THE LONDON TECHNICAL ADVISERS GROUP (LoTAG)

GUIDANCE ON DEVELOPING A HIGHWAY MANAGEMENT HIERARCHY

Date: December 2017
Version: Version no.1.0

Contents

ACKNOWLEDGEMENTS

Officers and staff of the following organisations took part in workshops, focus groups and consultations to produce this document:

LoTAG Board and Chairs
LoHEG, LoDEG, LoLEG, LoBEG
Metis Consultants Ltd
London Insurance Consortium
London Boroughs

VERISON CONTROL

Version	Date	Description
1.0	December 2017	Issue

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1. INTRODUCTION

1.1. LONDON TECHNICAL ADVISORS GROUP (LoTAG)

1.1.1. The London Technical Advisers Group (LoTAG) maintains a technical network for local government professionals and co-opted members in the highway and transport fields. It provides a centre for professional advice and assistance for local policy development and service delivery on a London wide basis. LoTAG is the regional grouping of TAG comprising a group of professional officers.

1.1.2. LoTAG represents all London highway authorities - 33 Boroughs and Transport for London.

1.2. LoTAG GUIDANCE

1.2.1. LoTAG works for and with highway authorities to promote good practice and consistency in London. LoTAG guidance documents are not mandatory or a requirement, their purpose is to provide advice and support to members, including examples of good practice.

1.3. LoTAG HIERARCHY GUIDANCE

1.3.1. This guidance 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.

1.3.2. The document provides one way of developing the hierarchy and does not prevent boroughs adopting an alternative approach.

1.4. TERMINOLOGY

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

1.4.2. 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.

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:

> *"The network hierarchy should reflect the whole highway network and the needs, priorities and actual use of each infrastructure asset"* (The Code, 2016: p22).

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).

2.2.2. A functional hierarchy provides a basis for developing risk based approaches to; inspection frequencies, investigatory levels, 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. Legal advice should be sought when considering any changes to the existing network hierarchy.

3. DEVELOPING A MANAGEMENT HIERARCHY

3.1. THE CONCEPT OF A MANAGEMENT HIERARCHY

3.1.1. LoTAG has 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 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 Policy and Asset Management 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, LoTAG has produced an approach that will support hierarchy consistency while also allowing local flexibility. A management hierarchy can act as a shared hierarchy for London 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 a Londonwide workshop and subsequent focus groups. The 22 participating boroughs and TfL considered the range of factors in the Code and with further reference to IHE Risk and Liability Guide. 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. Adopting common functionality factors across authority boundaries will help to promote consistency across London's network. A consistent hierarchy, in turn, will assist authorities to consider and compare levels of service and, where appropriate, enable greater consistency.

3.2.5. Working together as 33 boroughs and TfL reduces the need for each authority to develop their hierarchy.

3.2.6. Collaborating and adopting a common management hierarchy for London, 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 could be used as the base point for multiple activities that are key recommendations of the Code, they are not exclusive to:

- Safety inspection regimes;
- Defect investigatory levels;
- 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 consultations within the consultees listed in the acknowledgements of this document. This process included circulating a questionnaire to all authorities, and hosting a round of focus groups. The management hierarchy concept was then presented at a LoTAG workshop to understand the level of support and refine the concept.

4.1.2. Risk and insurance professionals within London boroughs 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. Functionality factors have been considered, as outlined in the Code. These were assessed against their feasibility for use and relevance to London. A selection of London specific functionality factors have been utilised as drivers for the management hierarchy.

4.1.5. Divergence from the hierarchies from the previous Code of Practice for Well-maintained Highways has been documented to show the transition between the existing and the proposed hierarchy.

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

4.1.7. The data led approach can use open source data from trusted sources such as Government departments. It is recognised that boroughs may need to use local knowledge.

4.2. CARRIAGEWAYS MANAGEMENT HIERARCHY

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

- Strategic Roads – Motorways, TfL Road Network and Borough Principal Roads
- Local Roads - Borough managed carriageways (excluding Principal Roads)

4.2.2. The management hierarchy for carriageways is further broken down, as shown in Table 4.2. A more detailed version of the hierarchy showing the link between the current hierarchy and the new management hierarchy can be seen in the Appendix.

4.2.3. The example Functionality Factors are not exhaustive or prescriptive. Each borough should select the information that is available and trusted.

4.2.4. Triggers for Low / Medium / High are to be determined locally and the figures presented and examples are for illustration purposes only.

Table 4.2: London Management Hierarchy - Carriageways

London Interpretation	Example Functionality Factor		Example Functionality Definition
Strategic Roads	Motorway		
	TfL Road Network		
	Borough Principal Road Network		
Local Roads	A	Prestige	e.g. High Profile
	B	Very High Traffic Volume	e.g. AADF>10k | Local Knowledge
		Essential Services	e.g. Hospital | Fire Station | Police Station
		Major Traffic Generators	e.g. Town Centre | Shopping Centre | Large School or University
		Very High Cyclist Volume	e.g. AADF>1000 | Defined Cycle Route
		Major Bus Route	e.g. Large number of buses
	C	High Traffic Volume	e.g. 10k>AADF>5k | Local Knowledge
		Medium Traffic Generators	e.g. Medium Schools | Shopping Parades
		High Cyclist Volume	e.g. AADF>500 | Local Knowledge
		Resilient Network	e.g. On Resilient Network
		Minor Bus Route	e.g. Medium number of buses
	D	Medium Traffic Volume	e.g. 5k>AADF>1k | Local Knowledge
		Medium Cyclist Volume	e.g. 500>AADF>100 | Local Knowledge
		HGV Usage	e.g. Route to industrial Estate | Local Knowledge
		Minor Traffic Generators	e.g. Small Schools | Local Shops | Ceremonial Routes
		Infrequent Bus Route	e.g. Small number of buses
	E	Low Traffic Volume	e.g. AADF<1k | Local Knowledge
		Low Cyclist Volume	e.g. AADF<100 | Local Knowledge
		No Traffic Generator	No Traffic Generator

*AADF = Annual Average Daily Flow (Motor vehicles/Cyclists per day). Suggested traffic volumes derived from Department for Transport traffic count data for London.

4.2.5. The indicative Annual Average Daily Flow (AADF) figures illustrated in the functionality definitions have been provided as a broad guidance of typical traffic volumes within each local road category. Authorities may wish to adjust these figures to align with local circumstances.

4.2.6. Where AADF 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. This should be done by persons knowledgeable about the network and may be guided by consideration of the

indicative AADF, which may also be converted into vehicles per hour or per minute for ease on visualisation.

4.3. FOOTWAYS MANAGEMENT HIERARCHY

4.3.1. The management hierarchy for footways is shown in Table 4.3. A more detailed version of the hierarchy showing the link between the current hierarchy and the new management hierarchy can be seen in the Appendix.

Table 4.3: London Management Hierarchy - Footways

London Interpretation	Example Functionality Factor		Example Functionality Definition
Local Footways & TfL Red Routes	A	Prestige	High Profile
	B	Very High Pedestrian Volume	e.g. Footfall Count | Local Knowledge
		Essential Services	e.g. Hospital | Care Home | Police Station
		Major Traffic Generators	e.g. Town Centre | Shopping Centre | Market | Large School or University | Train Station
		Major Bus Route	e.g. Large number of buses
	C	High Pedestrian Volume	e.g. Footfall Count | Local Knowledge
		Medium Traffic Generators	e.g. Medium School | Shopping parade
		Vulnerable Users	e.g. GP Surgery | Senior Citizens Home
		Shared Use	e.g. Shared Cycle/Footway
		Minor Bus Route	e.g. Medium number of buses
	D	Medium Pedestrian Volume	e.g. Footfall Count | Local Knowledge
		Minor Traffic Generators	e.g. Small School | Local Shops | Ceremonial Routes
		Infrequent Bus Route	e.g. Small number of buses
	E	Low Pedestrian Volume	e.g. Footfall Count | Local Knowledge
		No Traffic Generator	No Traffic Generator

4.4. CYCLEWAYS MANAGEMENT HIERARCHY

4.4.1. It is common practice for designated cycleways to be assigned the hierarchy of the footway or carriageway on which they exist. This guidance does not attempt to define a specific hierarchy for cycleways, either segregated or non-segregated. However, the Footway and Cycletrack Management Group (FCMG) are developing a guidance document, expected to be published early 2018, which will address this.

5. IMPLEMENTING THE MANAGEMENT HIERARCHY – AN EXAMPLE

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.

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 outlines some of the officers and external support that should be involved in the determination of the management hierarchy process, these are not exclusive to:

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

5.3. TAILORING THE HIERARCHY

5.3.1. 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.

5.3.2. 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.

5.4. DATA

5.4.1. Datasets that can be used to define the management hierarchy are outlined below and are not exclusive to the following:

- Footfall counts;
- Traffic counts (AADF);

- Locations of essential services (Hospitals, Police Stations, Fire Stations, etc.);
- Locations of usage generators (Rail Stations, Schools, GP Surgeries, etc.);
- Bus Routes;
- Cycle Routes;
- Industrial Areas;
- Ceremonial routes and special events;
- Market areas;
- Town Centre areas.

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

- Council owned datasets;
- Transport for London owned datasets;
- Validated open source datasets. E.g. Government departments

5.4.3. Data may be quantitative (e.g. 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.

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

5.5. SUB-DIVIDING THE HIGHWAY NETWORK

5.5.1. The management hierarchy can be applied to network sections in multiple ways and can be heavily dependent on the breakdown of the council's highway network. Some ways of breaking down the network, and the pros and cons of adopting each approach, are described in Table 5.5. The approach adopted needs to be documented and justifiable.

Table 5.5: Potential methods for splitting up highway network

Network Breakdown	Pros	Cons
Whole Carriageway / Footway Sections	A smaller quantity of sections to assign. A consistent hierarchy which can be easily applied to safety inspection schedule.	Network characteristics may change along a section. Unjustifiably high inspection frequencies may occur across the network.
Junction to Junction Sections	Network characteristics unlikely to change. The relatively small quantity of sections to assign. More manageable inspection frequencies likely to occur across the network.	Hierarchies may change across a single carriageway/footway. A larger quantity of sections to assign than whole carriageway sections.

Network Breakdown	Pros	Cons
Fixed Length Sections (e.g. 20m /100m)	Network characteristics would be specific to their sections. Optimisation of inspection frequencies across the network.	Network characteristics likely to be too focused to a single area. Effects of functionality drivers likely to be felt outside the immediate section. Difficulty in maintaining small sections. The potential for inconsistency, hence greater exposure to claims.

5.6. ALLOCATING SECTIONS TO THE HIERARCHY

5.6.1. A GIS mapping platform should be used to conduct the initial analysis. This will reduce the time required to assign a hierarchy category to each road section.

5.6.2. Authorities will have access to geolocation data for many of the functionality factors influencing the hierarchy category. This can be utilised to assign much of the management hierarchy efficiently.

5.6.3. Once the GIS analysis has been completed, a manual validation of the hierarchy should be conducted. This should be conducted by officers with a sound local knowledge of the area who will be able to pick up any potential errors and reassign as appropriate.

5.6.4. The management hierarchy should be stored in an appropriate electronic location, such as GIS or the authority's highway asset management system, which enables all stakeholders to access the information and allows managers to update the data.

5.6.5. All decisions made and approaches undertaken should be documented and justified. Legal advice should be sought to ensure that the process and decisions made are appropriate and defendable.

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 neighbouring authorities and/or similar authorities.

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

6.1.3. LoTAG 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 political priorities;
- Varying levels of usage between authorities (this will be especially relevant between boundaries of inner and outer London);
- 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 between approaches, and to justify why the approach taken within your authority is reasonable.

6.2.4. Alignment for outer London boroughs to authorities outside of London may be challenging due to the significant differences in functionality and funding. However, work should be done to understand how authorities outside of London define hierarchy and efforts made to justify the differing approach within London.

7. UPDATING THE MANAGEMENT HIERARCHY

7.1.1. The management hierarchy should be regularly reviewed and updated 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 staff (as described in 5.2.1) to account for any changes.

7.1.2. The functionality factors and descriptions should be reviewed periodically 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.

APPENDIX - FULL MANAGEMENT HIERARCHIES

CARRIAGEWAYS

Category	Type of Road General Description	Description	London Interpretation	Functionality Factor	
Motorway	Limited access -motorway regulations apply.	Routes for fast moving long distance traffic. Fully grade separated and restrictions on use.	Strategic Roads	Motorway	
Strategic Route	Trunk and some Principal 'A' class roads between Primary Destinations	Routes for fast moving long distance traffic with little frontage access or pedestrian traffic. Speed limits are usually in excess of 40 mph and there are few junctions. Pedestrian crossings are either segregated or controlled and parked vehicles are generally prohibited.		TfL Road Network	
Main Distributor	Major Urban Network and Inter-Primary Links. Short – medium distance traffic.	Routes between Strategic Routes and linking urban centres to the strategic network with limited frontage access. In urban areas speed limits are usually 40 mph or less, parking is restricted at peak times and there are positive measures for pedestrian safety.		Borough Principal Road Network	
Secondary Distributor	B and C class roads and some unclassified urban routes carrying bus, HGV and local traffic with frontage access and frequent junctions.	In residential and other built-up areas these roads have 20 or 30 mph speed limits and very high levels of pedestrian activity with some crossing facilities including zebra crossings. On-street parking is generally unrestricted except for safety reasons. In rural areas these roads link the larger villages, bus routes and HGV generators to the Strategic and Main Distributor Network.	Local Roads	A	Prestige
				B	Very High Traffic Volume
					Essential Services
					Major Traffic Generators
					Very High Cyclist Volume
					Major Bus Route
Link Road	Roads linking between the Main and Secondary Distributor Network with frontage access and frequent junctions.	In urban areas these are residential or industrial interconnecting roads with 20 or 30 mph speed limits, random pedestrian movements and uncontrolled parking. In rural areas these roads link the smaller villages to the distributor roads. They are of varying width and not always capable of carrying two-way traffic.		C	High Traffic Volume
					Medium Traffic Generators
					High Cyclist Volume
					Resilient Network
Local Access Road	Roads serving limited numbers of properties carrying only access traffic.	In rural areas these roads serve small settlements and provide access to individual properties and land. They are often only single lane width and unsuitable for HGVs. In urban areas they are often residential loop roads or cul-de-sacs.			Minor Bus Route
				D	Medium Traffic Volume
Minor Road	Little used roads serving very limited numbers of properties.	Locally defined roads.			Medium Cyclist Volume
					HGV Usage
					Minor Traffic Generators
					Infrequent Bus Route
				E	Low Traffic Volume
					Low Cyclist Volume
					No Traffic Generator

FOOTWAYS

Category	Description	London Interpretation	Functionality Factor	
Prestige Walking Zones	Very busy areas of towns and cities with high public space and street scene contribution.	Local Footways & TfL Red Routes	A	Prestige
Primary Walking Routes	Busy urban shopping and business areas and main pedestrian routes.		B	Very High Pedestrian Volume
Secondary Walking Routes	Medium usage routes through local areas feeding into primary routes, local shopping centres etc.			Essential Services
Link Footways	Linking local access footways through urban areas and busy rural footways.			Major Traffic Generators
Local Access Footways	Footways associated with low usage, short estate roads to the main routes and cul-de-sacs.			Major Bus Route
Minor Footways	Little used rural footways serving very limited numbers of properties.		C	High Pedestrian Volume
				Medium Traffic Generators
				Vulnerable Users
				Shared Use
				Minor Bus Route
			D	Medium Pedestrian Volume
				Minor Traffic Generators
				Infrequent Bus Route
			E	Low Pedestrian Volume
				No Traffic Generator