APPENDIX 2

West Yorkshire Highway Infrastructure Asset Management Board

West Yorkshire Plus York

HIGHWAY MANAGEMENT HIERARCHY

and

HIGHWAY SAFETY INSPECTIONS POLICY

Date: 10/08/2018
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Highway Management Hierarchy & Highway Safety Inspection Policy

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Section A Road Hierarchy

1.   INTRODUCTION

1.1.   West Yorkshire Highway Infrastructure Asset Management Board

1.1.1.   The constituent local authorities of the West Yorkshire Combined Authority (WYCA) for the purposes of this document comprises of the West Yorkshire partner councils of Bradford, Calderdale, Kirklees, Leeds and Wakefield, plus York, all are members of the West Yorkshire Highway Infrastructure Asset Management Board (HIAMB).

1.2.1.   The purpose of HIAMB is to promote good practice and consistency across West Yorkshire and York, HIAMB guidance documents are not mandatory or a requirement, their purpose is to provide advice and support to members, including examples of good practice.

1.2.   West Yorkshire Highway Infrastructure Asset Management Board Hierarchy Guidance

1.2.1.   This document provides guidance on an approach that members may wish to adopt when developing a management hierarchy for their highway assets, including carriageways, footways, structures, street lighting and drainage.

1.2.2.   The document provides one way of developing the hierarchy but does not prevent Authorities adopting an alternative approach.

1.3.   Terminology

1.3.1.   The Code of Practice for Well-managed Highway Infrastructure (October 2016) is hereafter referred to as the Code.

1.3.2.   The partner councils of Bradford, Calderdale, Kirklees, Leeds and Wakefield, plus York, are hereafter referred to as the HIAMB members.

1.3.3.   This guidance document uses the term 'Management Hierarchy' instead of Network Hierarchy - as used in the Code. The term 'management hierarchy' reflects that a primary function of this hierarchy is to support management of the highway network.

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2.   GUIDANCE IN THE CODE OF PRACTICE

2.1. Purpose of a Hierarchy

The Code sets out the need to develop a hierarchy based on function and use. Recommendation 12 of the Code states:

> *"A network hierarchy, or a series of related hierarchies, should be defined which include all elements of the highway network, including carriageways, footways, cycle routes, structures, lighting and rights of way. The hierarchy should take into account current and expected use, resilience, and local economic and social factors such as industry, schools, hospitals and similar, as well as the desirability of continuity and of a consistent approach for walking and cycling"* (The Code, 2016: p23).

2.1.1.   The Code goes on to state:

> *"It is important that the hierarchy adopted reflects the whole highway network and the needs, priorities and actual use of each infrastructure asset"* (The Code, 2016: p22, para A.4.3.2).

2.1.2.   This requires authorities to give due consideration to how their highway is used when developing a hierarchy.

2.2. A Risk Based Approach

2.2.1.   The Code explains the important role the hierarchy plays in a risk based approach:

> *"A network hierarchy based on asset function is the foundation of a risk-based maintenance strategy"* (The Code, 2016: p22, para A.4.3.1).

2.2.2.   A functional hierarchy provides a basis for developing risk based approaches to; inspection frequencies, work priorities and treatment decisions, amongst others. This provides continuity between functionality and use of the network and maintenance decisions.

2.3. Implementation Timeline

2.3.1.   The Code came into effect on 28 October 2016, running in parallel with its predecessor, which will be withdrawn in October 2018. Authorities should identify what activities and internal processes/approvals they require prior to this date and plan accordingly.

2.3.2.   Copies of the existing hierarchy should be archived as they may be required to defend future claims.

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3. DEVELOPING A MANAGEMENT HIERARCHY

3.1. The Concept of a Management Hierarchy

3.1.1. The HIAMB members have adopted the term 'management hierarchy' to demonstrate that the hierarchy should influence a wide range of highway management decisions, not just safety inspections.

3.1.2. Functionality factors, such as traffic volume (where available) or the presence of traffic generators like schools, are used to categorise network sections based on usage. By considering usage, or functionality, at the hierarchy development stage, risk becomes ingrained into subsequent decision making such as safety inspection frequencies and maintenance strategies.

3.1.3. The development of the management hierarchy should consider the Highway Management/Maintenance Strategy.

3.2. A Common Management Hierarchy

3.2.1. The Code identifies the need for authorities to consider consistency with their neighbours. As such, the HIAMB members have produced an approach that will support hierarchy consistency while also allowing local flexibility. A management hierarchy can act as a shared hierarchy for West Yorkshire and York City by utilising a common approach for how network sections are assigned to a hierarchy category.

3.2.2. The functionality factors were arrived at through the HIAMB members working together. The 6 participating Authorities considered the range of factors in the Code and with further reference to the Institute of Highway Engineers (IHE) document 'Well Managed Highway Liability Risk'. The functionality factors adopted are indicative and for guidance.

3.2.3. Recommendation 5 – Consistency with other Authorities states:

> *"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"* (The Code, 2016: p10).

3.2.4. Considering common functionality factors across authority boundaries will help to promote consistency across the HIAMB members individual networks. A consistent hierarchy, in turn, will assist authorities to consider and compare levels of service, improve cooperation, communication and consistency for stakeholders.

3.2.5. Within the functionality factors, there is a level of flexibility for defining the functionality. This is to enable authorities, with different pressures and volumes of usage, to still adopt the same principles.

3.2.6. Functionality definitions are generic, it is for each authority to decide what constitutes, for example, 'High/Medium/Low Usage Volumes'. Authority specific definitions need to be documented and approved with legal advisors to ensure that the definitions adopted are justifiable within the scope of the management hierarchy.

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3.2.7. Collaborating on and adopting a common management hierarchy, which is developed and agreed by a wide range of competent industry professionals, provides a robust basis for demonstrating that a sound and defensible approach is being used.

3.3. Using a Management Hierarchy

3.3.1. The management hierarchy should be used as the base point for multiple activities that are key recommendations of the Code, including but not exclusive to:

- Safety inspection regimes;
- Maintenance approaches;
- Treatment options.

4. MANAGEMENT HIERARCHY

4.1. Development of the Management Hierarchy

4.1.1.   The management hierarchy has been developed through a series of meetings with the consultees listed in the acknowledgements at the beginning of this document.

4.1.2.   Risk and insurance professionals of the HIAMB members have been consulted throughout the development of this guidance.

4.1.3.   The management hierarchy has been developed in line with the recommendations of the Code. Careful consideration of the risk based approach has been taken to ensure that adopting the management hierarchy will align with the recommendations of the Code.

4.1.4.   Hierarchies have been produced for carriageways, footways and cycleways. All hierarchies adopt the same core approach to determining functionality and use.

4.2. Functionality Factors / Traffic and Pedestrian Generators

4.2.1.   The functionality factors/traffic and pedestrian generators have been used as a proxy for traffic flows.

4.2.2.   Functionality factors have been considered, as outlined in the Code. These were assessed against their feasibility for use and relevance to HIAMB members. A selection of specific functionality factors have been suggested as drivers for the management hierarchy and are contained in table 4.1.

4.2.3.   Within the functionality factors, there is a level of flexibility for defining the functionality. This is to enable authorities, with different pressures and volumes of usage, to still adopt the same principles.

4.2.4.   A data led approach can use open source data from trusted sources such as Government departments. It is recognised that Authorities will need to use local knowledge.

4.2.5.   Datasets may be sourced from a variety of places. Some options are outlined below and are not exclusive to the following

- Council owned datasets;
- Transport for West Yorkshire and York City owned datasets;
- Validated open source datasets. E.g. Government departments

4.2.6.   Data may be quantitative e.g. Annual Average Daily Flow (AADF) figures or qualitative e.g. knowledge and expertise of highway managers and inspectors. Whenever data is used, the authority must accurately record what is used and how it has been used to develop the hierarchy.

4.2.7.   Where possible, the potential of future data availability should be considered. This will enable regular refreshes of the hierarchy to be completed efficiently.

4.2.8. The example Functionality Factors/Traffic Generators in table 4.1 are not exhaustive or prescriptive. Each authority should select the information that is available and trusted. Authority specific definitions need to be documented and approved with legal advisors to ensure that the definitions adopted are justifiable within the scope of the management hierarchy.

4.2.9. Triggers for Low / Medium / High are to be determined locally.

4.2.10. Where AADF (Annual Average Daily Flow) data is not available, as may be the case for the majority of the local road network, it is advised that local knowledge of traffic volumes, alongside the other functionality factors, be considered if appropriate.

4.3. Carriageway Management Hierarchy

4.3.1. The management hierarchy for carriageways has been broken down into two overarching categories:

- Strategic Roads – Motorways, West Yorkshire Key Route Network and Main Distributors.
- Local Roads.

4.3.2. The management hierarchy for carriageways is further broken down, as shown in Table 4.2.

Table 4.1: Functionality Factors / Traffic and Pedestrian Generators

Grouping	Service	Data Type	Low Value	Medium Value	High Value
Functionality Factors / Traffic and Pedestrian Generators *(the values shown in this table are examples only see paragraph 4.2.3)*					
Medical Facilities	Hospitals & Large Clinics	Number of Parking Space	<20	20-500	>500
	GP Surgeries	number of doctors in practice	n/a	5-10	>10
Educational Institutions	University	Number of Pupils	<200	200-1000	>1000
	College	Number of Pupils	<200	200-1000	>1000
	School	Number of Pupils	<200	200-1000	>1000
Retail facilities	Shopping Centres	Number of Shops	n/a	3-15	>15
	Supermarkets	Number of Parking Spaces	<50	50-200	>200
	Out of town shopping centres	Number of Stores	n/a	4-10	>10
Commercial:	Industrial estates	Number of units	<5	5 - 10	>10
	Business Parks	Number of Units	<5	5 - 10	>10
Recreational	Sports stadia	Number of Seats	<500	500-10,000	10,000
	Entertainment Venue	Number of Seats	<500	500-10,000	10,000
Transport	Railway Stations	Passenger entry/exit per annum	<50k	50k – 100k	>100k
	Bus routes	Buses frequency	n/a	Less than 15 mins	15mins or more
	Airports	Consider as high	n/a	n/a	
Emergency Services:	Ambulance, Fire Station, Police, Mountain Rescue	Consider as high if manned 24hrs	n/a	n/a	
Traffic flows	AADF if available	Individual authority to agree			
	Local knowledge	Individual authority to agree			
Cycle Routes	national cycle routes	Individual authority to agree			
	Tour de France & tour de Yorkshire routes	Individual authority to agree			

Table 4.2: Management Hierarchy - Carriageways

Carriageway Hierarchy			
Category	Hierarchy Description	Defined by	Road Description
1	Motorway	DFT	Limited access, motorway regulations apply
2	West Yorkshire Key Route Network (WYKRN)	Defined by WYCA	Regional routes which have a 'strategic' function such as connecting the key towns and cities in the county, linking to the motorway network or to Leeds Bradford Airport.
3	Main Distributor	Defined by Individual Authorities	Heavily trafficked routes and busy freight routes including Resilient Network eg roads linking towns to the WYKRN
4	High Traffic Local Network	Defined by Individual Authorities	Heavily trafficked local roads which have one or more high traffic volume generators eg important links in the network connecting towns and larger villages.
5	Medium Traffic Local Network	Defined by Individual Authorities	Medium trafficked local roads which have one or more medium traffic volume generators
6	Low Traffic Local Network	Defined by Individual Authorities	Low trafficked local roads which have one or more low volume traffic generators
7	Local Road	Defined by Individual Authorities	Local roads which have no traffic generators present eg serving residential properties.
8	Minor Access Road	Defined by Individual Authorities	Minor routes and low use un metalled tracks- some may already be unsuitable for motors and maintained in character only.

4.4. Footways Management Hierarchy.

4.4.1.　　The management hierarchy for footways is shown in Table 4.3.

4.4.2.　　The categorisation of a footway used by vulnerable users or as a safer route to school shall be determined by the use of local knowledge.

Table 4.3 Management Hierarchy - Footways

Footway Hierarchy	
Category	Description
Prestige Walking Zones	Very busy areas of towns and cities with high public space and street scene contribution.
Primary Walking Routes	Busy urban shopping and business areas and main pedestrian routes. which have one or more high pedestrian volume generators
Secondary Walking Routes	Medium usage routes through local areas feeding into primary walking routes, local shopping centres etc, which have one or more medium pedestrian volume generators.
Link Footways	Linking local access footways through urban areas and busy rural footways, which have one or more low pedestrian volume generators
Local Access Footways	Footways associated with low usage, estate roads and cul- de-sacs.
Minor Footways	Adopted little used footways serving very limited numbers of properties.

4.5. Cycleways Management Hierarchy

4.5.1 The categories for cycle routes are shown in table 4.4.

Table4.4 Cycle Hierarchy

Category	Description
Cycle Lane	Cycle facilities forming part of the carriageway, these will be assigned the hierarchy of the footway/carriageway on which they exist.
Cycle Track	Cycle track, a 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.
Cycle Trails	Cycle trails, leisure routes through open spaces. These are not necessarily the responsibility of the highway authority.

5. IMPLEMENTING THE MANAGEMENT HIERARCHY

5.1. Documentation

5.1.1.   Document the approach followed to develop your hierarchy. This can be straightforward and included references to the Code and guidance like this document.

5.1.2.   Clearly identify and justify decisions made, record the stakeholders involved in the decisions and record the dates of decisions, implement a suitable document control, archiving and retention policy that supports the authorities ability to defend claims at a later date.

5.2. Stakeholders

5.2.1.   To ensure the management hierarchy is accurate and adoptable, a range of stakeholders within the authority, alongside legal advisors, should be involved at various stages during the determination of the management hierarchy. The list below, although not exhaustive outlines some of the officers and external support that should be involved in the determination of the management hierarchy process:

- Asset Managers;
- Highway Engineers;
- Safety Inspectors;
- Network Management Officers;
- Risk Managers;
- Insurance Managers;
- Legal Representatives;
- Other officers with good local usage knowledge.

5.3. Sub-dividing the Highway Network.

5.3.1   The management hierarchy will be applied to the existing network sections.

6. COLLABORATION WITH OTHER AUTHORITIES

6.1. Engaging with other Authorities

6.1.1. When developing the management hierarchy, it is recommended that efforts are made to engage with authorities adjacent to the HIAMB members.

6.1.2. In the development of this guidance, a significant amount of collaboration has taken place across the HIAMB highway authorities. Whether an authority chooses to adopt this and associated HIAMB guidance or not, they can benefit from the consultation that has taken place to inform their decision making.

6.1.3. Collaboration and benchmarking can be augmented by targeted engagement to understand the approach of similar neighbouring authorities. The functionality definitions being used to determine each of the hierarchy categories is an area that should be considered for discussion.

6.1.4. Collaboration also provides an opportunity to share datasets and reduce the overall workload for individual authorities.

6.2. Justifying a Different Approach to Other Authorities

6.2.1. Where reasonable, efforts should be made to align processes and practices with other authorities, however, due to differing priorities and service drivers, this may not always be possible.

6.2.2. When engaging with other authorities, it may become apparent that there are differences between the functionality definitions or factors used between different authorities. This may be due to numerous factors including:

- Different Council priorities;
- Varying levels of usage;
- Availability of datasets.

6.2.3. The Code allows for differences between authority approaches. However, work should be done to document why there are differences, and to justify why the approach taken within your authority is appropriate.

7. UPDATING THE MANAGEMENT HIERARCHY

7.1.1.   The management hierarchy shall be reviewed at least every two years as functionality and usage of the network evolves. Authorities should establish their triggers for review or changes, but it is recommended that a periodic review of the management hierarchy is conducted with all relevant stakeholders (as described in 5.2.1) to account for any changes.

7.1.2.   The functionality factors and descriptions should be reviewed every two years to see if any new data sources can be used to update the hierarchy.

7.1.3.   Collaboration with neighbouring and/or similar authorities should also take place at this stage to ensure any changes or deviations from either authority has been documented and the approach taken, or any differences are justified.

7.1.4.   Any updates to the management hierarchy should be recorded on the allocated systems and fully documented. These will likely have impacts on activities that are based upon the management hierarchy. Hence changes should be made to all subsequent activities to ensure continuity through the operations.

Section B Highway Safety Inspections

8. HIGHWAY SAFETY INSPECTIONS

8.1. Development of Highway Safety Inspections

8.1.1   This section provides guidance on an approach that authorities may wish to adopt when developing a safety inspection regime of their highway assets, including carriageways, footways, structures, street lighting and drainage.

8.1.2   The document provides an approach to undertaking highway safety inspections but does not prevent Authorities adopting an alternative approach

8.1.3   Recommendation 7 Risk based Approach states

> A risk based approach should be adopted for all aspects of highway infrastructure maintenance, including setting levels of service, inspections, responses, resilience, priorities and programmes. The Code 2016 page 12

8.1.4   The principle of risk based approach is to assess the likelihood of injury or damage as a result of any network users coming in to contact with defectiveness and the consequences of that event should it occur.

8.1.5   A risk based approach utilises the expertise of appropriately trained inspectors to correctly and consistently evaluate defects in accordance with the guidance established in this policy. Expertise and consistency of inspectors is ensured by training to industry recognised standards and regular comparative inspections, as detailed in section 8.4.

8.1.6   The mechanism for how individual defects will be described will be defined in each authorities Safety Inspection Manual.

8.1.7   Recommendation 16 Inspections states

> A risk-based inspection regime, including regular safety inspections, should be developed and implemented for all highway assets. The Code 2016 page 39.

8.1.8   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 Highways Act 1980 Section 41 requires the Council to maintain the highways for which they are responsible. Section 58 of the act provides a statutory defence to a claim made for breach of the Section 41 duty to maintain. This document provides a framework for HIAMB authorities to use in that defence.

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8.2. Inspection Coverage

8.2.1 The list below identifies the minimum criteria that inspectors should inspect during Highway Safety Inspections. However each individual authority will define in detail what the extents of their safety inspection regime under these headings will be, within their own Highway Safety Inspection Manual.

- Running Surface (Carriageway/Footway/Cycleway/Verges)
- Drainage
- Obstruction/Spillage

8.3. Inspection Frequency

8.3.1 Inspection frequencies for each asset shall be defined in each authorities' Highway Safety Inspection Manual.

8.3.2 In exceptional circumstances, inspections may not be able to be carried out, e.g. during periods of extreme weather or other exceptional circumstances. In these cases, Safety Inspections may be suspended and/or a temporary programme put in place. The reasons for this should be documented

8.4. Competence and Training

8.4.1 A vital component of inspections is to ensure that inspectors are able to undertake inspection and assessment duties consistently, accurately and within current guidelines and standards, inspectors will undertake training on a regular basis.

8.4.2 Recommendation 15 Competencies and Training states

> The appropriate competencies for all staff should be identified. Training should be provided where necessary for directly employed staff, and contractors should be required to provide evidence of the appropriate competencies of their staff. The Code 2016, page 37

8.4.2 All inspectors of highways should be trained where appropriate to a standard that allows registration on the National register of Highway Inspectors. The registration should be continuous and any required continuing professional development required shall be carried out. The development and maintenance of competence will cover:

- Inspector training and accreditation.
- Health and safety training.
- Risk assessment training.
- Annual reviews and assessments etc.

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8.5. Categories of Defect

8.5.1   The Authorities will utilise a risk based approach to defect categorisation and repair times to enable 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 in the longer term and may also result in a reduction in:

- repeat repairs;
- Disruption and overall risk to the highway users; and,
- Environmental impact.

8.5.2   Defects are allocated one of four categories as follows:

Category 1 (risk ranking 16) those defects categorised as a high risk that require prompt attention because they represent an immediate or imminent hazard.

Category 2 (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 3 (risk ranking 4-8) those defects which are categorised as a low risk following a risk assessment and should be where practicable repaired within 28 days.

Category 4 (risk ranking 1-3) those defects which require maintenance but do not represent a safety hazard to users of the highway network, and may be considered for a future maintenance program.

8.6. Risk Assessment

8.6.1 The impact of a risk occurring is measured on a scale of 1 – 4 (1 lowest, 4 highest) the following table gives guidance: 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.

8.6.2 The probability of a risk occurring is measured on a scale of 1 – 4 (1 lowest, 4 highest) the following table gives guidance:

8.6.3 The risk ranking is the product of the impact and the probability and determines the seriousness of the risk. The risk matrix determines the risk factor from the impact and probability assessments.

Table 8.1 Risk Assessment matrix Defect Categories and Response Times

Impact \ Probability	Very low	Low	Medium	High
Negligible	1	2	3	4
Low	2	4	6	8
Moderate	3	6	9	12
High	4	8	12	16
Category	Cat 4	Cat 3	Cat 2	Cat 1
Response Minimum Time Frame	Consider for forward programme	28 days	7 days	1 day

8.6.4 These timescales commence at the point in time that the Council (or its Service Provider) has visited site and categorised the defect.

8.6.5 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.

8.6.6 In some situations, it may be necessary to respond to certain defects as soon as reasonably practicable.