

Transport and Environment Committee

10.00am, Thursday, 6 October 2022

Risk Based Approach to Road Asset Safety Inspections - Update

Executive/routine Wards Council Commitments	Routine All
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1. Recommendations

- 1.1 It is recommended that Transport and Environment Committee:
 - 1.1.1 Notes the updated Risk Based Approach to Safety Inspections as shown in Appendix 1; and
 - 1.1.2 Notes the updated carriageway and footway hierarchy, as shown in Appendices 2 and 3.

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Risk Based Approach to Road Asset Safety Inspections - Update

2. Executive Summary

- 2.1 This report updates Committee on the Council's Road Safety Inspection Policy, as detailed in Appendix 1, to continue to fulfil the requirements of the Well-Managed Highway Infrastructure Code of Practice in implementing a risk-based approach.
- 2.2 The hierarchy for carriageways and footways, on which inspection frequencies are determined, have also been updated and are shown in Appendices 2 and 3.

3. Background

- 3.1 The Roads (Scotland) Act 1984 states that a local roads authority shall manage and maintain all such roads in their area that are included in the list of public roads held by the authority. These are commonly referred to as "adopted roads".
- 3.2 The policy does not apply to Trunk Roads, which are the responsibility of Scottish Ministers.
- 3.3 'Well-Managed Highway Infrastructure: A Code of Practice' Recommendation 7 states that roads authorities should adopt a Risk Based Approach to all aspects of road maintenance. This policy specifically relates to having a risk-based procedure for conducting road safety inspections.
- 3.4 A Risk Based Approach is also recommended by the Institute of Highway Engineers in their guidance on managing risk and liability, 'Well Managed Highway Liability'.
- 3.5 It is important that the risk-based approach is reviewed regularly and updated, when required, in order to consider any changes to the existing transport network. This includes a review of the carriageway and footway hierarchy.
- 3.6 The City of Edinburgh Council's Risk Based approach to Road Asset Safety Inspections was approved by Transport and Environment Committee on [12 September 2019](#).

4. Main report

- 4.1 The Society of Chief Officers for Transportation in Scotland (SCOTS) has developed guidance on adopting a risk-based approach to road safety inspections. The revised strategy is based on this SCOTS recommended practice and is shown in Appendix 1.
- 4.2 Road Safety Inspections are designed to identify and repair defects to minimise, as far as reasonably practicable, the exposure to danger or serious inconvenience to users of the road network or the wider community. Such defects include those that require immediate attention, as well as those where the defect location and nature are such that longer periods of response are possible. Having a robust process for prioritising responses to identified defects is therefore crucial.
- 4.3 A risk-based approach is a major move away from the prescriptive descriptions of defects, based mainly on 40mm depth in carriageways and 25mm in footways, in previous codes and the tendency for 'worst case scenario' thinking used in assigning categories of response. The revised strategy includes a risk assessment process whereby a defect is analysed with regard to the context in which it exists. Using a risk matrix tool to evaluate the hazard in terms of likelihood and most probable consequence, the risk posed is objectively categorised and the corresponding required level of response determined.
- 4.4 The Council has finite resources for managing and maintaining the road network. As well as its critical safeguarding purpose, the implementation of this risk-based approach will improve efficiency and provide greater value for money through more appropriate categorisation of defects and responses based on risk to road users that is likely to lead to a reduction in the number of temporary repairs and an increase in permanent programmed work. As well as being more cost effective, this policy should have a positive impact on network road condition in the longer term, assuming current levels of investment are retained.
- 4.5 The Road Safety Inspection methodology allows Councils to demonstrate that legal responsibilities with regard to the inspection and maintenance of adopted roads are fulfilled. While the number of claims made against the Council may not necessarily be reduced, through the implementation of this risk-based policy, the Council will be better placed to defend them.
- 4.6 Currently, the Council has an adopted road length of 1,511km and over 2,200km of footways/footpaths/cycleways and cyclepaths.
- 4.7 An effective inspection regime requires having an appropriate hierarchy to which the local network assets are categorised. Guidance on the appropriate hierarchy for carriageways, footways and cycleways/cycletracks is given in the Code of Practice which this policy adopts. Inspection frequencies are then set for each level of the hierarchy and, as a result, a programme of inspections is developed for the stated asset types.
- 4.8 Edinburgh's carriageway and footway hierarchies have been updated and are shown in Appendices 2 and 3. This review was carried out by Council officers.

- 4.9 The carriageway hierarchy has been updated using existing data from The Scottish Roadworks Commissioners “Aurora” database and data from Edinburgh’s Street Design Guidance. This ensures that the frequency of carriageway safety inspections is determined by usage and the importance of the road i.e. arterial routes.
- 4.10 The footway hierarchy has been update using the usage categories from the Street Design Guidance. This ensures that the streets with the highest frequency of pedestrians are being inspected on a more regular basis.
- 4.11 The off-road cycle network is currently inspected in-line with the current footway inspection procedures. Work is currently underway to produce a map showing the off-road cycle network and the hierarchy category. It is expected that this map will be produced before the end of October.
- 4.12 Performance against set standards, within this policy, for identifying and repairing defects will continue to be recorded and reported.
- 4.13 It is essential that all inspectors are trained to an acceptable standard in order to carry out safety inspections. A training framework has been established and is reviewed regularly to ensure the appropriate competencies for all inspectors.
- 4.14 All Inspectors are required to attend the accredited Risk Based Approach to Safety Inspection training. This allows the Inspectors to be registered on the Institute of Highway Engineers “Highway Inspectors Register”.

5. Next Steps

- 5.1 Inspections will be carried out in accordance with the strategy set out in Appendix 1. The repair of defects is recorded and reported monthly against existing performance criteria.
- 5.2 This strategy will continue to be reviewed on a regular basis to consider any changes to Edinburgh transport network.

6. Financial impact

- 6.1 The cost of road safety inspections is contained within existing Transport revenue budgets. There are no additional costs associated with this policy.

7. Stakeholder/Community Impact

- 7.1 There are no significant compliance, governance or regulatory implications expected as a result of approving the recommendations in this report.
- 7.2 The investment in the city’s roads, footways, gullies and street lighting improves the accessibility and safety of the road and footway network and therefore has a positive impact for all users, particularly older people and those with a disability.

- 7.3 The development of the new hierarchies ensures that carriageways and footways are inspected in-line with their usage. This is a positive step for equalities and impact, in particular, for footway inspections.
- 7.4 There are no significant sustainability implications expected as a result of noting this report.

8. Background reading/external references

- 8.1 [Carriageway and Footway Investment Strategy 2016](#)

9. Appendices

- 9.1 Appendix 1 Road Asset Inspection: A Risk Based Approach
- 9.2 Appendix 2 Edinburgh's Carriageway Hierarchy
- 9.3 Appendix 3 Edinburgh's Footway Hierarchy

Appendix 1

The City of Edinburgh Council

Road Asset Inspections: A Risk Based Approach

Road Asset Safety Inspection Strategy



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Introduction

The City of Edinburgh Council's Road Safety Inspection Policy has been developed with the primary aim of providing operational guidance to those officers responsible for managing road asset safety inspections. This is in order to encourage a consistent approach by utilising a formalised system that recommends the frequency of inspections as well as the method of assessing, recording and responding to defects in the road asset.

This strategy is based on the SCOTS Risk Based Approach (RBA) guidance and compiled using their Road Safety Inspection Strategy template. The document is one of a suite of Risk Based Approach documents, a description of which can be found in the overview document held in the Asset Management Khub: "SCOTS Risk Based Approach Overview.doc"

'Well-Managed Highway Infrastructure: A Code of Practice' has specific recommendations regarding inspections of all road elements. This Strategy document specifically relates to the procedure for carrying out road safety inspections. Recommendation 7 of the code of practice is that Road Authorities should adopt a Risk Based Approach to all aspects of road maintenance.

A Risk Based Approach is also recommended by the Institute of Highway Engineers in their guidance on managing risk and liability, 'Well Managed Highway Liability Risk'.

The establishment of an effective regime of safety inspections is a crucial component of road maintenance in accordance with the Code of Practice, The Society of Chief Officers of Transportation in Scotland (SCOTS) seeks to encourage the benefits that will be gained by harmonising such procedures across Scotland. Recommendation 6 within the Code of Practice refers to Consistency with Other Authorities and is stated below:

"To ensure that users' reasonable expectations for consistency are taken into account, the approach of other local and strategic highway and transport authorities, especially those with integrated or adjoining networks, should be considered when developing highway infrastructure maintenance policies."

This Road Safety Inspection Strategy has been developed in partnership with the roads authorities associated through SCOTS to focus on safety inspections and categorisations and is now being made available for all Scottish roads authorities to consider adopting for their network.

Officers across all Scottish Local Authorities recognise that Councils are currently faced with delivering services within an environment of increasing fiscal austerity and are aware of the benefits that can be achieved by adopting a common approach which follows the principles of 'Well-Managed Highway Infrastructure'.

Adoption of this strategy will provide a consistent methodology for the management of the road network, while focusing on delivering a proactive programme of permanent repairs. It is intended that

its implementation will also allow performance to be monitored and reviewed, implementing any necessary improvements identified through its use.

Legislative Requirements

The Roads (Scotland) Act 1984 Section 1, states that "...a local roads authority shall manage and maintain all such roads in their area as are for the time being entered in a list (in this Act referred to as their "list of public roads") prepared and kept by them under this section."

This Document

This Road Safety Inspection Strategy contains guidance to assist road authorities in managing safety inspections on public roads on the roads authority network including the nature and priority of response to defects encountered.

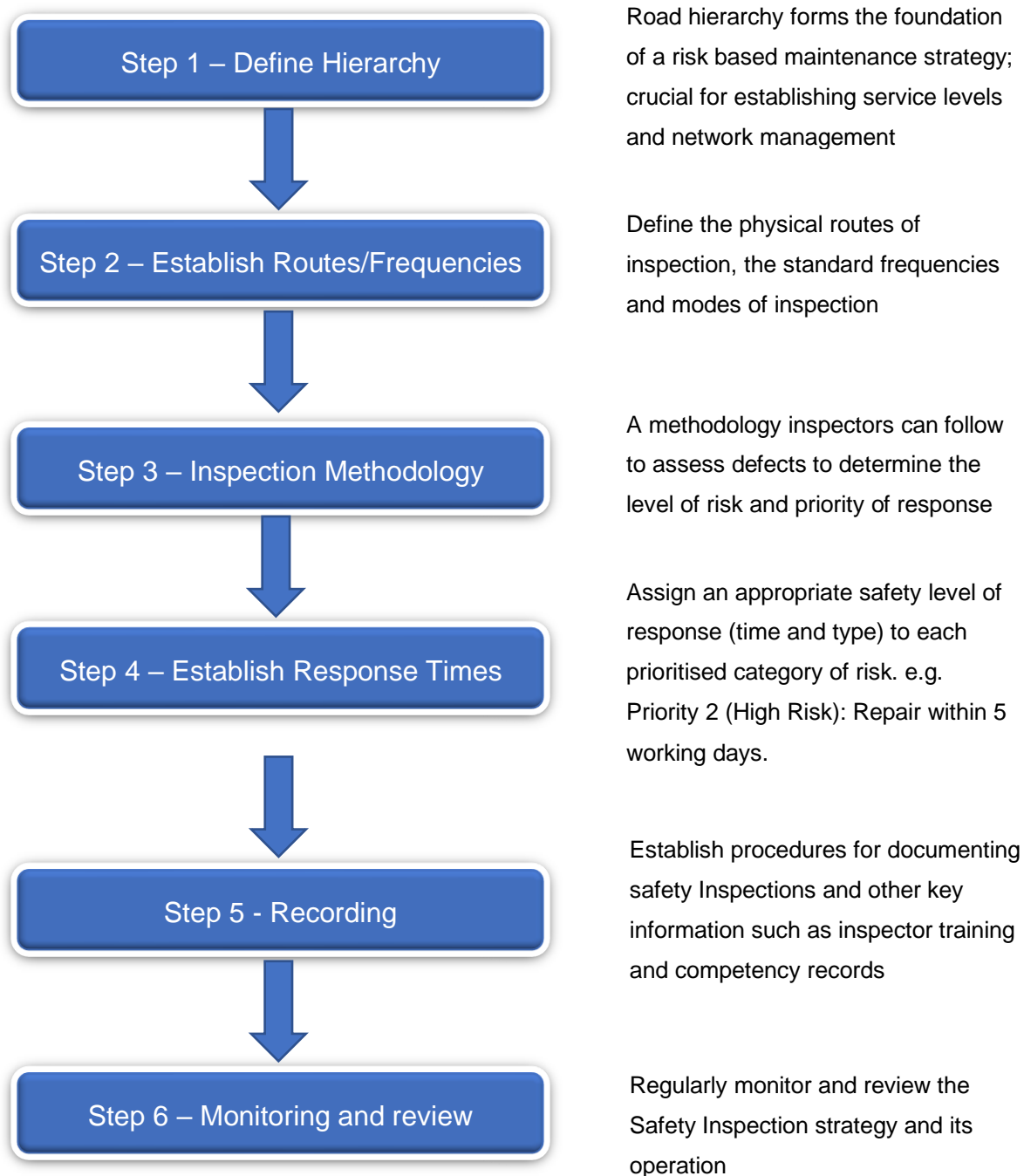
SCOTS formed a focus group to develop this Risk Based Approach documentation. The rationale for producing it and the approach taken to key content is contained in the following document held within the SCOTS Road Asset Management Knowledge Hub (Khub):

[‘SCOTS Rationale for Risk Based Approach to RAM Guidance.doc’](#)

The Training, Competency and Experience of all persons involved in developing the SCOTS risk-based approach guidance documentation is also detailed in the rationale document.

Overview

The safety inspection strategy involves several key steps, explained in detail within this document. They are:



Hierarchy

“Well-Managed Highways Infrastructure – Code of Practice” (WMHI CoP) indicates that a network hierarchy is the foundation of a risk-based maintenance strategy; crucial for establishing service levels and network management.

Guidance for Edinburgh’s carriageway, footway and cycleway categories is based on the descriptions within the Code of Practice (2016) which is replicated in the tables below.

Carriageways

Table 1 below provides descriptions for carriageway categories based on those in ‘Well-Managed Highway Infrastructure: A Code of Practice’.

Table 1 Carriageway Hierarchy

Category	Hierarchy	Description
1	Strategic Route	Routes for fast-moving long-distance traffic with little frontage access or pedestrian traffic. Speed limits generally in excess of 40mph with few junctions. Parked vehicles are generally not encountered out with urban areas.
2	Main Distributor	Routes between strategic routes and linking urban centers to the strategic network with limited frontage access. In urban areas speed limits are usually 40mph or less.
3	Secondary Distributor	In residential and other built-up areas these roads have 20 or 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. In rural areas these roads link the larger villages, bus routes and HGV generators to the Strategic and Main Distributor Network.
4	Link Road	In urban areas these are residential or industrial interconnecting roads with 20 or 30 mph speed limits, random pedestrian movements and uncontrolled parking. 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.
5	Local Access Road	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.
6	Minor Road	Locally defined roads.

Footways

Table 2 below is based on the recommendations of 'Well-Managed Highway Infrastructure: A Code of Practice' and should be used as a starting point when allocating a footway / footpath to a particular category.

The following should also be taken into consideration:

- pedestrian volume,
- designation as a traffic sensitive pedestrian route,
- current usage and proposed usage,
- contribution to the quality of public space and streetscene,
- age and distribution of the population, proximity of schools or other establishments attracting higher than normal numbers or specific groups of pedestrians,
- accidents and other risk assessments and
- character and traffic use of adjoining carriageway.

Table 2 Footway Hierarchy

Category	Category Name	Description
1	Prestige Walking Zones	Very busy areas of town centres with high public space and Streetscene contribution.
2	Primary Walking Routes	Busy urban shopping and business areas and main pedestrian routes, including links to significant public transport locations.
3	Secondary Walking Routes	Medium usage routes through local areas feeding into primary routes, local shopping centres etc.
4	Link Footways / Footpaths	Linking local access footways through urban areas and busy rural footways.
5	Local Access Footways / Footpaths	Footways associated with low usage, short estate roads to the main routes and cul-de-sacs.
6	Minor Footways	Little used footways serving very limited numbers of properties.

Cycle Routes

Cycle routes are categorised by location and a proposed hierarchy is shown in Table 3 below.

Table 3 **Cycle Route Hierarchy**

Category	Description
1	Cycle lane forming part of the carriageway, commonly a strip adjacent to the nearside kerb. Cycle gaps at road closure point (no entry to traffic but allowing cycle access).
2	Cycle track - a designated route for cyclists not contiguous with the public footway or carriageway. Shared cycle/pedestrian paths, either segregated by a white line or other physical segregation, or un-segregated.
3	Cycle trails, leisure routes through open spaces, remote from carriageway or footway / path where on the list of public roads.

Road Network Assessment

It is important that the road network categorisation reflects the needs, priorities and actual use of the network and infrastructure assets.

SCOTS recommends that roads authorities use a focus group of local expert stakeholders, who have been assessed as appropriately experienced and competent, to assist with review of the road network against the hierarchy categories.

Built on top of this foundation hierarchy, the focus group should consider the National Street Gazetteer (NSG) and related information such as traffic sensitivity, special engineering difficulties, etc.

Consideration should also be given to additional information relevant for each asset functional hierarchy; example data that can be utilised is:

- Traffic levels (e.g., vehicles, vehicle types, footfall, cyclists, etc)
- Environment (Urban or Rural)
- Major shopping areas
- Industrial estates/Business Parks
- Transportation hubs & depots (e.g. Bus/train stations, Bus/train depots, airports, ports, etc.)
- Military bases
- Emergency Service stations
- User type (e.g., vulnerable users)
- Claims
- Defects
- Customer Service Requests
- Flooding

The above list is not exhaustive and are examples only; road authorities must consider their local needs, requirements and priorities.

The competency of those involved in establishing network categories and the discussion and reasons for key decisions **must** be documented. This information can be recorded within this strategy document, or as an appendix, or elsewhere (if so, cross reference the document).

Review of Road Network Categories

Road networks are dynamic, therefore network categories should be regularly reviewed, considering any changes in the network as it evolves, to ensure that assigned categories remain relevant.

As recommended in the Code of Practice (2016), network hierarchies will be reviewed to ensure they are dynamic and to reflect changes in network characteristics and functionality.

An annual review will be undertaken for any major changes within the network, such as a major new development. Decommissioning of a site or change to functionality of a location (e.g., industrial estate that is being redeveloped into residential properties).

Additionally, a more detailed review of functional hierarchies will be undertaken every 3 years.

Review of the road network against hierarchy is undertaken by appropriately experienced and competent members of the Transport Team.

Continuity of safety and serviceability with neighbouring Highway Authorities

The adoption of the WMHI code of practice hierarchy and common SCOTS safety inspection methodology should, while allowing for management of hierarchies with regard to local circumstances, enable a high degree of continuity of safety and serviceability across neighbouring authorities.

Inspection Frequencies

The City of Edinburgh Council is adopting the 'Well-Managed Highway Infrastructure: A Code of Practice' Frequencies for safety inspections as follows:

Table 4 Frequency of Inspection – Carriageways

Category	Hierarchy Description	Frequency
1	Strategic Route	Monthly
2	Main Distributor	Monthly
3	Secondary Distributor	Monthly
4	Link Road	Quarterly
5	Local Access Road	Annually
6	Minor Road	Annually

Table 5 Frequency of Inspection – Footways & Footpaths

Category	Category Name	Frequency
1	Prestige Walking Zones	Monthly
2	Primary Walking Routes	Monthly
3	Secondary Walking Routes	Quarterly
4	Link Footways / Footpaths	Six Monthly
5	Local Access Footways / Footpaths	Annually
6	Minor Footways	Annually

Table 6 Frequency of Inspections – Cycleways

Category	Frequency
1	As for adjacent road
2	Six Monthly
3	Annually

The frequency of inspections contained within Tables 4 to 6 above represents guidance as a starting point.

In accordance with the Code of Practice, where appropriate, a risk assessment taking into account the below considerations will be contemplated where there are deviations proposed for individual sections of the road network:

- The hierarchy of the network
- Type of asset

- Critical assets
- Consequence of failure
- Network resilience
- Use characteristics and trends
- Incident and inspection history
- Characteristics of adjoining networks elements
- The approach of adjoining roads authorities
- Wider policy or operational considerations

Safety Inspection Routes

Safety inspection routes are determined through a manual process to build an annual programme of safety inspection routes. These are then uploaded to Edinburgh's Asset Management System (Confirm). The development of the routes is based on the following considerations:

- Road Network Hierarchy
- Required frequencies
- Lengths in which a safety inspector can drive/walk per day
- Whether routes are walked or driven

Inspection Tolerances

All road safety inspections will be carried out to the SCOTS recommended frequencies detailed in the following tables and should be completed within the tolerances shown in Table 7, as follows:

Table 7 Inspection Tolerances

Frequency of Inspection	Inspection Tolerances
Monthly	± 5 working days of the Due Date
Quarterly	± 10 working days of the Due Date
Six Monthly	± 15 working days of the Due Date
Annual	± 20 working days of the Due Date

Definition of above terms

- **Frequency of Inspection - Monthly** indicates that twelve regular spaced inspections will be carried out per year.
- **Frequency of Inspection - Quarterly** indicates that four regular spaced inspections will be carried out per year.
- **Frequency of Inspection - Six Monthly** indicates that two regular spaced inspections will be carried out per year.
- **Frequency of Inspection - Annual** indicates that one regular spaced inspection will be carried out per year.
- **Due Date** is the programmed date of an inspection.

Staff Contingency and Alterations to the Inspection Programme

- Due to the nature of the weather in Scotland it is probable that the road surface will be wet with some elements of standing or running water whilst an inspection is in progress. However, if the quantity of water is excessive or across the full width of the carriageway then

the inspection should be abandoned, and an entry should be made to document the circumstances.

- If an inspection Due Date falls during an extended period of absence e.g., inspector holiday or illness, then the inspection should be allocated to another suitably experienced member of staff who has the capacity to undertake the inspection.
- If and for reasons beyond the control of the roads authority (e.g., substantial snow fall), any inspection cannot be carried out in compliance with Table 7 the roads authority will decide on the viability of a safety survey being undertaken, taking into account the availability of staff and the prevailing weather conditions.
- As soon as reasonably practicable following the above events a deferred programmed safety inspection should be carried out on the affected length of road.
 - Where a monthly inspection is more than 2 weeks late due then the programmed inspection will be missed, and the cycle resumed at the next due inspection date.
 - Where substantial unavoidable delays are incurred to other inspection frequencies the manager may assess the impact and adjust the programme.
 - A record must be kept of change decisions and reasons for them.

Ad-Hoc reactive Safety Inspections

Inspectors may be instructed to undertake ad-hoc safety inspections e.g., in response to a third-party report that is deemed to merit inspection of a defect to determine whether reactive repair is required. *These inspections must be carried out within 5 working days from the date that a report was made to The City of Edinburgh Council.*

The risk assessment methodology outlined in the 'Defect Identification and Risk Assessment Process' section of this document will also be adopted for ad-hoc reactive inspections.

Inspection Methodology

Safety Inspections

Road Safety Inspections are designed to identify defects likely to cause a hazard or serious inconvenience to users of the network or the wider community. Such defects include those that require urgent attention as well as those where the locations and sizes are such that longer periods of response are appropriate.

Planned Cyclic Safety Inspections

The Safety Inspection regime forms a key aspect of the road authority's strategy for managing liability and risk. Planned, cyclic safety inspections are carried out to identify defects which are hazardous (to any user of the road including drivers, pedestrians, equestrians and cyclists) so that an effective repair can be carried out within a predetermined response time.

The specified frequency of these inspections is dependent upon the **hierarchy category** of each section of road but may be varied after a documented risk assessment.

During safety inspections, observed defects that provide any foreseeable degree of risk to users will be recorded and processed for repair as appropriate following the methodology detailed in the 'Defect Risk Assessment' section of this document. The degree of deficiency in the road elements will be crucial in determining the nature and speed of response. Judgement will always need to take account of particular circumstances. For example, the degree of risk from a pothole depends upon not only its depth but also its surface area, location within the road network and usage of the road or footway.

The objectives of safety inspection activity are to:

- Minimise the risk of injury and disruption to road users as far as is reasonably practicable,
- Provide a regular, structured inspection of the public road network, within available resources,
- Deliver a consistent, reliable response to identified defects, within available resources,
- Maintain accurate and comprehensive records of inspections and response,
- Provide a clear, accurate and comprehensive response to claims.

Items for Inspection

The following are examples of the types of defects which, when identified, should be assessed and an instruction for repair issued with an appropriate response time specified. The list identified below is not exhaustive.

Carriageways

- Surface defects
- Abrupt level differences in running surface
- Edge deterioration of the running surface

- Excessive standing water, water discharging onto and / or flowing across the road
- Blocked gullies and obstructed drainage channels or grips which could lead to ponding or flooding
- Debris and/or spillages likely to be a hazard
- Missing road studs
- Badly worn Stop, Give Way, double continuous white line or markings associated with TRO's
- Missing or significantly damaged covers

Footways, Footpaths and Cycleways

- Surface defects
- Excessive standing water and water discharging onto and or flowing across the foot/cycleway
- Dangerous rocking paving slabs
- Large cracks or gaps between paving slabs
- Missing or significantly damaged covers
- Debris and / or spillages likely to be a hazard
- Damaged kerbs
- Line markings

Street Furniture

- Damaged vehicle restraint systems, parapets, handrails or guardrails
- Damaged boundary fence where animals or children could gain access
- Damaged or missing signs, such as Give Way, Stop, Speed Limit

Road Lighting

- Damaged column, cabinet, control pillar, wall mounting
- Exposed, live electrical equipment

Others

- Overhead wires in dangerous condition
- Sight lines obstructed by trees and other vegetation,
- Trees in a dangerous condition
- Earth slips where debris has encroached or is likely to encroach the road or causing the road to fall away
- Rocks or rock faces constituting a hazard to road users
- Damaged road structures

Risk Management Process

Inspectors undertaking safety inspections or responding to reported incidents require to use judgement in determining likelihood and consequences of the observed or reported defects. This approach is consistent with 'Well-Managed Highway Infrastructure: A Code of Practice' recommendation that roads authorities adopt a system of defect risk assessment for determining the response categories to road defects. However, it represents a step change in the way that defects are assessed. Taking a risk-based approach, as per the above code of practice, means that there are NO prescriptive investigation or intervention levels to apply. The rationale for removing these is that the same defect will represent a different level of risk in a different context. In the past this has led to inappropriate and often unnecessary, costly, temporary repairs. Instead, by using a risk-based approach, councils can reduce such reactive interventions and target more of their scarce resources towards programmed work that in the longer term will lead to an overall improvement of road condition.

While not providing any minimum or default standards, the code of practice does support the development of local levels of service in accordance with local needs, priorities and affordability.

Establishing Context

Establishing context requires the inspector to utilise experience and knowledge during the inspections to assess the road characteristics, such as giving consideration to environment (speed limit, width, rural/urban, road hierarchy, visibility, bend, hill - incline/decline, road camber/crossfall, etc.), relevant road user types (pedestrians, cyclists, horse riders, cars, LGV's, HGV's, PSV's, etc.), traffic volumes, maintenance history, historical incidents/claims/complaints (e.g. experience/knowledge of similar hazards being a contributory factor to incidents/claims within the authority or a neighbouring authority), demographics and key local amenities (proximity to doctors surgery, hospitals, shopping areas, schools, etc.).

Risk Assessment

Taking the context into consideration, Risk Assessment is a three-step process:

1. Hazard Identification

An inspection item for which the inspector identifies road asset defects which may pose a risk to road users i.e., lead to a negative consequence. The types of assets to be inspected and the potential associated hazards from defects are detailed in the Inspectors Operations Manual.

2. Risk Analysis

All risks identified through this process must be evaluated in terms of their significance which means assessing the likelihood of encountering the hazard and the most probable (not worst possible) consequence should this occur.

The procedure is designed to mitigate 'worst case scenario' thinking and ensure an objective assessment is carried out. It is important therefore that the analysis is carried out in this defined step sequence to determine the appropriate level of risk and corresponding priority response.

Risk Likelihood

The risk likelihood is assessed with regard to how many users are likely to pass by or over the defect, consequently the network hierarchy and defect location are important considerations in the assessment.

The likelihood of encountering a hazard, within the established context, will be quantified on a scale of Remote to Almost Certain as follows:

Table 8 Risk Likelihood

Likelihood / Probability	Likelihood Description	
Almost Certain	Will undoubtedly happen	Daily
Likely	Will probably happen, but not a persistent issue	Monthly
Possible	May happen occasionally	Annually
Unlikely	Not expected to happen, but it is possible	10 Years
Remote	Improbable	20 Years

Risk Consequence

The risk consequence is assessed by considering the most probable (NOT worst possible) outcome (impact) should the risk occur and will be quantified on a scale of Negligible to Catastrophic as follows:

Table 9 Consequence (Impact/Severity) Score

Consequence (Impact/Severity)	Description			
	Impact on people	Impact on Service Objectives	Financial Impact	Impact on Reputation
Catastrophic	Death	Unable to function, inability to fulfil obligations	Severe financial loss	Highly damaging, sever loss of public confidence
Major	Extensive injury, major permanent harm	Significant impact on services provision	Major financial loss	Major adverse publicity, major loss of confidence
Moderate	Medical treatment required, semi-permanent harm up to 1 year	Service objectives partially achievable	Significant financial loss	Some adverse publicity, legal implications
Minor	First aid treatment, non-permanent harm up to 1 month	Minor impact on service objectives	Moderate financial loss	Some public embarrassment, no damage to reputation
Negligible	No obvious harm/injury	Minimal impact, no service disruption	Minimal financial loss	No interest to the press, internal only

3. Risk Evaluation

The risk factor for a particular risk is the product of the risk impact and risk. It is this factor that identifies the overall seriousness of the risk and consequently therefore the appropriateness of the speed of response to remedy the defect. Accordingly, the priority response time for dealing with a defect can be determined by correlation with the risk factor as shown in the risk matrix, table 10:

Table 10 Risk Matrix

Consequence	Negligible	Minor	Moderate	Major	Catastrophic
Likelihood					
Remote	NR	NR	NR	NR	P3
Unlikely	NR	NR	P4	P4	P3
Possible	NR	P4	P4	P3	P2
Likely	NR	P4	P3	P2	P1
Almost Certain	NR	P3	P2	P1	P1

Risk Management Response

Having identified a particular risk, assessed the likelihood of it occurring and most probable consequence (impact/severity) and thus calculated the risk factor, the appropriate response is identified in the form of a risk management (response) matrix, Table 11.

Table 11 Risk Management Matrix

Risk Category	Priority Response
Critical Risk	Priority 1 response
High Risk	Priority 2 response
Medium Risk	Priority 3 response
Low Risk	Priority 4 response
Negligible Risk	No response

Intersections and Multiple Road User Types

The hazard context considers the location and the types of road users which could be impacted by the defect. Inspectors should consider the different impacts and consequences for each road user type (e.g., pedestrians, cyclists, vehicle drivers, etc.) and at intersections, consider the hierarchy of each route. Inspectors must therefore assess the likelihood and consequence for each road user type and/or route hierarchy. The priority of the response is based on the highest priority determined from the risk matrix (Table 10).

Defects That are Not the Responsibility of the Council

During an inspection, defects may be identified which are not the responsibility of the Council to repair. The Council does, however, have a duty of care to the users of the network. Therefore, the defect must be recorded and the party responsible for the repair must be made aware of the defect. If the defect is identified as a Priority 1 defect, it should be made safe either by signing and coning or by a temporary repair.

Statutory Undertakers' Defective Apparatus

Where defective apparatus belonging to undertakers is identified, the defect must be recorded and the utility contacted in accordance with the 'New Roads and Street Works Act 1991 – Code of Practice for Inspections'.

Defects That are the Responsibility of Other Third Parties

Where the defect is the responsibility of another party who is not a Statutory Undertaker, for example an adjacent landowner, the defect should be recorded and the landowner contacted with a request to carry out the necessary remedial works within an appropriate period of time. A number of scenarios may arise from an inspection, which are covered by provisions contained within the Roads (Scotland) Act 1984, for which it may be appropriate to inform the party responsible for the defect / hazard of their responsibilities under the Act.

Some selected examples of the above are;

- Prevention of danger to road users from nearby vegetation and fences etc. or from retaining walls being inadequate (Section 91)
- Deposit of mud from vehicles on road (Section 95)
- Control of flow of water etc. onto roads (Section 99)

A number of these provisions within the Act allow the roads authority to carry out remedial works to address the defect/hazard either immediately or after a suitable period of notice, and further may give powers to recover any expenses reasonably incurred in doing so.

Any decision to undertake such remedial work should not be done without the agreement of a suitably responsible person, and in the first instance constructive discussion with the responsible party, in order to resolve the issue, is the preferred option.

Inspection Records

Inspections and records arising from inspections are held electronically, allowing records to be used for reference and later dates.

All Inspection routes, defects identified, and repairs are recorded and updated in Edinburgh's Asset Management System (Confirm).

Priority Response Times

Safety Levels

The Appropriate response to particular risk is identified in the form of a risk management response. 'Safe' levels of target response times to a particular defect category have been developed through guidance by SCOTS recommendations to safety level response times and through recommendations of the Code of Practice (2016) by implementing a risk-based approach. This will also provide consistency with neighbouring Local Authorities.

The Road Safety Inspection methodology allows Councils to demonstrate that legal responsibilities with regard to inspection and maintenance of adopted roads are fulfilled. While the number of claims made against the Council may not necessarily be reduced, through the implementation of this risk-based policy, the Council will be better placed to defend them.

The Priority Response Times for each Defect Category are shown in Table 12 below.

Table 12 SAFETY LEVELS - Defect Priority and Response Times

Defect Priority	1	2	3	4	NR
Standard Response Time	24 Hours	5 Working Days	60 Working Days	Programmed work	No Action required

Priority 1: Make safe within 24 Hours

Priority 1 represents a critical risk to road users and should be corrected or made safe at the time of inspection, if reasonably practicable. In this context, making safe may constitute displaying warning signs and / or coning off to protect the public from the defect. Where reasonably practicable, safety defects of this Priority should not be left unattended until made safe or a temporary or permanent repair has been carried out.

When a Priority 1 defect is identified within a larger group / area of defects, only that particular element shall be treated as a Priority 1 defect. The remaining defects shall be categorised accordingly.

Priority 2: Repair within 5 Working Days.

This allows a more proactive approach to be adopted for those defects that represent a high risk to road users or because there is a risk of short-term structural deterioration. Such defects may have safety implications, although of a lesser significance than Priority 1 defects, but are more likely to have serviceability or sustainability implications.

Priority 3: Action within 60 Working Days.

Defects that require attention although they represent a medium risk to road users. The 60-day response time allows defects of this nature to be included in medium term planned programmes of work, allowing more time for better planning and an increased number of permanent repairs.

Priority 4: Consider for Planned Works Programme

The defect is considered to be of low risk; no immediate response is required. Defects in Priority 4 are not classed as safety defects and are collected to assist the development and prioritisation of Planned Maintenance Works Programmes.

NR: NO Action Required

The defect is considered to be of negligible risk, no intervention is required, and monitoring will continue as per the inspection regime

Meeting Target Response Times

It may not be possible, particularly at certain times of year, to meet target response times, due to pressure on resources. This could, but not exclusively, be due to the high number of defects that can arise in a short period of time after periods of adverse weather, such as prolonged spells of heavy rain or snow, or freeze / thaw conditions. Prolonged periods of adverse weather may also prevent remedial measures being carried out.

Performance Monitoring

The City of Edinburgh Council has procedures in place for conducting and recording regular monitoring of safety inspections. This includes:

- Time taken to inspect defects
- Number of defects recorded
- Time taken to repair defects

The performance of the safety inspection regime is monitored using appropriate indicators which are benchmarked against similar authorities through the SCOTS/APSE benchmarking programme.

Inspector Competency

For the purpose of this document, the term 'Inspector' is defined as 'a person who the road authority has assessed and certified as competent to identify and undertake a risk assessment of a road asset defect and if required, determine the risk treatment'. Therefore, within this document, 'inspector' is not utilised exclusively for a person who mainly completes the routine road asset safety inspections, but can include technicians, engineers or other staff within the authority who have been assessed by the authority to achieve the authority's required level of competency.



