

Highway Safety Inspection Manual

Version	2
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Record of Amendments

Version 1 (Issued 26th November 2018)

Item	Date	By	Amendment
4.3.1	01/04/2020	RG (& Gold Command)/AF/ST	Safety inspections are continuing, however, due to Coronavirus and government guidelines on social distancing. Safety inspections previously done in pairs i.e. driven inspections are being done by a single inspector.
General	10/10/2022	AW/AF/ST	Various typo amendments (spelling, headers, footers, text alignment, headings, text consistency)
3.3	10/10/2022	AW/AF/ST	General Maintenance Manual sentence removed. Ambiguous paragraph reworded.
Table 4.1	10/10/2022	AW/AF/ST	Headings amended and Hierarchy code column added. Cycleways amended to reflect what is currently done.
Table 4.2	10/10/2022	AW/AF/ST	6 Monthly inspections removed.
4.3	10/10/2022	AW/AF/ST	Section updated.
8.2.1	10/10/2022	AW/AF/ST	Reference to Appendix 1 added.
Tables 8.4 & 8.5	10/10/2022	AW/AF/ST	Order Reversed.
Table 8.6	10/10/2022	AW/AF/ST	Additional headings added to table.
10.2	10/10/2022	AW/AF/ST	Item removed. Until the West Yorkshire group decide on a way forward.
Appendix 2	10/10/2022	AW/AF/ST	Remove existing flowchart and replaced with simplified version.
Appendix 4	10/10/2022	AW/AF/ST	Remove A4 landscape table and replaced with A4 portrait table.

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1. INTRODUCTION TO THE MANUAL

- 1.1 In line with the principles of Well-Managed Highway Infrastructure: A Code of Practice (October 2016), this manual has been produced with regard to local circumstances, and the relative risks and consequences associated with these. The characteristics of the regime, including the frequency of inspection, items to be recorded, and the nature of response are defined by this Highway Safety Inspection Manual, which is set in the context of the West Yorkshire Plus York, Highway Infrastructure Asset Management Board, Highway Management Hierarchy and Highway Safety Inspection Policy.
- 1.2 This manual is intended for Engineers/Inspectors who undertake the highway safety inspections of the Bradford Council highway network.
- 1.3 This manual is not intended to cover inspections of Public Rights of Way (generally rural footpaths and bridleways as shown on the Definitive Map), detailed Street Lighting inspections, Tree inspections or inspections of Highway Structures.
- 1.4 Unless otherwise stated, terms used in this manual are as defined in Well-Managed Highway Infrastructure: A Code of Practice (October 2016).

2. LEGAL CONSIDERATIONS

- 2.1 The Highways Act 1980 sets out the main duties of Highway Authorities in England and Wales. In particular, Section 41 imposes a duty to maintain highways maintainable at public expense, and almost all claims against authorities relating to highway functions arise from the alleged breach of this section.
- 2.2 Section 58 provides for a defense against action relating to alleged failure to maintain on grounds that the authority has taken such care as in all the circumstances was reasonably required to secure that the part of the highway in question was not dangerous for traffic.

3. PURPOSE OF SAFETY INSPECTIONS

- 3.1 Safety Inspections are designed to identify all defects likely to create danger or serious inconvenience to users of the network or the wider community. The risk of danger is assessed on site and the defect identified with an appropriate timescale for action.
- 3.2 The Safety Inspection regime forms a key aspect of the Council's strategy for managing liability and risk.
- 3.3 Safety Inspectors predominantly deal with defect response categories Cat A, Cat B and some Cat C, arising out of planned cyclic inspections. General Maintenance Inspectors deal with categories Cat C and Cat D, with some Cat A and Cat B, arising out of reactive inspections following reports and complaints in respect of the condition of the highway.

4. FREQUENCY OF INSPECTIONS

- 4.1 The Highway Safety Inspections are based upon Network Management categories developed from the West Yorkshire Plus York, Highway Infrastructure Asset Management Board, Highway Management Hierarchy and Highway Safety Inspections Policy.

Table 4.1 – Safety Inspection Frequency and Method

Feature	Hierarchy	Hierarchy Description	Frequency	Method
Carriageway	1	Motorway	Done by others	N/A
	2	WY Key Route Network	Monthly	Driven
	3	Main Distributor	Monthly	Driven
	4	High Traffic Local Network	3 Monthly	Driven
	5	Medium Traffic Local Network	3 Monthly	Driven
	6	Low Traffic Local Network	Yearly	Driven or Walked
	7	Local Road	Yearly	Driven or Walked
	8	Minor Access Track	Reactive Only	Not routinely inspected
Footway	1a	Prestige Walking Zones	Monthly	Walked
	1	Primary Walking Routes	Monthly	Walked
	2	Secondary Walking Routes	3 Monthly	Walked
	3	Link Footways	Yearly	Driven or Walked
	4	Local Access Footways	Yearly	Driven or Walked
	5	Minor Footways	Yearly	Driven or Walked
Cycleway		Cycle Lane	As for carriageway	As for carriageway
		Cycle Track	Reactive Only	Not routinely inspected
		Cycle Trails	Reactive Only	Not routinely inspected

- 4.2 Planned Safety Inspections shall be carried out at the frequencies shown in Table 4.1 and within the tolerances shown in Table 4.2.

Table 4.2 - Safety Inspection Tolerances

Frequency of Inspection	1 month	3 month	1 year
Tolerance	+7 days or any time before due date	+14 days or any time before due date	+14 days or any time before due date

Note: all time periods are in calendar days.

4.3 Method of Inspection

- 4.3.1 Driven safety inspections are undertaken in a vehicle travelling at a speed that will enable adequate spotting of defects. On spotting any suspected defects the inspector shall conduct a visual assessment of the area on foot. To ensure full coverage, driven inspections will be carried out in both directions.
- 4.3.2 Walked safety inspections shall be undertaken in a manner which allows adequate spotting of defects. To ensure full coverage multiple walked inspections may be required.
- 4.3.3 Footways associated with WY Key Route Network, Main Distributor, High Traffic Local Network and Medium Traffic Local Network roads generally have a lower frequency of inspection and will be inspected separately.
All other Footway inspections will be carried out at the same time as the carriageway.
- 4.3.4 The following sections of footways shall always be undertaken on foot by the inspector.
Flagged and other modular paved footways
Detached footways (not adjacent to carriageway)
Obstructed footways (i.e. parked cars)
- 4.3.5 Sections of highway needing more extensive treatment over and above safety defects, e.g. patching, are photographed and passed to the appropriate Senior Engineer for more detailed inspection and future works.

5. ADDITIONAL INSPECTIONS

- 5.1 Additional inspections may be necessary as a result of roads being used for long term diversions. The occurrence of any such inspection and its outcome is recorded in the same format as a programmed Safety Inspection but is recorded as being an additional inspection. Records of planned and additional Safety Inspections are recorded on the Council's databases.

6. EXCEPTIONAL CIRCUMSTANCES

- 6.1 In exceptional circumstances, inspections may not be able to be carried out, e.g. during periods of extreme weather. In these circumstances, the Safety Inspection policy may be suspended and/or a temporary measure put in place. The authority for such action lies with the Highway Services Manager.

7. ITEMS FOR INSPECTION

- 7.1 The main items included in Safety Inspections are outlined in Appendix 4. The Safety Inspectors also record any other defects not included in this Appendix that they consider are likely to create a danger to network users.
- 7.2 In certain locations, defects identified within an area of carriageway require the investigatory criteria for a footway defect to be applied. These are at signal controlled pedestrian crossing points (puffin/pelican/toucan), zebra crossings and carriageways within pedestrian zones/shared surface areas where there is no physical upstand (i.e. kerb) to differentiate between carriageway and footway.
- 7.3 During an inspection, defects may be identified that are not the responsibility of the Council to repair. The Council does, however, have a duty of care to the users of the highway. The staff involved in this activity shall therefore take steps to ensure that the party responsible for the repair is made aware of the defect and if necessary take interim action to make the defect temporarily safe.
- 7.4 For defective apparatus belonging to Statutory Undertakers the inspectors shall record the defect and forward a S81 notice directly to the statutory undertaker. See Appendix 3.
- 7.5 Any potentially hazardous defect identified where the owner is unknown shall be recorded and action taken to make safe the defect. Investigations shall then be undertaken to locate the responsible party.

8. RISK BASED INSPECTION

8.1 Risk Based approach

- 8.1.1 A risk based approach to defect identification and repair times enables maintenance that is appropriate to the level of risk presented to all highway users, in the context of the entire highway asset for which the Council is responsible. This approach will wherever practicable, enable a right first time approach to permanent repairs which will reduce the risk to the travelling public.
- 8.1.2 Appendix 4 (Defect Investigation Criteria) provides details of investigation criteria for typical safety defects. Consideration of defect location, volume/nature of traffic, usage by vulnerable users, visibility at the location, etc. is also required as part of the risk based approach.
- 8.1.3 The defect investigation criteria have been established with due regard to established practices.

8.2 Risk Evaluation

- 8.2.1 All defects identified during the inspection process shall be evaluated in terms of their significance, which means assessing the likely impact should an incident occur and the probability of it actually happening. Appendix 1 provides guidance for Inspectors to assess the Probability and Impact of defects. Appendix 2 includes a flowchart which defines the evaluation process for inspectors to assess defects and their associated risk.

8.2.2 Examples of parameters which may be taken into consideration when assessing the risk may include:

- The depth, surface area or other degree of deficiency of the defect or obstruction.
- The volume, characteristic and speed of traffic.
- The location of the defect relative to other highway features such as retaining walls, bridges, embankments, junctions and bends.
- The location of the defect, if it could adversely affect non-highway features such as neighboring properties.
- The location of the defect relative to the positioning of users, especially vulnerable users.

8.3 Risk Ranking

8.3.1 The risk ranking for a particular hazard (defect) is the product of the impact and the probability, which is measured on a scale of 1 to 16.

8.3.2 The risk ranking can be used to identify the overall significance of the risk and consequently the appropriate response required.

8.3.3 Defects are allocated one of four response categories as follows:

Category A (risk ranking 16) those defects categorised as a high risk that require prompt attention because they represent an imminent hazard and should be repaired or made safe within 1 day. There are some defects which due to their nature and location represent a very serious risk to the public. These will be considered for more urgent treatment and if deemed necessary will be made safe or repaired as soon as reasonably practicable.

Category B (risk ranking 9-12) those defects which are categorised as a medium risk following a risk assessment, are deemed not to represent an immediate or imminent hazard but should where practicable be repaired within 7 days.

Category C (risk ranking 6-8) those defects which are categorised as a low risk following a risk assessment and should be where practicable repaired within 28 days.

Category D (risk ranking 1-4) those defects which are categorized as a very low risk following a risk assessment but do not represent a safety hazard to users of the highway network. These defects could require no further action, be monitored or be considered for a future maintenance programme.

Note: In situations where Response Categories B and C are noted within the same road/street, repair work will be ordered as Category B.

8.4 Risk Impact

8.4.1 The impact of a risk occurring will be quantified on a scale of 1 to 4.

8.4.2 Consideration should be given to the extent of damage or injury likely to be caused if an incident occurred. The impact is likely to change with different defects, the amount and type of traffic and speed.

Table 8.4 Impact Ratings

Impact Rating	Description	Score
Very Low	Negligible	1
Low	Minor	2
Medium	Moderate	3
High	Serious	4

8.5 Risk Probability

- 8.5.1 The probability of a risk occurring will be quantified on a scale of 1 to 4.
- 8.5.2 Consideration should be given to the likelihood of users passing by or encountering the hazard (defect) including location, vehicular and pedestrian flows.

Table 8.5 Probability Ratings

Probability Rating	Description	Score
Very Low	Unlikely	1
Low	Possible	2
Medium	Likely	3
High	Almost Certain	4

8.6 Risk Matrix

- 8.6.1 The risk matrix below (Table 8.6) determines the risk ranking from the impact and probability assessments.
- 8.6.2 The response category of repair is identified by its risk ranking (see 8.3.3 above) and allocated a time for repair based upon this risk ranking.
- 8.6.3 The repair timescales in calendar days, commence at the point in time that the Council has ordered the work.
- 8.6.4 Timescales are designed to enable highway defects to be, wherever practicable, actioned by a permanent repair. This balances the immediate risk posed to highway users with the ongoing risk that will be posed as a consequence of a failed temporary repair.

Table 8.6 Risk Assessment Matrix and Response Times

Risk Assessment Matrix

Probability Impact	Very Low (1)	Low (2)	Medium (3)	High (4)
Very Low (1)	1	2	3	4
Low (2)	2	4	6	8
Medium (3)	3	6	9	12
High (4)	4	8	12	16

Response Times

Category	Risk Ranking 1 to 4 = Cat D	Risk Ranking 6 to 8 = Cat C	Risk Ranking 9 to 12 = Cat B	Risk Ranking 16 = Cat A
Response Minimum Time Frame	Consider for forward programme	28 days	7 days	1 day

It is essential that work is ordered consistently and in a manner that can be managed effectively by the allocated resource within the following categories of defect:

Category A: Repair or make safe defects requiring prompt attention because they represent an imminent danger to the public. If a defect is initially made safe then this may need following up with a further order for the permanent repair. See also paragraph 8.3.3.

Category B and C: By their nature, these orders should be no more than 5m². This will allow the work to be effectively managed and avoid disruption to other programmed work.

Category D: These defects could require no further action, be monitored or be considered for a future maintenance programme.

9. RECORDING AND MONITORING OF INFORMATION

- 9.1 All information obtained from safety inspections, together with the nature of response, including nil returns, shall be recorded consistently. The data obtained shall be able to be reviewed independently and in conjunction with other survey information. It shall be stored electronically on a server which is backed-up on a daily basis. Service requests, complaints, reports or information from users and other third parties shall also be recorded, along with the nature of response, including nil returns.
- 9.2 All inspections shall record the date, section label, street name, inspection frequency, weather conditions, any unusual circumstances of the inspection and the persons

conducting the inspection.

- 9.3 All recordable defects shall include the location, defect code, required parameters, photograph number, description of repair, associated schedule of items for works order and shall be marked out using temporary road marking paint. The photograph should show the defect and the general surroundings.
- 9.4 Where no defects are found, the Inspector shall record: NDF (no defects found)

10. TRAINING

- 10.1 Appropriate training is needed to ensure that personnel responsible for managing and carrying out highway inspections understand the reasons and importance of highway inspections. These reasons include public safety and the Council's insurance claim procedures.

Appendix 1: Guidance Notes for Inspectors

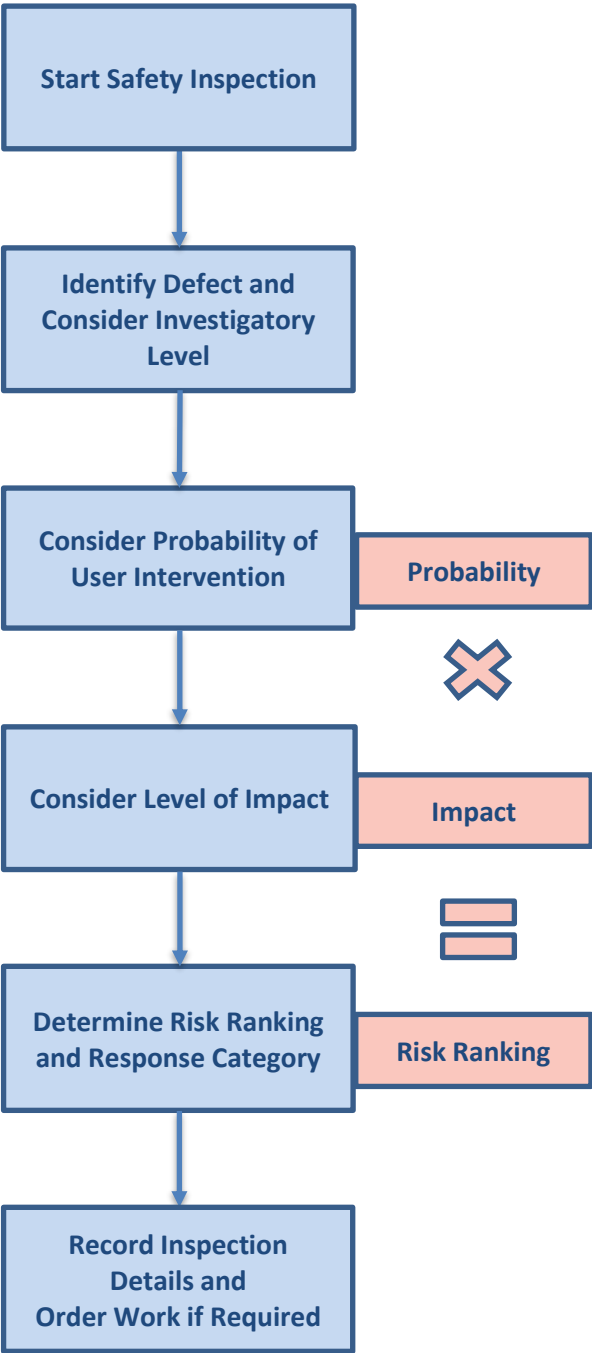
The following table provides descriptions for the various levels of Probability

Probability	Description
(1) Very Low	Vehicular, cycle or pedestrian flows are very low. Highway users will be able to avoid the defect.
(2) Low	Vehicular, cycle or pedestrian flows are low. Highway users will be able to recognise and take action to mitigate the impact of the defect.
(3) Medium	Vehicle, cycle or pedestrian flows may be high. Highway users should be able to recognise and take action to mitigate the impact of the defect. Probability of interaction with highway user is 50/50.
(4) High	Vehicular, cycle and/or pedestrian flows are high. High percentage of vulnerable users. It is difficult for a user to avoid the defect.

The following table provides descriptions for the various levels of Impact

Impact	Description
(1) Very Low	Unlikely to result in personal injury. Defect will contribute to the deterioration in the overall condition of the highway asset. Likely to deteriorate further before the next safety inspection. No physical damage to vehicle but possible acceleration of normal vehicle wear and tear over time, e.g. suspension.
(2) Low	Could result in minor personal injury requiring first aid treatment. If defect is untreated it will contribute to the deterioration in the overall condition of the highway asset. Likely to deteriorate further before the next safety inspection. Minor damage to vehicle, e.g. puncture.
(3) Medium	Could result in personal injury requiring treatment by medical practitioner. Moderate damage to vehicle, e.g. tyre damage/wheel tracking/wheel damage.
(4) High	Could result in serious personal injury requiring hospitalization or a fatality. Significant or extensive damage to vehicle, e.g. broken suspension/undercarriage damage/bodywork damage following loss of control impact.

Appendix 2: Inspection Process Flowchart



Appendix 3: Defective Apparatus Reporting Procedure

The procedure is in accordance with Yorkshire HAUC (Yorkshire Highway Authorities and Utilities Committee).

When defective apparatus is found by or reported to CBMDC, the relevant staff shall implement the following procedure:

1. The inspector makes a judgment as to whether the defect should be categorised as an Emergency Defect*, a 24 Hour Defect or a 28 Day Defect.
2. If the apparatus belongs to a Statutory Undertaker:

Emergency Defect*	28 Day Notice of Defect
The Inspector contacts the undertaker immediately via mobile phone detailing remedial works to be carried out within 2 hours.	The Inspector's inspection sheets are passed to the statutory undertaker giving all details.
If the undertaker is unable to comply or cannot be contacted, CBMDC may make safe and charge reasonable costs** to the undertaker for work done.	

* Defined as emergency works in the New Roads and Street Works Act 1991 'Code of Practice for the Co-ordination of Street Works.....' (put simply, a defect likely to cause imminent injury or damage to pedestrians or vehicles).

** Reasonable costs to include the actual cost to CBMDC from the Council's Highway Delivery Unit or General Highway Projects (term maintenance) contractor.

Appendix 4: Defect Investigation Criteria

Carriageway

Defect Type	Investigation Criteria					
	Depth	Width	Any Horizontal Dimension	Length	Any Vertical Dimension	Description
Pothole	≥ 40mm		≥ 300mm			
Deformation/ Depression			≤ 600mm		≥ 40mm	
Joints/Cracks	≥ 40mm	≥ 25mm	≥ 300mm			
Modular Paving Trip*					≥ 40mm	High/Low/ Rocking
Modular Paving Missing	All					
Abrupt Level Difference/Trip (other than modular paving)					≥ 40mm	
Ironwork Trip					≥ 40mm	High/Low/ Rocking
Ironwork Missing	All					
Ironwork Broken	All					
Edge Deterioration	≥ 50mm			≥ 300mm		

* Modular paving includes flags, blocks, setts, tiles, etc.

Cycleway

Defect Type	Investigation Criteria					
	Depth	Width	Any Horizontal Dimension	Length	Any Vertical Dimension	Description
Pothole	≥ 25mm		≥ 150mm			
Deformation/ Depression			≤ 300mm		≥ 25mm	

Joints/Cracks	≥ 25mm	≥ 25mm	≥ 150mm			
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Footway

Defect Type	Investigation Criteria					
	Depth	Width	Any Horizontal Dimension	Length	Any Vertical Dimension	Description
Pothole	≥ 25mm		≥ 150mm			
Deformation/Depression			≤ 300mm		≥ 25mm	
Joints/Cracks	≥ 25mm	≥ 25mm	≥ 150mm			
Modular Paving Trip*					≥ 25mm	High/Low/Rocking
Modular Paving Missing	All					
Ironwork Trip					≥ 25mm	High/Low/Rocking
Ironwork Missing	All					
Ironwork Broken	All					
Edge Deterioration	≥ 50mm			≥ 150mm		

* Modular paving includes flags, blocks, setts, tiles, etc.

Kerbs

Defect Type	Investigation Criteria					
	Depth	Width	Any Horizontal Dimension	Length	Any Vertical Dimension	Description
Displaced Kerb			≥ 50mm	≥ 150mm	≥ 50mm	
Loose/Rocking Kerb	All					
Missing Kerb	All					
Gap Between Adjacent Kerbs				≥ 50mm		