Guidance for Highway Safety Inspections

Safe, clean, ambitious, proud

Nottingham City Council

Document history: AMF-010

Version No.	Status	Owner	Date	Changes from Previous Version
01	Final	Kevin Charnley	October 2018	First release
02	Final	Kevin Charnley	February 2019	Further review of Network Hierarchy

Document Sign-off

Role	Name	Signature	Sign-off Date
Director of Commercial, Infrastructure and Energy	Gordon Thomson		13th September 2018

For further information on this document, please contact:

Kevin Charnley
Highway Maintenance Manager
Commercial and Operations
Nottingham City Council
Humber Building
Eastcroft Depot
London Road
Nottingham
NG2 3AH
Email: kevin.charnley@nottinghamcity.gov.uk

Contents:

1. Background

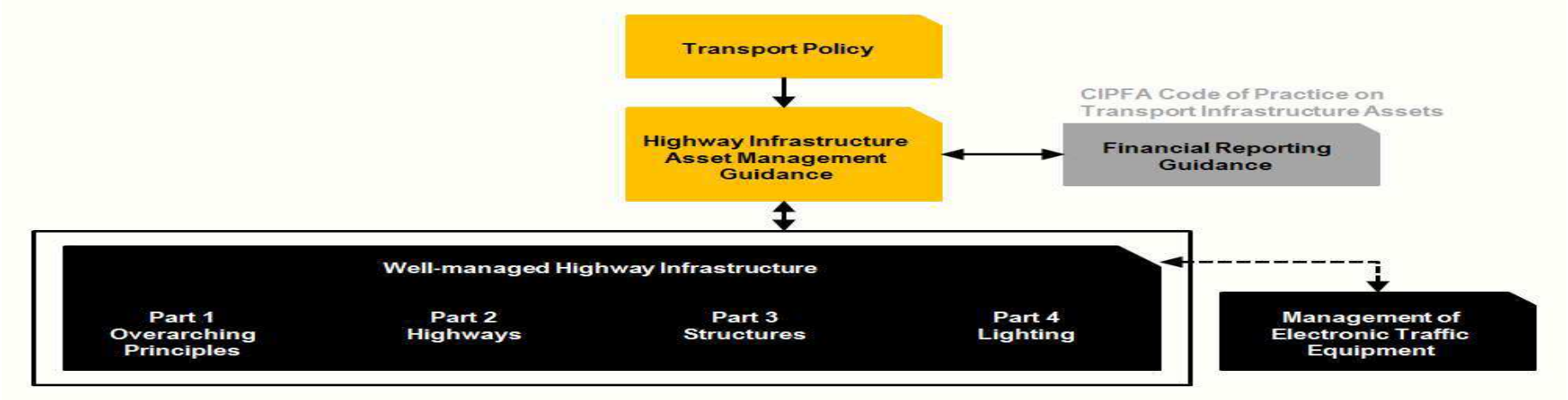
This document supersedes the previous document tilted – 'Nottingham City Council Highway Inspection Manual' dated April 2012.

This document sets out how Nottingham City Council manages and risk assesses the maintenance of its highways to fulfil its statutory obligations and deliver a safe, serviceable and resilient highway network.

The objective of this manual is to ensure that the highway is safe for all users and to provide a reference text to all staff. It will also provide a useful document to other departments and stakeholders highlighting the extent of the Highways Inspection regime.

To meet the overriding objective of ensuring that the highway is safe for all users, a risk management approach is used to assess defects and prioritise treatments, in line with the revised code of practice for Highway maintenance **Well-managed Highway Infrastructure - A Code of Practice** which was published in October 2016. The previous Code of Practice had been defined in three specific documents, the contents of these Codes of Practice has been revised and brought together under a single guidance document.

The general principles and content of the Well-managed Highway Infrastructure document have been shared within the highways sector over two years prior to its publication in October 2016 to ensure that all local authorities have contributed to its content and evolution. The revised Code of Practice encourages the development of a locally determined risk-based approach to highway maintenance, aligned to central governments expectation that local highway authorities will adopt a fully developed asset management approach. The following diagram helps to illustrate this broader context.



This manual is intended for employees involved in the safety inspections of Nottingham City Council's highway network, whether that be through routine safety inspections or ad-hoc safety inspections generated as a result of an enquiry investigation. It is not intended to cover inspections of Public Rights of Way (unless they form part of the footway hierarchy within or on the fringe of urban areas). The use of this Manual applies to adopted highways only.

The Code of Practice is not a statutory document but comprises a framework of guidance and standards for the highways maintenance service. As a national document, the Code of Practice recognises the need for local discretion and diversity in service provision and differing local service users priorities.

Nottingham City Council is a member of the Midlands Service Improvement Group (MSIG) which is a collective of Midlands and North West County, City and Unitary Councils who collaborate and share best practice to drive improvements and efficiencies within the Highways and Road Safety Disciplines of Local Authorities. The MSIG Highway Maintenance and Asset Management Task Group has worked to develop a set of High Level Principles for the Risk Based Approach to Safety Inspections and Defect Response times. Nottingham City Council has utilised the guidance documents produced by MSIG in the development of this highway safety inspection manual with a view to ensuring that highway users experience an appropriately consistent approach to highway safety inspection and maintenance.

2. The need for Highway Safety Inspections

Under Section 41 of the Highways Act 1980, Nottingham City Council has a statutory duty to maintain a highway maintainable at public expense in a safe and serviceable manner for all types of road user. Neglecting this duty can lead to claims against the City Council for damages resulting from a failure to maintain the highway. Under Section 58 of the Highways Act 1980, the highway authority can use a "Special Defence" in respect of action against it for damages for non-repair of the highway if it can prove that it has taken such care as was reasonable. Part of the defence rests upon:

1) The character of the highway and the traffic which was reasonably to be expected to use it
2) The standard of maintenance appropriate for a highway of that character and used by such traffic
3) The state of repair in which a reasonable person would have expected to find the highway'
4) Whether the highway authority knew, or could reasonably have been expected to know, that the condition of the part of the highway to which the action relates was likely to cause danger to users of the highway'
5) Whether warning notices were displayed when immediate repair could not reasonably be expected.

3. Customer Care Policy

All enquiries are logged into 'Confirm' via the Customer Enquiries Module. The system automatically forwards the details to the relevant highway inspector for action and reply.

Case history demonstrates that the Highway Authority must also record all customer reports of highway defects, however, not all defects, which the Authority becomes aware of by inspection or customer report, need to be repaired. All defects are recorded in 'Confirm' and these records may also be used as evidence to show that the Highway Authority has acted reasonably.

'Confirm' currently provides a single database for the recording and tracking of customer enquiries, the management of routine highway safety inspections, asset inventory and management and works ordering.

4. Aims and Purpose & Inspection

The aim of inspecting the highway is to identify and take action to remove those hazards causing danger to highway users. Additionally the process will support the development of programmes, to maintain the asset and keep the highway in a serviceable condition.

The core objectives for maintenance could be considered to be:
Network Safety: complying with statutory obligations; and meeting users' needs for safety.
Customer Service: user experience/satisfaction; communication; information; and levels of service.
Network Serviceability: ensuring availability; achieving integrity; maintaining reliability; resilience; and managing condition.

Highway safety inspections are undertaken to identify defects that are creating or likely to create a danger or serious inconvenience to users of the network or the wider community. Such defects should include those that will require urgent attention (within a maximum of 36 hours) as well as those where the reduced level of severity is such that longer periods of response would be acceptable, or confirm that no response is needed.

5. Persons undertaking Inspections

The person undertaking an inspection an inspection should be provided with appropriate training, regular updates, audited and accredited as competent in the required field of expertise. All Highway Safety Inspectors should hold a valid Lantra Approved Highway Safety Inspection Certificate which enables Inspectors to be entered onto the IHE National Register of Highway Inspectors. They will also have completed other relevant training, including the NRSWA Streetworks Supervisors certificate. **(http://www.theihe.org/registers/highway-inspectors-register/)**

The person undertaking the inspection is responsible for the accuracy of that inspection and the recorded information. In certain circumstances, that person may be called into Court to substantiate their inspection records. Persons undertaking inspections may also be required to provide information relating to third party claims received and provide statements towards the defence of claims where Nottingham City Council legal and insurance representatives are involved.

6. Highway Network Maintenance Hierarchy

Each part of the network is assigned a hierarchy to recognise the impact certain routes have on the city's economy and the communities they serve. The network maintenance hierarchy currently serves to inform the frequency of inspection and is also used as a weighting factor to inform the response times for routine and reactive maintenance in accordance with the risk based approach as recommended by the new Code of Practice. Deterioration on higher hierarchy routes would have greater impact on all highway users and highway maintenance activities will need to be effectively prioritised when determining the response time and the type of repair to keep the network safe.

The maintenance hierarchy adopted by the Nottingham City Council reflects the needs, priorities, strategic importance and actual use of each highway element on the highway network. The dynamic nature of the highway network is taken into account and hierarchies are reviewed on a regular basis so that maintenance policies, practices and standards reflect the current situation rather than the use expected when the hierarchy was originally defined and or last modified.

Highway Inspectors are able to evaluate their inspection routes when changes occur in characteristics and functionality and, as a result, they can make recommendations for a hierarchy review as they see appropriate.

This hierarchy is stored in the Highway Asset Management System (Confirm) and records are kept of hierarchy changes. Footway hierarchies are different to carriageway hierarchies and therefore most roads have different hierarchy classification and potentially inspection frequency for carriageway and footway.

The Authority will ensure that the inspection routes include the existing highway network and newly adopted highways, where appropriate, are added to the inspection routes.

The current hierarchy is detailed in the following tables.

6.1 Table 1 – Carriageway Asset Maintenance Hierarchy

The following table is based on guidance from the Code of Practice document and forms the basis on which Nottingham City Council's highway network is categorised.

Carriageway Hierarchy	Type of Road	Description
M101	Strategic Roads	Major national cross-country roads between places of traffic importance across the UK, with the aim of providing easily identifiable routes to access the whole of the country i.e. motorway network. Typically, major dual carriageways and major single A roads.
M102	Primary Roads	Primary roads within the city providing quick access to urban areas, linking to major industrial/ retail areas and main centres of employment. These roads will typically be inner and outer ring roads.
M103	Secondary Roads	Roads connecting urban areas to the inner and outer ring road. Typically, major bus routes and roads serving smaller retail i.e. District Centres, business and leisure facilities. Also including roads serving the city centre from the inner ring roads.
M104	Local Link Roads	Roads providing alternative but less direct links between urban areas and the inner and outer ring roads. They typically are the main routes through residential and industrial areas and will have less traffic than secondary roads
M105	Major Residential	Roads providing links within residential areas, often bus routes, small shopping frontages <4 shops. Typically, the spine road through an urban estate, collecting traffic from access and minor residential roads.
M106	Access Roads	Roads serving to distribute users from major residential roads to minor residential roads, often with on street parking serving >30 properties including long cul-de- sacs and minor industrial estate roads
M107	Minor Residential Roads	Urban residential roads including those with a shared road space. Typically, cul-de-sacs with <30 properties, including paved service roads i.e. rear of residential properties/shops

6.2. Table 2 – Footway Hierarchy

Footway hierarchy is determined by functionality and scale of use. Six broad maintenance categories are recommended in the code of Practice for footways as follows:

Footway Maintenance Hierarchy	Category	Description
M201	Prestige Walking Zones	Very busy areas of the city with high public space and street scene contribution, i.e. city centre
M202	Primary Walking Routes	Busy urban shopping and business areas and main pedestrian routes, i.e. District Centres.
M203	Secondary Walking Routes	Medium usage routes through local areas feeding into primary routes, local neighbourhood shopping centres. Including signed and lined cycle routes
M204	Link Footways	Linking local access footways through urban areas and busy estate footways, short estate roads to the main routes and cul-de sacs.
M205	Local Access Footways	Footways associated with low usage, short estate roads to the main routes and cul-de-sacs

6.3 Table 3 - Cycle Routes Hierarchy

Cycle route hierarchy is determined by the location of the cycle route to reflect the differing risks associated with shared, partially segregated and fully segregated cycle routes as follows:

Cycle Routes Hierarchy	Description
CYC1	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).
CYC2	Cycle track - a highway route for cyclists not contiguous with the public footway or carriageway. Shared cycle/pedestrian paths, either segregated by a white line or other physical segregation, or un-segregated.
CYC3	Cycle provision on carriageway, other than a marked cycle lane or marked cycle provision, where cycle flows are significant

7. Highway Safety Inspection

Nottingham City Council has set its own standards for the frequency of its highway safety inspections. These take into account national guidelines for the definition highway type, hierarchy and inspection frequencies, issued in the revised Code of Practice

Nottingham City Council have established two forms of safety inspection – planned and reactive. Planned inspections are carried out by Highway Inspectors at frequencies identified in the table overleaf. The inspections are recorded as ‘planned inspections’ in the ‘Confirm’ Highway Asset Management System

Frequencies are provided for guidance only, and operational activities may lead to fluctuations in the recommended time periods.

7.1 Table 1 – Frequency of Highway Safety Inspections*

Feature	Category	Frequency
Carriageway	**M101** Strategic Roads **M102** Primary Roads **M103** Secondary Roads **M104** Local Link Roads **M105** Major Residential **M106** Access Roads **M107** Minor Residential Roads	1 Month 1 Month 1 Month 3 Months 6 Months 12 Months 12 Months
Footways	**M201** Prestige Area / Shopping Forecourts **M202** Primary Walking Route **M203** Secondary Walking Route **M204** Link Footway **M205** Local Access Footway	1 Month 1 Month 3 Months 6 Months 12 Months
Cycle Routes	**CYC1** On carriageway - Contiguous or shared **CYC2** On footway - Contiguous or shared **CYC3** Other cycle provision on the carriageway	As per carriageway inspection frequency As per footway inspection frequency (To include the Super Cycle Highway) As per carriageway inspection frequency

Carriageways shall be subject to the same investigatory levels as Footways at all defined pedestrian crossing points. Defined pedestrian crossing points can be identified by tapered and dropped kerb units, often accompanied by tactile paving and road studs/markings on the carriageway surface. The width of carriageway subject to footway investigatory levels shall be that width between opposing sets of tapered kerb stones.

8. Highway Inspection Frequency Tolerances

One of the purposes of defining inspection frequencies is to be able to demonstrate to a court of law that the City Council has taken due care to maintain its highways. From time to time it will not always be possible to undertake an inspection exactly on the due date. Nottingham City Council will always endeavour to undertake inspections before or on the due date, however it has been accepted that this is not always possible and inspection tolerances have therefore been adopted as follows:

Safety Inspection Frequency Tolerance	
Inspection Frequency	**Tolerance**
Monthly and 3 Monthly	+/- 10 days
3 Monthly	+/- 10 days
6 Monthly	+/- 15 days
Annually	+/- 30 days

The due date for each inspection is set at the beginning of the financial year (1st April).

The minimum number of planned safety inspections to be completed each year (1st April to 31st March) will be:

- Monthly – 12 per year
- 3 Monthly – 4 per year
- 6 monthly – 2 per year
- 12 monthly – 1 per year

If, and for reasons beyond the control of the Highways Authority (e.g. substantial snow fall) an inspection cannot be carried out by the due date, then the inspection should be recorded as suspended, and the reasons and photographs recorded in Confirm. An inspection will be programmed to be undertaken once the highway is accessible.

Due to the nature of the weather in the UK it is probable that carriageway, footway and cycleway surfaces 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 highway, then the inspection should be abandoned and an entry made to document the circumstances. An appropriate order will be raised to make the situation safe.

As soon as possible following the above events an ad-hoc safety inspection will be carried out on the effected length of highway.

9. Method of Inspection

Driven Inspection

Carriageway Safety Inspections should always be undertaken by two people in a suitable vehicle travelling at a suitable speed that will enable adequate recording of defects – (guidance speed is 20mph) one driving and the other inspecting. The vehicle used for the driven inspection has to be equipped with a roof mounted high intensity beacon, reflective markings and a first aid kit. Traffic sensitive routes should be inspected outside of the main peak flow periods.

The driver is not expected to be actively involved in identifying and recording defects and will instead concentrate on ensuring the safe passage of the vehicle.

Walked Inspection

Carriageways can be inspected by one person on foot if the person is walking on a footway and can inspect the footway and carriageway at the same time. All footways (if there is a footway on both sides of the road) are to be inspected in both directions. Inspections must be carried out in a safe manner so as not to endanger our colleagues or local citizens. All operations will have a current risk assessment, which must be followed by colleagues.

Alternative Methods

Where alternative methods are available, such as drones or high resolution photography, they will be considered and tested to assess whether they provide a viable alternative method under appropriate circumstances.

10. Inspection Types

Safety Inspections - these are cyclical inspections covering the whole highway network, which are carried out at a frequency determined by the new maintenance hierarchies.

Reactive Inspections - these are inspections that are generated as a result of reports and enquiries received by members of the public, internal teams, councillors and contractors. Reactive inspections also include requests for vehicle crossing quotes.

Service inspections - these are inspections of the highway infrastructure assets that assess their condition with regard to programming a series of planned maintenance interventions and to maintain the asset in a serviceable condition and based on a lifecycle approach. Highway Inspectors provide information by supplying candidates for the planned carriageway and footway surfacing programmes and also supplying current condition observations through Annual Engineering Inspections.

New Roads and Streetworks (NRSWA) sample Inspections – Generated through observations whilst carrying out planned and reactive inspections. Reports inputted onto Confirm Connect by the Highway Safety Inspectors and transferred to Network Management by weekly e-mail reports.

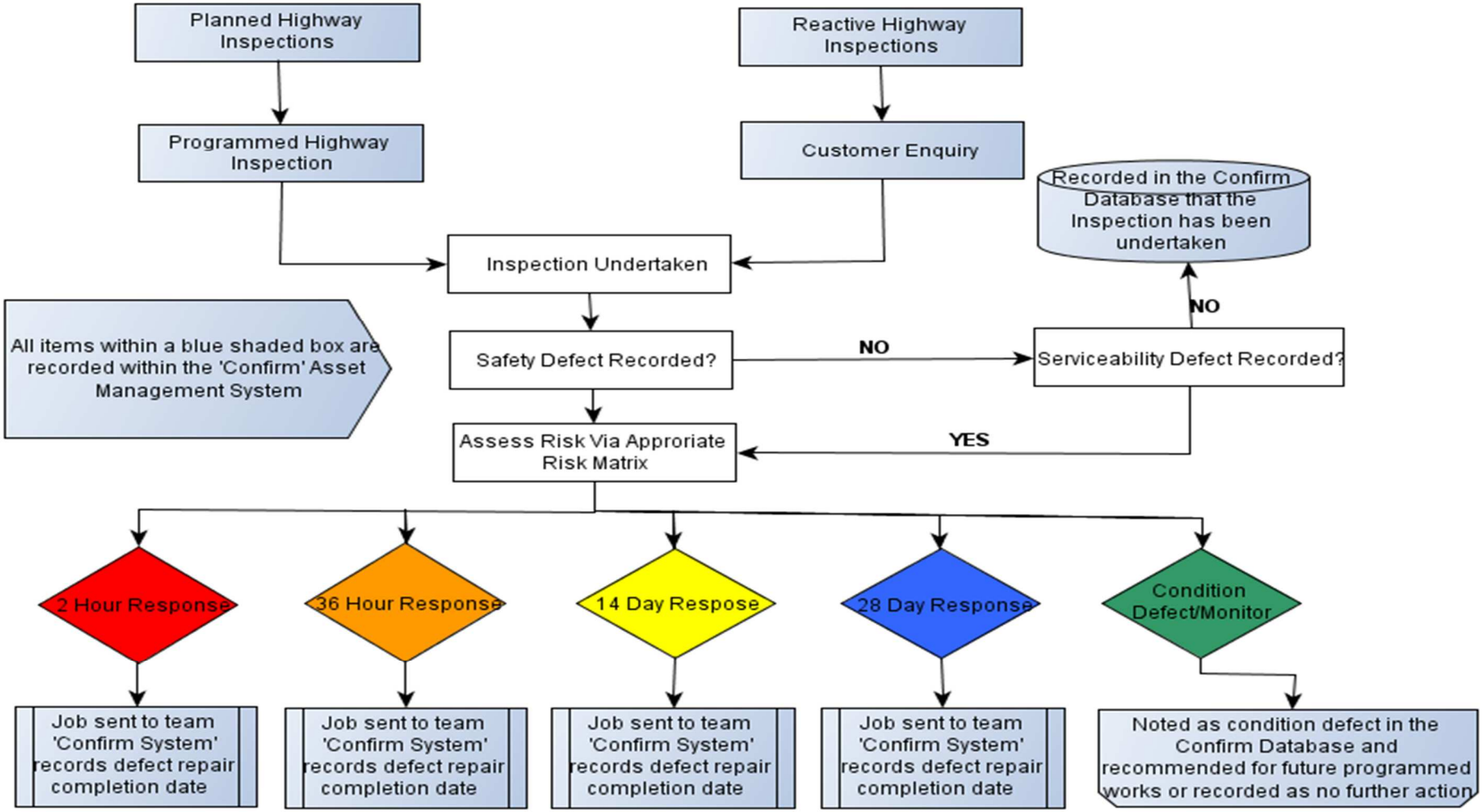
11. Inspection Process

The flowchart on page 14 shows the highway safety inspection procedure and subsequent defect process. Not all defects will require a repair as a result of a safety Inspection, a defect recorded as a 'serviceability defect' can be recorded as part of the safety inspection regime, but as a low risk, non-immediate defect. The Inspector is effectively recording the condition which will be recorded within the safety inspection regime, but is categorised as a low risk defect which helps inform the overall service level (c**o**ndition) which helps to inform the overall condition of the asset, in accordance with asset management practices. It provides additional intelligence to the Infrastructure Asset Manager to decide whether it warrants inclusion in a mid-long term maintenance programme for planned repair or can continue to be monitored through the cyclical inspections.

Response options available to the Highway Inspector as part of the safety inspection regime are also shown in the flowchart. A safety defect that constitutes an immediate or imminent danger/hazard to the road user (requiring a 2 or 36-hour response) or a defect which the inspector believes may become a hazard to the road or footway soon (14 or 28-day response). A serviceability defect will be recorded within the safety inspection regime, but is categorised as a low risk defect which helps inform the overall service level (condition).

Appendix A includes the risk matrixes adopted for each carriageway and footway maintenance hierarchy. As you go through each hierarchy, the response times may change, which reflects the risk of that defect on the hierarchy and enables, where possible, first time permanent repairs

Nottingham City Council Highway Safety Inspection Process



12. Defect Risk Assessment (Inspections)

The Highway inspections procedure has been developed using a risk assessment process in order to provide a practical but robust approach to managing the risks identified. The inspection regime should take account of the potential risks to all road users, and in particular those most vulnerable.

Inspectors undertaking safety inspections or responding to reported incidents are required to use judgement in determining response times to observed or reported defects**.** The Well-managed Highway Infrastructure - A Code of Practice recommends that roads authorities adopt a system of defect risk assessment for determining the response times to road defects.

The risks identified through this process have to be evaluated in terms of their significance. This means assessing the likely impact should the risk occur and the probability of it actually happening. The impact is quantified by assessing the extent of damage likely to be caused should the risk become an incident. As the impact is likely to increase with increasing speeds, the volume of traffic and category of road are important considerations in the assessment. The probability is quantified by assessing the likelihood of road 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 consequently important considerations in the risk assessment.

The process is summarised below:

- Risk Identification, where a defect is identified as a potential risk
- Risk Evaluation, where the nature and degree of risk is assessed based upon the likelihood of an incident resulting from a defect and the impact of that incident, Should it arise
- The selection of a response appropriate to the assessed level of risk
- Overall probability and impact of damage or accident occurrence The depth, surface area – (extent of the defect)
- The location of the defect relative to other highway features such as junctions and bends
- The location of the defect and its likely effect on the road user.
- Consideration will be given to pedestrians and our vulnerable citizens and whether it affects walking routes outside sheltered accommodation, elderly people's homes, doctors' surgeries etc.
- Consideration will also be given to the position of the defect in traffic lanes and in particular the wheel tracks.
- The volume of traffic, vehicular or pedestrian
- The nature and extent of interaction with other defects
- Forecast weather conditions and time of year, especially considering the potential for freezing of standing water

Having identified a defect that presents a potential risk, a structured process of assessing the defect will incorporate Nottingham City Council's defect investigatory levels.

- Carriageway investigatory levels are at or around 50mm (including protrusions)
- Footway investigatory levels are or around 25mm (including protrusions)
- In **M201** only, footway investigatory levels are or around 20mm (including protrusions)

This considers the probability of the defect resulting in an incident and, should an incident arise, the potential level of impact

Risk assessment matrix

Probability → Impact↓	Negligible (1)	Low (2)	Medium (3)	High (4)	Severe (5)
Negligible (1)	1	2	3	4	5
Low (2)	2	4	6	8	10
Medium (3)	3	6	9	12	15
High (4)	4	8	12	16	20
Very High (5)	5	10	15	20	25
Response Category	Cat 2C Monitor	Cat 2B 28 Working Days	Cat 2A 14 Working Days	Cat 1U 36 Hour Response	Cat 1E 2 Hour Response

Nottingham City Council's response times are based on the Council's classification of hierarchy taking into account the risk matrix which is illustrated above, assuming that a high impact defect on a lower hierarchy road will have the same potential impact but a much lower probability of causing this impact. This also correlates with the inspection frequencies of the network.

Defect response options

Defect Type	Defect Response	Description
Safety Defect	Cat 1E - Emergency 2 Hour Response	This response time is to be used where the defect/incident has the potential to be very serious or create major disruption of the highway network. The Highway Inspector will request this response to make safe and may not be able to leave the defect, until it has been made safe.
	Cat 1U - Urgent 36 Hour Response	This is a high priority defect and will be made safe as soon as is reasonably practicable within 36 hours. The repair in the first instance may be temporary. Where the action taken is a temporary repair the defect can be re-categorised in accordance with the risk assessment process detailed in this manual, with the permanent repair being taken forward in accord with the remedial action and timescales specified for that defect category.
	Cat 2A 14 Day Response	This response time is for a medium/high defect. This is required to enable a permanent first-time repair, but allows for any required materials to be ordered and Streetworks permits to be generated.
	Cat 2B 28 Day Response	These are defects which represent a moderate safety hazard and may deteriorate further before the next scheduled inspection. They will be permanently repaired as part of routine maintenance work or as a part of a programmed maintenance scheme. This response allows for co-ordinating work with other maintenance requirements, ordering any required materials and generating Streetworks permits.
Service Level Defect	Cat 2C Condition Defect/Monitor	These are defects, which do not represent a safety concern and are unlikely to deteriorate further before the next scheduled inspection. They are noted for the next safety inspection, or permanently repaired as part of other planned routine maintenance works or as part of a programmed maintenance scheme.
Not Defective	Record inspection completed in Confirm	This response registers within Confirm that a safety inspection had been carried out on the asset as scheduled and no actionable defects have been identified. These roads will be monitored through the structured cyclical inspection regime.

Safety Defect

This is a defect which constitutes an immediate or imminent danger/hazard to road user (2 or 36-hour response) or a defect which the inspector believes may become a hazard to the road user within the next 28 days (14 or 28-day response)

Service Level Defect (Condition)

This is a defect which can be recorded within the safety inspection regime but is a low risk or insignificant defect which helps inform the service level (condition), in accordance with asset management practices.

Impact

The impact of a risk occurring is measured on a scale of 1 - 5 (1 lowest, 5 highest) the following table gives guidance:

Impact Ratings

Impact rating	Score	Description	Possible Indicators
Very High	**5**	The hazard presented by the defect or due to the short term structural deterioration in the defect, could result in serious injury or fatality.	Impact will result in serious damage to persons or property. Highway users will instinctively react to avoid the defect and this will place them in peril. The defect could destabilise a vehicle and will place the highway user in peril.
High	**4**	The hazard presented by the defect, or due to the short term structural deterioration in the defect, could result in injury or serious claim against the authority.	Impact will result in damage to persons or property, from which they are likely to recover. Highway users will instinctively react to avoid the defect.
Moderate	**3**	The hazard presented by the defect, or due to the short term structural deterioration in the defect, could result in a minor injury or claim against the Authority. If untreated the defect will contribute to the deterioration in the overall condition of the highway asset. The defect is likely to deteriorate further before the next safety inspection.	Most impacts will not result in any injury. Highway users are unlikely to react to avoid the defect and the impact will not interrupt their passage. The defect will be felt and recognised as a defect by most highway users, and its presence will be a negative on their perception of the highway asset.
Low	**2**	The hazard presented by the defect, or due to the short term structural deterioration in the defect, is unlikely to result in injury or claim, but the defect will contribute to the deterioration of the overall condition of the highway asset. The defect is unlikely to deteriorate further before the next safety inspection.	The defect will be recognised by highway inspectors as requiring consideration, but is unlikely to be felt or recognised as a defect by most highway users. The defect is unlikely to cause injury or damage.
Negligible	**1**	The hazard presented by the defect, or due to the short term structural deterioration in the defect, is unlikely to result in injury or claim, but the defect will contribute to the overall condition of the highway asset. The defect is unlikely to deteriorate further before the next safety inspection.	The defect will be recognised as requiring consideration, but is unlikely to felt or recognised as a defect by highway users. The defect is very unlikely to cause injury of damage.

The vulnerability of all highway users, including cyclists and pedestrians to certain highway defects will be reflected in the risk assessment carried out when deciding the category of the defect. In all other areas the degree of regular use of the network by cyclists will be considered in the risk assessment.

Probability

The probability of a risk occurring is measured on a scale of 1 - 5

Probability Ratings

Probability Ratings	Score	Description	Possible Indicators
Severe	5	More than a 75% chance of occurrence.	Vehicle, cycle and/or pedestrian flows are high. A high % of vulnerable users may pass. The location of the defect and the topography will mean that it is difficult for a highway user to recognise and avoid. Forward visibility may be compromised.
High	4	60% to 75% chance of occurrence.	Vehicle, cycle or pedestrian flows may be high, but differing modes are less likely to share the highway at this location. Some highway users would recognise and take action to mitigate the impact of the defect. Forward visibility is good.
Noticeable	3	40% to 60% chance of occurrence.	Vehicle, cycle or pedestrian flows may be moderate, but differing modes are less likely to share the highway at this location. The majority of highway users will be able
Low	2	10% to 40% chance of occurrence.	Vehicle, cycle or pedestrian flows are moderate or low. Different modes are unlikely to share the highway at this location. The majority of highway users will be able to recognise and take action to mitigate the impact of the defect
Very Low	1	Less than 10% chance of	Vehicle, cycle or pedestrian flows are very low. The speed differential between users is very likely to be low. The majority of highway users will be able to avoid the defect.

13. Information to be recorded

Each inspection must be recorded against the relevant Street Section in Confirm. This information will be considered to identify potential preventative maintenance and renewal schemes. When recording inspections using a handheld device it will automatically time and date stamp the inspection. The inspection will show the inspector who carried out the inspection (inspections must not be carried out in another person's name).

Category 1 defects (2 or 36 Hours) which require immediate attention should be transferred from the handheld device as soon as the inspection on a particular street has been completed. If it is not possible to transfer the Category 2A (14 working days) defect at the time of inspection, it must be transferred within 2 hours of it being recorded.

All Category 2B and 2C defects (28 Working Days and Monitor/Planned Programme of Work) should be transferred on the day of inspection. All inspections shall be properly recorded into Confirm and retained by the Authority for future reference

14. Emergency Response

The Risk Matrixes (Appendix A) show response times relating to Highway maintenance activities, that includes but is not limited to items covered in safety inspections. These tables form Nottingham City Council's risk assessments for investigation levels and response times but in all cases is subject to on-site professional judgement. In all cases, these are maximum response times. Any reference to days is working days unless otherwise stated.

Some defects are identified as emergencies; these particular defects have been singled out as particularly high risk, and will be dealt with expeditiously but in all cases within 36 hours. They have been identified taking into account the likely risk; however, on site judgement will always need to take account of particular circumstances therefore it is possible other situations could be considered as emergencies.

15. Investigatory Levels

Defect	General Description	Defect	General Description
Carriageway		**Footway and Cycleway**	
Pot hole	Depth 50mm or greater	Pot hole	Depth 25mm or greater Depth 20mm or greater in M201 only
Difference in level or depression	Depth of 50mm or greater over a length >600mm	Difference in level or depression	Depth 25mm or greater Depth 20mm or greater in M201 only
Modular paving uneven/rocking	Depth 50mm or greater	Modular paving uneven or rocking	Depth 25mm or greater Depth 20mm or greater in M201 only
Flooding	Affecting >25% of the lane width	Flooding	Affecting >25% of the footway width
Rutting	Depth of 50mm or greater for a length >5m	Abrupt difference in level from an asset	Depth 25mm or greater Depth 20mm or greater in M201 only
Abrupt difference in level from an asset	Depth 50mm or greater		

This table shows a summary of the investigatory levels for the majority of safety defects collected. The full list of defects will be available on the mobile device for the Highway Inspector to select as required. It should be noted also that these definitions are provided as guidance for the inspector to understand the initial defect. Their risk assessment at the point of inspection will determine the appropriate response and their synchronised mobile device will enable them to change the default response time if necessary, but require notes to be provided on their reasoning.

The Risk Matrixes (Appendix A) use the risk based approach contained within this document and have been populated on the basis of individual defect types. These tables provide examples of how the risk based approach should be used to help assess risk for any defect noted.

16. Coverage

The safety inspection includes those highway infrastructure assets within the following main asset groups:

- Carriageways, including on-road cycle ways
- Footways, including shared use cycle ways
- Highway drainage
- Street furniture
- Safety barriers and restraint Systems
- Non-illuminated signs
- Highway trees
- Non-illuminated bollards
- Road markings
- Obstructions (including issues with trees and vegetation)
- Obscured visibility
- Spillage or debris on the highway network
- Overhead wires in a dangerous condition
- Missing or defective ironwork and other apparatus that is the responsibility of public utility companies should be directed to the relevant utility company for action as soon as possible, under section 72 of the NRSWA 1991.
- Specification for the Reinstatement of Openings in Highways, Third Edition Code of practice

The list is not exhaustive; the important issue is to ensure the safety and to prevent serious inconvenience to road users and the wider community. If there is any uncertainty over any potential hazard then the Highways Inspector should seek guidance from their line manager. The overriding issue is to ensure the safe passage of highway users.

17. Review Process

This manual will be supported through a formal review process which will generally occur annually. However, feedback and lesson learned will also be reported and any resulting changes required to the manual or process will be disseminated through the monthly Inspector's team meetings as a regular agenda item.

To maintain the integrity of the safety inspections process, regular audits will be undertaken of the process of recording, accuracy and completeness of safety Inspections based on the content and principles of this manual. Additional support and training will be provided, if considered necessary, to maintain an efficient, effective and consistent safety inspection regime.

18 New Roads and Street Works Act 1991 (NRSWA)

Concurrent with a Highway Safety Inspection, any item of statutory undertaker apparatus or any utility reinstatement under guarantee, which the Highways Inspector considers defective in accordance with the guidance in this manual, will be recorded and reported to the appropriate Utility Company. If the utility apparatus / reinstatement is found to be outside its tolerances (as specified in the NRSWA: Street Works (Reinstatement) Regulations) due to settlement, plucking out, heave or other reasons, and it exceeds the category 1 criteria, any costs incurred in making safe, and/or repair, must be recovered from the undertaker.

Notice will normally be served on the undertaker to respond to a category 1 defect within 2 hours; however, if such a response is not forthcoming then the highway authority will respond and recover its costs. All costs must be charged in accordance with the Street Works (Recovery of Costs) (England) Regulations 2002.
Other defects associated with statutory undertaker apparatus/ reinstatements (i.e. outside the tolerances of Street Works (Reinstatement) Regulations 1992 but not a category 1 safety defect) may still require reporting to the appropriate Utility Company by serving of a notice under **Section 81 of the New Roads and Street Works Act 1991.**

Section 81 defects identified during Highway Inspections will be entered into 'Confirm' by the Highway Inspectors. Notifications will be automatically sent to Network Management, any urgent defects (2-hour responses) will be phoned through to Network Management and a confirmation Section 81 notification will be sent to Network Management.

Any faults which involve faults with electrical signs, bollards, beacons, street lighting columns should be reported to Scottish Southern Electrical (SSE) who manage this service on behalf of NCC: http://www.lightsoninnottingham.co.uk/Public/ReportFault.aspx
Traffic signal faults should be reported to the Traffic Control Centre on 0115 941 7878. http://www.itsnottingham.info/contact.aspx

Appendix A Risk Matrixes

Matrix 1: Carriageway Maintenance Hierarchy M101 and M102

Monthly Inspections

Major national cross-country roads between places of traffic importance across the UK, with the aim of providing easily identifiable routes to access the whole of the country i.e. motorway network. Typically, major dual carriageways and major single A roads and Primary roads within the city providing quick access to urban areas, linking to major industrial/ retail areas and main centres of employment. These roads will typically be inner and outer ring roads.

Description			Probability/Likelihood of Interaction with Highway User				
			Negligible	Low	Medium	High	Severe
Consequence/ Impact	**Negligible**	• Little or no inconvenience to highway user	Record inspection completed in Confirm	Record inspection completed in Confirm	Record inspection completed in Confirm	Condition Defect/Monitor	Condition Defect/Monitor
	Low	• Potential to create minor vehicle damage • Potential minor inconvenience to the road user	Record inspection completed in Confirm	Condition Defect/Monitor	Condition Defect/Monitor	28 Days	14 Days
	Noticeable	• Potential to create vehicle damage • Potential for a slight injury to one or more persons • Potential to create moderate disruption of highway network	Record inspection completed in Confirm	Condition Defect/Monitor	28 Days	14 Days	36 Hours
	High	• Potential to be a serious injury to one or more persons • Potential to create major disruption of the highway network	Condition Defect/Monitor	28 Days	14 Days	36 Hours	36 Hours
	Very High	• Potential to be serious injury to one or more persons • Potential to create serious disruption of the highway network	Condition Defect/Monitor	14 Days	36 Hours	36 Hours	2 Hours

Matrix 2: Carriageway Maintenance Hierarchy M103 and M104

3 Monthly Inspection

Roads connecting urban areas to the inner and outer ring road. Typically, major bus routes and roads serving smaller retail i.e. District Centres, business and leisure facilities. Also including roads serving the city centre from the inner ring roads and Roads providing alternative but less direct links between urban areas and the inner and outer ring roads. They typically are the main routes through residential and industrial areas and will have less traffic than secondary roads.

Description			Probability/Likelihood of Interaction with Highway User				
			Negligible	Low	Medium	High	Severe
Consequence/ Impact	**Negligible**	• Little or no inconvenience to highway user	Record inspection completed in Confirm	Record inspection completed in Confirm	Record inspection completed in Confirm	Condition Defect/Monitor	Condition Defect/Monitor
	Low	• Potential to create minor vehicle damage • Potential minor inconvenience to the road user • inconvenience to the highway user	Record inspection completed in Confirm	Condition Defect/Monitor	Condition Defect/Monitor	28 Days	28 Days
	Noticeable	• Potential to create vehicle damage • Potential for a slight injury to one or more persons • Potential to create moderate disruption of highway network	Record inspection completed in Confirm	Condition Defect/Monitor	28 Days	14 Days	14 Days
	High	• Potential to be a serious injury to one or more persons • Potential to create major disruption of the highway network	Condition Defect/Monitor	28 Days	14 Days	36 Hours	36 Hours
	Very High	• Potential to be serious injury to one or more persons • Potential to create serious disruption of the highway network	Condition Defect/Monitor	28 Days	14 Days	36 Hours	2 Hours

Matrix 3: Carriageway Maintenance Hierarchy M105 and M106

6 Month Inspection

Roads providing links within residential areas, often bus routes, small shopping frontages <4 shops. Typically, the spine road through an urban estate, collecting traffic from access and minor residential roads and Roads serving to distribute users from major residential roads to minor residential roads, often with on street parking serving >30 properties including long cul-de-sacs and minor industrial estate roads.

Description			Probability/Likelihood of Interaction with Highway User				
			Negligible	Low	Medium	High	Severe
Consequence/ Impact	**Negligible**	• Little or no inconvenience to highway user	Record inspection completed in Confirm	Record inspection completed in Confirm	Record inspection completed in Confirm	Record inspection completed in Confirm	Condition Defect/Monitor
	Low	• Potential to create minor vehicle damage • Potential minor inconvenience to the road user	Record inspection completed in Confirm	Record inspection completed in Confirm	Condition Defect/Monitor	Condition Defect/Monitor	28 Days
	Noticeable	• Potential to create vehicle damage • Potential for a slight injury to one or more persons • Potential to create moderate disruption of highway network	Record inspection completed in Confirm	Condition Defect/Monitor	28 Days	28 Days	14 Days
	High	• Potential to be a serious injury to one or more persons • Potential to create major disruption of the highway network	Record inspection completed in Confirm	Condition Defect/Monitor	28 Days	14 Days	36 Hours
	Very High	• Potential to be serious injury to one or more persons • Potential to create serious disruption of the highway network	Condition Defect/Monitor	28 Days	14 Days	36 Hours	2 Hours

Matrix 4: Carriageway Maintenance Hierarchy M107

12 Month Inspection

Urban residential roads including those with a shared road space. Typically, cul-de-sacs with <30 properties, including paved service roads i.e. rear of residential properties/shops

Description			Probability/Likelihood of Interaction with Highway User				
			Negligible	Low	Medium	High	Severe
Consequence/ Impact	**Negligible**	• Little or no inconvenience to highway user	Record inspection completed in Confirm	Record inspection completed in Confirm	Record inspection completed in Confirm	Record inspection completed in Confirm	Condition Defect/Monitor
	Low	• Potential to create minor vehicle damage • Potential minor inconvenience to the road user	Record inspection completed in Confirm	Record inspection completed in Confirm	Condition Defect/Monitor	Condition Defect/Monitor	28 Days
	Noticeable	• Potential to create vehicle damage • Potential for a slight injury to one or more persons • Potential to create moderate disruption of highway network	Record inspection completed in Confirm	Condition Defect/Monitor	28 Days	28 Days	14 Days
	High	• Potential to be a serious injury to one or more persons • Potential to create major disruption of the highway network	Record inspection completed in Confirm	Condition Defect/Monitor	28 Days	14 Days	36 Hours
	Very High	• Potential to be serious injury to one or more persons • Potential to create serious disruption of the highway network	Condition Defect/Monitor	28 Days	14 Days	36 Hours	2 Hours

Matrix 5: Prestige Walking Zones Footway Maintenance Hierarchy M201

1 Month Inspection

Very busy areas of the city with high public space and street scene contribution, i.e. city centre

Description			Probability/Likelihood of Interaction with Highway User				
			Negligible	Low	Medium	High	Severe
Consequence/ Impact	**Negligible**	• Little or no inconvenience to the footway user	Record inspection completed in Confirm	Record inspection completed in Confirm	Record inspection completed in Confirm	Condition Defect/Monitor	Condition Defect/Monitor
	Low	• Potential minor inconvenience to the footway user	Record inspection completed in Confirm	Record inspection completed in Confirm	Condition Defect/Monitor	28 Days	14 Days
	Noticeable	• Potential for a slight injury to one or more persons • Potential to create moderate disruption of footway network	Record inspection completed in Confirm	Condition Defect/Monitor	28 Days	14 Days	36 Hours
	High	• Potential to be a serious injury to one or more persons • Potential to create major disruption of the footway network	Condition Defect/Monitor	28 Days	14 Days	36 Hours	36 Hours
	Very High	• Potential to be serious injury to one or more persons • Potential to create serious disruption of the footway network	Condition Defect/Monitor	14 Days	36 Hours	36 Hours	2 Hours

Matrix 6: Footway Maintenance Hierarchy M202

1 Month Inspection

Busy urban shopping and business areas and main pedestrian routes, i.e. District Centres.

Description			Probability/Likelihood of Interaction with Highway User				
			Negligible	Low	Medium	High	Severe
Consequence/ Impact	**Negligible**	• Little or no inconvenience to the footway user	Record inspection completed in Confirm	Record inspection completed in Confirm	Record inspection completed in Confirm	Condition Defect/Monitor	Condition Defect/Monitor
	Low	• Potential minor inconvenience to the footway user	Record inspection completed in Confirm	Record inspection completed in Confirm	Record inspection completed in Confirm	28 Days	28 Days
	Noticeable	• Potential for a slight injury to one or more persons • Potential to create moderate disruption of footway network	Record inspection completed in Confirm	Condition Defect/Monitor	28 Days	14 Days	36 Hours
	High	• Potential to be a serious injury to one or more persons • Potential to create major disruption of the footway network	Record inspection completed in Confirm	28 Days	14 Days	36 Hours	36 Hours
	Very High	• Potential to be serious injury to one or more persons • Potential to create serious disruption of the footway network	Condition Defect/Monitor	28 Days	36 Hours	36 Hours	2 Hours

Matrix 7: Footway Maintenance Hierarchy M203

3 Monthly Inspection

Medium usage routes through local areas feeding into primary routes, local neighbourhood shopping centres. Including signed and lined cycle routes

Description			Probability/Likelihood of Interaction with Highway User				
			Negligible	Low	Medium	High	Severe
Consequence/ Impact	**Negligible**	• Little or no inconvenience to the footway user	Record inspection completed in Confirm	Record inspection completed in Confirm	Record inspection completed in Confirm	Record inspection completed in Confirm	Condition Defect/Monitor
	Low	• Potential minor inconvenience to the footway user	Record inspection completed in Confirm	Record inspection completed in Confirm	Record inspection completed in Confirm	28 Days	28 Days
	Noticeable	• Potential for a slight injury to one or more persons • Potential to create moderate disruption of footway network	Record inspection completed in Confirm	Condition Defect/Monitor	28 Days	14 Days	14 Days
	High	• Potential to be a serious injury to one or more persons • Potential to create major disruption of the footway network	Condition Defect/Monitor	28 Days	14 Days	36 Hours	36 Hours
	Very High	• Potential to be serious injury to one or more persons • Potential to create serious disruption of the footway network	Condition Defect/Monitor	28 Days	14 Days	36 Hours	2 Hours

Matrix 8: Footway Maintenance Hierarchy M204

6 Monthly Inspection

Linking local access footways through urban areas and busy estate footways, short estate roads to the main routes and cul-de sacs.

Description			Probability/Likelihood of Interaction with Highway User				
			Negligible	Low	Medium	High	Severe
Consequence/ Impact	**Negligible**	• Little or no inconvenience to the footway user	Record inspection completed in Confirm	Record inspection completed in Confirm	Record inspection completed in Confirm	Record inspection completed in Confirm	Condition Defect/Monitor
	Low	• Potential minor inconvenience to the footway user	Record inspection completed in Confirm	Record inspection completed in Confirm	Condition Defect/Monitor	Condition Defect/Monitor	28 Days
	Noticeable	• Potential for a slight injury to one or more persons • Potential to create moderate disruption of footway network	Record inspection completed in Confirm	Condition Defect/Monitor	28 Days	28 Days	14 Days
	High	• Potential to be a serious injury to one or more persons • Potential to create major disruption of the footway network	Condition Defect/Monitor	Condition Defect/Monitor	28 Days	14 Days	36 Hours
	Very High	• Potential to be serious injury to one or more persons • Potential to create serious disruption of the footway network	Condition Defect/Monitor	28 Days	14 Days	36 Hours	2 Hours

Matrix 8: Footway Maintenance Hierarchy M205

12 Month Inspection

Footways associated with low usage, short estate roads to the main routes and cul-de-sacs

Description			Probability/Likelihood of Interaction with Highway User				
			Negligible	Low	Medium	High	Severe
Consequence/ Impact	**Negligible**	• Little or no inconvenience to the footway user	Record inspection completed in Confirm	Record inspection completed in Confirm	Record inspection completed in Confirm	Record inspection completed in Confirm	Condition Defect/Monitor
	Low	• Potential minor inconvenience to the footway user	Record inspection completed in Confirm	Record inspection completed in Confirm	Condition Defect/Monitor	Condition Defect/Monitor	28 Days
	Noticeable	• Potential for a slight injury to one or more persons • Potential to create moderate disruption of footway network	Record inspection completed in Confirm	Condition Defect/Monitor	28 Days	28 Days	14 Days
	High	• Potential to be a serious injury to one or more persons • Potential to create major disruption of the footway network	Record inspection completed in Confirm	Condition Defect/Monitor	28 Days	14 Days	36 Hours
	Very High	• Potential to be serious injury to one or more persons • Potential to create serious disruption of the footway network	Condition Defect/Monitor	28 Days	14 Days	36 Hours	2 Hours

Appendix B

Schedule of related documentation and legislation

Legislation relevant to and or referred to in this document

The Highways Act 1980 https://www.legislation.gov.uk/ukpga/1980/66
The New Roads and Street Works Act 1991 http://www.legislation.gov.uk/ukpga/1991/22/contents
Traffic Signs, Regulations & General Directions 2016 http://www.legislation.gov.uk/uksi/2016/362/contents/made
The Traffic Management Act 2004 https://www.legislation.gov.uk/ukpga/2004/18/contents
The Public Health Act 1925 https://www.legislation.gov.uk/ukpga/Geo5/15-16/71
The Flood and Water Management Act 2010 https://www.legislation.gov.uk/ukpga/2010/29/contents
MSIG – Risk Based Approach to Highway Safety Defects V2.00

Further Documentation
Well-managed Highway Infrastructure - A Code of Practice

Specification for the Reinstatement of Openings in Highways, Third Edition Code of practice
http://content.tfl.gov.uk/specification-for-reinstatement-of-openings-in-highways-sroh.pdf