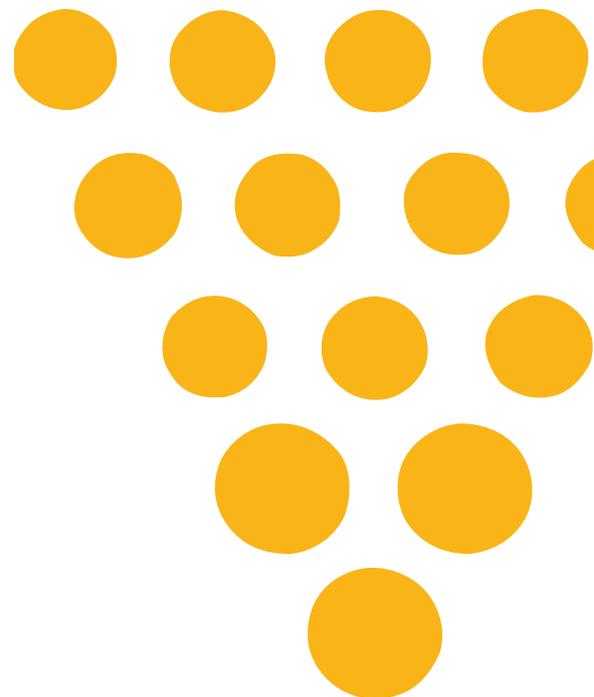




Highway Maintenance Manual

Version 4.0

Economic Growth and Development
Transport & Infrastructure



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Introduction

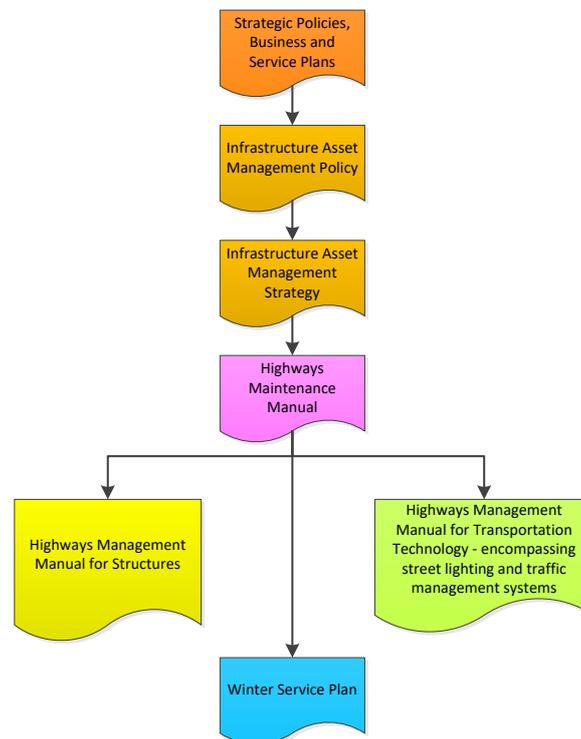
The Highway Maintenance Manual (HMM) sets out how Cornwall Council manages, and risk assesses, the maintenance of its highways to fulfil its statutory obligations and deliver a safe, serviceable and resilient highway network. Taken as a whole the HMM sets out how Cornwall Council complies with the objectives and recommendations set out in national guidance documents and in particular the UK Roads Liaison Group Code of Practice “Well Managed Highway Infrastructure” published in October 2016. This document advocates a holistic integrated risk-based approach to the management of all highway infrastructure and replaces three previous codes dealing with highways, highway structures and streetlighting.

Local highway authorities are required to have a fully developed integrated risk-based approach to the management of their highway infrastructure by October 2018; this latest version of the HMM brings the highway aspects into line with the recommendations of the 2016 code.

The HMM is an operational component of the Transport and Infrastructure Service’s asset management framework and is supplemented by documents covering highway structures and transport technology which encompass street lighting and traffic management systems.

Figure 1

Highways Asset Management Frame Work



This Highway Maintenance Manual comprises of three sections, the main HMM that focuses on defining how Cornwall Council manages and risk assesses the routine maintenance of its highway and two sub-documents that focus on highway structures and transport technology including streetlighting and traffic management systems are appended to the document (the winter service plan forms part of the suite of documents and focuses purely on the provision of the winter service):-

1. Highway maintenance plan:

Provides the broad context for the delivery of an appropriate maintenance regime for Cornwall Council's highway network that takes account of its statutory duties, service aspirations and reflects the availability of resources.

2. Highway inspection and condition assessment:

Identifies items within the inventory sets that are inspected; defines the type and frequency of inspection and sets out investigatory levels used to establish the condition of the asset. Information from inspections is used to determine appropriate maintenance treatments which are in line with the objectives set out in the infrastructure asset management strategy.

Inspection requirements and condition assessment processes for street lighting and the electrical components of other highway infrastructure and larger structural assets are contained within the maintenance / management plans for those assets appended.

3. Highway service standards:

Sets out service standards for highway maintenance by inventory set. These standards are derived from the levels of service as defined in Section 1 of this document which identifies and allocates risk by setting particular levels of service standards and recording how changes between these standards feed into the service and corporate risk registers.

1.0 Highway maintenance plan

The highway network is the Council's largest and most valuable single asset. In a rural county such as Cornwall it provides key links between communities and is the main communication network for the delivery of a whole host of other services. All of us, whether as vehicle users, pedestrians, or users of Council services are dependent on the availability of a safe and serviceable highway network which is, in an ideal scenario, maintained so as to minimise costs over time, using treatments and materials which are sustainable.

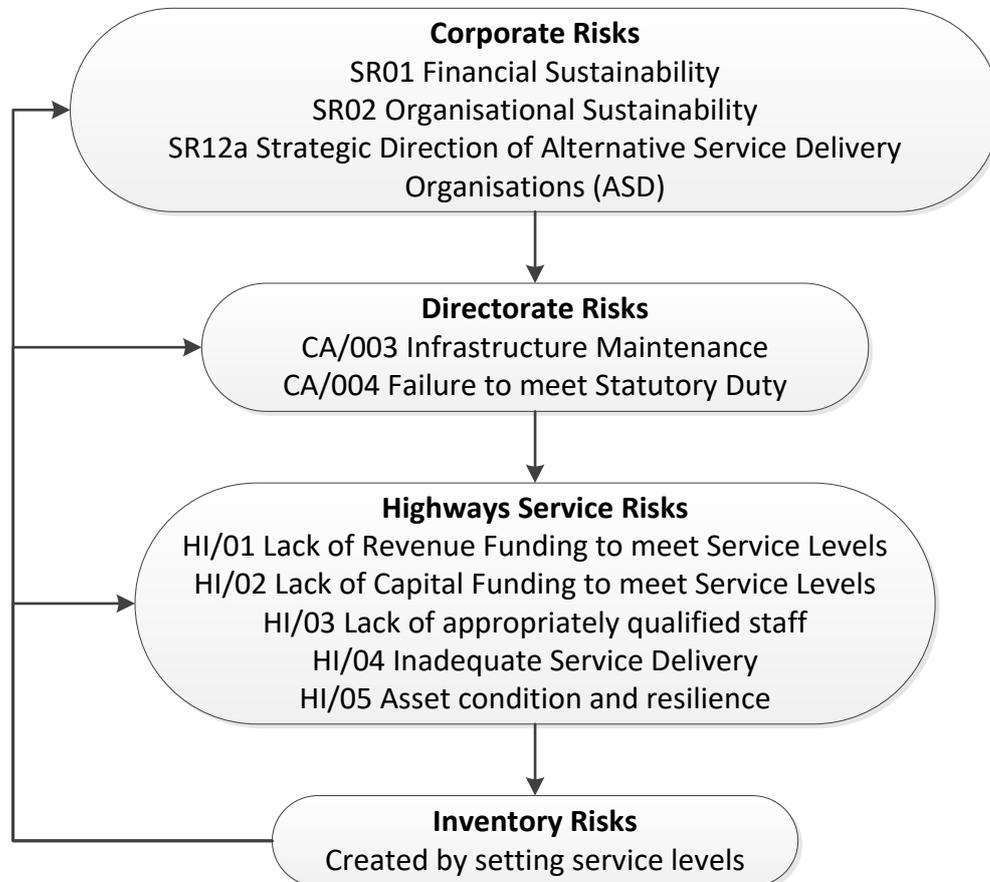
The maintenance of a safe highway network is one of the primary duties placed on the Council as Highway Authority. This duty is set out in Section 41 of the Highways Act 1980. Guidance on the discharge of this duty has, for many years been available in a national Code of Practice (COP) – Well maintained Highways – initially published in 2005 and subsequently updated at regular intervals. In October 2016 a revised code of practice, Well Managed Highways, was published which reflected changes in the financial and service delivery context of local authorities since the publication of the previous code. This HMM specifically addresses the guidance and requirement contained in this revised code of practice and sets the overall context for the application of a risk-based methodology to the management of the highway.

In the current financial climate appropriate management of risk both in assessing the implications of investment decisions for asset management purposes and also in determining appropriate responses to highway deficiencies is a primary consideration. Critically, it must be noted that lack of financial resources is not an adequate defence under Section 58 of the 1980 act – special defence in action against a highway authority - it is therefore crucially important that all those involved in highway maintenance, including Cornwall Council members, their portfolio holder and senior management have a clear understanding of their powers and duties and the implications and the procedures used to manage and mitigate risk.

There is also a need to understand the risks and impacts to the network in setting, or changing, the levels of service for each inventory set. These inventory risks feed directly into the Transportation and Infrastructure risk register, the Economic Growth and Development risk register and ultimately the Council's corporate risk register. The flow chart within this section (Fig.2) shows the links between the risk registers and references. Even in the absence of specific duties and powers, authorities have a general duty of care to users and the community to maintain the highway in a condition fit for its purpose. This principle should be applied to all decisions affecting highway maintenance works.

The purpose of this highway maintenance plan is to set out the broad context for the delivery of an appropriate highway maintenance regime for Cornwall Council's network which takes account of its statutory duties, service aspirations and reflects as appropriate the availability of resources at its disposal.

Figure 2



1.1 Principles and objectives of highway maintenance

Highway maintenance strategy should be based on a systematic logical approach taking note of legislation, guidance and local context. It is a key component of a more broadly-based asset management approach which is set out in the Economic Growth and Development's Infrastructure Asset Management Strategy.

Maintenance strategy should be aimed at optimising the maintenance contribution to the service provided by the infrastructure. The principles of highway maintenance strategy should therefore be;

- to deliver the statutory obligations of the authority;
- to be responsive to the needs of users' and the community;
- to contribute to effective asset management and maintain the asset value;
- to support effective delivery of the statutory network management duty;
- to support and add value to local transport objectives; and
- to support and add value to wider corporate policy objectives.

These principles are underpinned by the following core service levels:

Figure 3



These overall levels of service are in effect a hierarchy travelling from the mandatory (safety) through enhancing the network (serviceability) and long-term effectiveness (sustainability) to the aspiration of delivering a high-quality service which meets customer demands.

The customer service objective applies to the service as a whole and users may not be able to distinguish between maintenance, network management and improvement works.

These levels of service and objectives together with risk management strategy, needs based budgeting and competitive service delivery; provide the basis for an effective highway maintenance strategy.

1.2 Components of a highway maintenance strategy

The foundations on which this Highway Maintenance Plan has been developed are:

- A detailed inventory of relevant components of the asset
- A defined hierarchy for all elements of the network
- A robust framework of levels of service linked to the core objectives of the Code of Practice
- A robust framework of policies and objectives for the service

1.3 Network inventory

A detailed highway inventory is an essential prerequisite of establishing a cost effective and adequate maintenance regime and is the starting point for valuation of the asset which is to be used for the Whole Government Accounts (WGA).

The inventory is the foundation on which asset management is built and when analysed in combination with other data, for example, condition, road casualties and traffic flows, it provides crucial decision supporting information.

The inventory held for highways assets is generally good with all the major asset types recorded including the highway network, structures, lighting, ancillary items such as signs and historic items such as milestones and finger posts.

The nature and extent of highway drainage infrastructure including gullies and the location of highway piped drainage systems is continuing to be developed as and when new inventory is being added or replaced.

1.3 Network inventory	
Inventory Set	Inventory Items
Carriageways	Carriageway Central Reserve Central Island Lay-by Parking Bays Speed Humps Roundabout Kerbs Channels
Drainage	Gully Weir Catch-pit / Interceptor Manhole Filter Drain Ditch Grip Piped Grip Piped Drainage Small Culvert Bolthole Outlet / Headwall Soakaway
Footways & Cycleways	Footway Cycleway
Structures	Retaining Walls Bridges including larger culverts Gantries
Verges etc	Verge Embankment and Cutting Trees Hedges
Fences, Barriers & Bus Stops	Vehicle Restraint System Barriers, Fences and Walls Pedestrian Guardrail Bus Shelters Bus stop posts
Traffic Signs	Sign (non-illuminated) Signs and Bollards (illuminated) Hazard Post Blockwork Chevrons Finger Posts Milestones Boundary Stones, Crosses etc.
Road Markings	Transverse and Special Marks Longitudinal Road Markings Hatched Road Markings Dragons Teeth Studs
Traffic Signals and Pedestrian Crossings	Traffic Signals Pedestrian Crossing
Street Lighting	Street Light
Level Crossing	Level Crossing
Fords	Ford
Cattle Grids	Cattle Grid
Grit Bins	Grit / Salt Bin
Utilities	Utility Covers, Frames & Boxes

1.4 Network hierarchy

The concept of a road maintenance hierarchy is the foundation of a coherent, consistent and auditable maintenance strategy. This hierarchy should reflect the needs, priorities and actual use of each road in the network and will be used as the main tool in determining policy priorities, maintenance standards, targets and performance. It is also crucial to asset management in establishing levels of service and for network management.

The Council has a process for developing its hierarchy for carriageways, footways and cycleways which has initially been based upon traffic flows for roads and defined priorities for footways and cycleways. In addition, a further assessment has been undertaken to consider the type of road, the role of the route in a local context and a consideration of functional factors that may influence how the road is managed. The current hierarchy is detailed in the following tables. This hierarchy is reviewed on a network level when changes of use are identified at a local level.

1.4.1 Carriageway hierarchy

1.4.1 Carriageway hierarchy		
Carriageway Maintenance	Hierarchy Description	Type of Road / General Description
1	Motorway	N/A
2a	Strategic Route	Heavily trafficked, classified 'A' roads between primary destinations
2b	Strategic Route	All other Classified 'A' roads
3a	Main Distributor	Busy classified 'B' & 'C' and unclassified 'U' roads, providing rural routes between strategic networks together with heavily trafficked urban roads
3b	Secondary Distributor	As above but with lighter traffic conditions together with urban 'U' roads with >100 bus journeys per day
4a	Local Roads	'C' and 'U' roads linking between the Main and Secondary Distributor Networks
		In urban areas they are interconnecting roads between residential areas or industrial estates
		In Rural areas they are interconnecting and access routes serving villages, schools, local industry together with important passenger transport and heavy goods vehicle access routes
4b	Local Access Roads	Local roads serving limited numbers of properties
		In urban areas they are the residential roads and smaller industrial estates
		In rural areas they are the access roads serving smaller villages and hamlets
5a	Minor Access Roads	Minor roads providing access to properties, or roads with limited carriageway width generally less than 3m
		In urban areas they will generally be the minor side roads and alleyways
		In rural areas they are the very lightly trafficked access roads to houses and farms
5b	Lanes	Minor lanes principally serving agricultural needs in rural areas
		Generally, 'No Through Roads' or lanes with carriageway widths less than 2.5m
6a	Tracks	Tracks that are unsuitable for vehicular traffic but may be being used as a footpath, part of a cycle trail, used by horse riders or is a designated PROW.
6b	Abandoned Tracks	Abandoned due to regression or agricultural use

1.4.2 Footway hierarchy

1.4.2 Footway hierarchy		
Category No	Category Name	Description
1a	Prestige Walking Zone	N/A in Cornwall - Very busy areas of towns and cities with high public space and street-scene contribution.
1	Primary Walking Route	Busy urban shopping and business areas, and main pedestrian routes.
2	Secondary Walking Route	Medium usage routes through local areas feeding into primary routes, local shopping centres etc.
3	Link Footway	Linking local access footways through urban areas and busy rural footways.
4	Local Access Footway	Footways associated with low usage, short estate roads to the main routes and cul-de-sacs.

1.4.3 Cycleway hierarchy

1.4.3 Cycleway hierarchy	
Category	Description
A	Cycle lane forming part of the carriageway
B	Cycle track, not contiguous with the carriageway (generally surfaced)
C	Cycle trails, leisure routes through open spaces. These are not necessarily the responsibility of the highway authority but may be maintained by an authority under other powers or duties (generally not surfaced)

1.4.4 Resilient network

The Secretary of State for Transport commissioned a Transportation Resilience Review and in 2014, an outcome of this review recommended that authorities established a resilient network i.e. a network to which they give priority in order to maintain economic activity and access to key services during extreme weather. The Council has identified its resilient network as all parts of the network hierarchy 2a, 2b and 3a. This resilient network is used in combination with the carriageway hierarchy in the prioritisation of the treatment of relevant assets. It is also used in the Winter Service Plan.

1.4.5 Emergency Management

Emergencies on the highway network are dealt with by Cornwall Council's Resilience and Emergency Management Team and are contactable on 0300 1234 232 24 hours a day. Details can be found at <http://www.cornwall.gov.uk/community-and-living/cornwall-fire-and-rescue-service-homepage/about-us/what-we-do/resilience-and-emergency-management/>.

1.4.6 Abnormal Loads

Controlling the movement of abnormal loads is necessary for network management in order to promote safe use and prevent structural damage.

If you need to move loads which are classed as abnormal, i.e. greater than 44 tonnes in weight, greater than 30m in length or greater than 6.1m in width, then you must notify Cornwall Council, as the local highway authority, of the routes you intend to travel. Our consent is required before moving, so that the load or size of those vehicles does not exceed the load carrying capacity of bridges or retaining walls.

Our Abnormal Loads Officer can be contacted on 0300 1234 222. They will work with you and in close co-operation with the Police, to ensure that highway structures and the environment are protected.

Hauliers are required to notify by the Electronic Service Delivery for Abnormal Loads (ESDAL) System <https://www.gov.uk/register-with-esdal>.

1.5 Inspection, assessment and recording regime

The establishment of an effective regime of inspection, assessment and recording is the most crucial component of an effective highway maintenance strategy which incorporates network safety and serviceability. In addition, a robust inspection regime also forms part of an authority's defence against third party liability claims.

The inspection, assessment and recording regime should provide the basic information for addressing the core service levels of:

- Network safety
- Network serviceability
- Network sustainability

It will also provide the basic condition data for the development of capital maintenance programmes as part of the Asset Management Strategy. All elements of the inspection and assessment regime should be applied systematically and consistently. This is particularly important in the case of network safety, where information may be crucial in respect of legal proceedings. It is important to recognise, however, that all information recorded, even if not primarily intended for network safety purposes, may have consequential implications for safety and may therefore be relevant to legal proceedings. Equally important is the recognition that, following the introduction of the Freedom of Information Act 2000 and the Environmental Information Regulations 2004, all records are potentially available for public inspection and reference.

The Council has developed an inspection regime which complies with the requirements of the code of practice and this is detailed in section two of this document.

1.5.1 Information Management

The Council has a web site that is sometimes used to report specific information on Council policy and procedures or to provide information on systems or bids. It can be found here <https://www.cornwall.gov.uk/>.

1.6 Levels of service and investigatory levels

The core levels of service governing the Council's approach to management of the highway asset are:

- Network safety
- Network serviceability
- Network sustainability

Each element of the highway network will contribute differently to the objective of customer service and possibly within different timescales. For example, good surface condition or signing will have an immediate positive effect whilst the effect of good quality drainage will probably be imperceptible for most of the time. Generally, the level of customer satisfaction is more relevant when applied to the whole of the network and is therefore not specifically dealt with as a level of service within this section of the manual.

Every aspect of highway maintenance for each element of the network has the potential to contribute towards the core objectives of safety, serviceability and sustainability. For example, the contribution to the safety objective of the carriageway surface is affected by:

- actual condition of the surface
- response time for reacting to inspections and user concerns
- quality of management and service delivery
- effectiveness of the materials and treatments used

In addition to this each objective can be affected to a different extent by several different highway maintenance operations. For example:

- Network availability can be affected by winter maintenance operations, NRSWA regulatory activity, deficiency of drainage systems and by the planning of maintenance schemes in general;
- Network integrity can be assisted by consistent, joined up and effective temporary signing, by ensuring consistent standards of maintenance on cycle routes between segregated and non-segregated sections, and providing consistent accessibility standards, for example through the use of

dropped kerbs on key pedestrian routes especially those used by disabled people, older people, or those using prams;

- Environmental contributions can be made through verge management plans, reducing sign clutter, use of recycled products or the provision of noise-reducing surfacing; and
- Heritage contributions can be made through careful selection of materials and the preservation and enhancement of particular elements or features of the highway.

There are several types of maintenance that contribute to the core objectives:

1.6.1 Reactive maintenance

Reactive maintenance is undertaken in response to inspections, complaints or emergencies. The action taken may vary depending upon the nature of the defect.

- All assets - sign and making safe for safety purpose
- All assets - provide initial temporary repair for safety purposes
- All assets - provide permanent repair for safety purposes

1.6.2 Planned reactive maintenance

Planned reactive maintenance is predominately undertaken in response to certain types and levels of weather warning. A proactive inspection of specific drainage features is undertaken in response to a warning of a significant rain event. The Winter Service Plan sets out response procedures for snow and ice warnings. To comply with legislation planned reactive maintenance is also used to manage injurious weeds.

1.6.3 Routine maintenance

Routine maintenance is that maintenance which is carried out on a regular basis e.g. gully emptying. It also includes minor works which are carried out in response to user complaints and as a result of inspections and includes:

- Carriageways footways and cycleways – minor works and patching
- Drainage systems – cleansing and repair

- Embankments, cuttings, retaining features <1.4m – stability
- Landscaped areas and trees – management
- Verges – grass cutting
- Fences and barriers – tensioning and repair
- Traffic signs and bollards – cleansing and repair
- Road Markings- Renewal

1.6.4 Programmed maintenance

Programmed maintenance consists of works which form part of a capital programme and primarily consists of;

- Carriageways – minor works, resurfacing or reconstruction;
- Footways – minor works, resurfacing or reconstruction; and
- Cycleways - minor works, resurfacing or reconstruction.

1.7 Overall levels of service

The higher tier levels of service can be aggregated to give an overall indication of the levels of service within a particular category and on a particular highway sub-network as defined by the hierarchy. For example, the basic level of service that must be delivered is network safety; a slightly higher level of service will include the safety strand and add elements of serviceability; an improved level of service will deliver all aspects of safety and serviceability within the strand whilst the highest level of service will include sustainability in addition to the safety and serviceability aspects. This may be represented as follows:

1.7 Overall levels of service				
Levels of Service	Safety	Serviceability 1	Serviceability 2	Sustainability
1	P	P	P	P
2	P	P	P	O
3	P	P	O	O
4	P	O	O	O

1.8 Inventory sets and levels of service by environment

This plan addresses the operational levels of service relating to asset condition (safety, serviceability, sustainability) for the following grouping of highways inventory sets:

- Carriageways
- Drainage
- Footways & Cycleways
- Verges, landscaped areas, hedges and trees
- Embankments and cuttings including retaining structures under 1.4m in retained height
- Fences and barriers
- Traffic signs
- Road markings

Each element (inventory item) of the network could have different levels of service, a minimum one to satisfy requirements for safety and higher ones designed to meet local requirements for serviceability or sustainability. Details of the level of service, provision, typical works output, risks of setting the inventory at that service standards and the impact are shown for each inventory set within Section 3.

The levels of service for structures and lighting are contained within their own maintenance/management manuals appended to this document.

Rural Levels of Service								
Hierarchy	Maintenance Activity							
	Carriageways	Drainage Gullies	Drainage Other	Footways & Cycleways	Verges etc.	Fences & Barriers	Traffic Signs	Road Markings
2a	Green	Yellow	Yellow	Yellow	Yellow	Yellow	Red	Red
2b	Green	Yellow	Yellow	Yellow	Yellow	Yellow	Red	Red
3a	Green	Yellow	Yellow	Yellow	Yellow	Yellow	Red	Red
3b	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Red	Red
4a	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Red	Red
4b	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Red	Red
5a	Red	Red	Red	Red	Red	Red	Red	Red
5b	Red	Red	Red	Red	Red	Red	Red	Red
6a	Red	Red	Red	Red	Red	Red	Red	Red
6b	Red	Red	Red	Red	Red	Red	Red	Red

Key

- Service Level 1 - includes Safety, Serviceability and Sustainability
- Service Level 2 - includes Safety, and intermediate level of Serviceability (no Sustainability)
- Service Level 3 - includes Safety and minimal level of Serviceability (no Sustainability and severely reduced level of Serviceability)
- Service Level 4 - includes Safety (no Serviceability and Sustainability) - This is the minimum legal level

Urban Levels of Service								
Hierarchy	Maintenance Activity							
	Carriageways	Drainage Gullies	Drainage Other	Footways & Cycleways	Verges etc.	Fences & Barriers	Traffic Signs	Road Markings
2a	Green	Yellow	Yellow	Yellow	Yellow	Yellow	Red	Red
2b	Green	Yellow	Yellow	Yellow	Yellow	Yellow	Red	Red
3a	Green	Yellow	Yellow	Yellow	Yellow	Yellow	Red	Red
3b	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Red	Red
4a	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Red	Red
4b	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Red	Red
5a	Red	Red	Red	Red	Red	Red	Red	Red
5b	Red	Red	Red	Red	Red	Red	Red	Red
6a	N/a							
6b	N/a							

Key

-  Service Level 1 - includes Safety, Serviceability and Sustainability
-  Service Level 2 - includes Safety, and intermediate level of Serviceability (no Sustainability)
-  Service Level 3 - includes Safety and minimal level of Serviceability (no Sustainability and severely reduced level of serviceability)
-  Service Level 4 - includes Safety (no Serviceability and Sustainability) - This is the minimum legal level

The COP also recommends that operational standards should be set for inspection frequency and the nature and timing of responses. These standards are contained within Section 2 of this document and have been based on previous experience tested against an analysis of defects and claims experienced on the live highway network.

1.9 Maintenance options

As part of the wider asset management strategy it is recognised that each element of the highway asset will have a variety of lifecycle options taking the asset through from creation to disposal. Furthermore, within the lifecycle of the asset there are also a variety of treatment options which will provide for short, medium and long-term maintenance of the asset. These treatment options will form an integral part of the process for identifying and prioritising treatments as part of the asset management process. The treatment options chosen will have an impact on both achieving the core service levels of safety, serviceability and sustainability and maintaining or improving the asset value.

2.0 Highway inspection & condition assessment

The inspection types and condition assessment methods featured in this section of the HMM are based around the original recommendations made in 'Well Maintained Highways 2005'. However, in taking note of the revised 2016 COP both the inspection types and condition assessment methods have been amended to reflect local circumstances and have been based on previous experience tested against an analysis of defects and claims experienced on the live highway network.

2.1 Urban / rural environment

The definition for urban areas in England is defined by the Department for Communities and Local Government (DCLG) as:

- Land with an irreversibly urban use and independent of administrative area boundaries
- Settlements with a minimum population of 1,000 and minimum land area of 20 hectares*

For consistency however in national statistical reporting, the DCLG recommend that a cut off population of 10,000 is used.

For Cornwall the urban / rural environment definition used for inspections and surveys has been defined as follows:

- Urban roads – Major and minor roads within a built environment with settlement populations greater than 1,000.
- Rural roads – All other roads within the County boundary area.

*Due to insufficient population data there may be circumstances where local judgments have to be made by the Transportation and Infrastructure team.

2.2 Inspections, assessment and monitoring

The establishment of an effective regime of inspection, assessment and monitoring is the most crucial component of an effective highway maintenance strategy, incorporating network safety, serviceability and sustainability. The following sections define the frequency of inspections, items to be recorded and responses dependent upon risk assessment.

Inspections are particularly important in the case of network safety where information may be crucial in respect of legal actions. A robust inspection regime therefore forms a central part of an authority's defence against claims and legal proceedings.

2.2.1 Safety inspections

These inspections are undertaken to meet the key objective of network safety. They are critical to the authority's strategy for managing liabilities and risks. They are used to identify defects likely to be hazardous or cause serious inconvenience to highway users or the communities served; including defects requiring urgent attention. The actual risk of danger will be assessed on site and each defect allocated an appropriate defect category. These defects will normally initiate reactive maintenance.

The safety inspection is carried out in a manner that ensures that the highway can be adequately assessed and may include a combination of walked and driven inspections. The inspection methodology adopted will ensure risk to the inspector is minimised.

2.2.2 Service inspections

The service inspection is intended to meet the key objective of network serviceability and they form a significant input to asset management and programmes of work. Service inspections comprise of a more detailed inspection, tailored to identify issues that may have an effect on the reliability, quality, comfort and ease of use of the road network and will normally initiate scheduled routine maintenance.

The service inspection should be carried out in a manner that ensures that the highway can be adequately assessed and may include a combination of walked and driven inspections. In addition, the procedures adopted will ensure risk to the inspector is minimised.

2.2.3 Specialist inspections

Specialist inspections comprise of more detailed specific inspections of particular highway elements, with regard to the key objectives of network serviceability and sustainability and will be used to identify programmed maintenance requirements.

It will often be necessary for inspectors to have specialist knowledge in a particular field and may require the use of specialist equipment.

Specialist inspection procedures have been developed and are included within Appendix C. It should however be noted that the availability of budgets will dictate the level of specialist inspections undertaken.

2.3.4 Reactive inspections

Reactive inspections are carried out as a result of third party defect reports. Such reports may be received through calls, in writing, via social media sites or via a web form submission.

Reactive inspections to verify a defect arising from these reports will normally be carried out before the end of the next working day on the 2a, 2b and 3a hierarchy network; defects on all other network hierarchy will normally be inspected and verified within seven days.

Defects verified through this reactive inspection will be dealt with as if the defect was found as part of a scheduled inspection.

2.3 Condition assessment

Condition surveys are primarily intended to identify deficiencies in the highway infrastructure which, if left untreated, are likely to adversely affect its long-term performance and serviceability.

They provide information on the nature and severity of deterioration which is used to determine appropriate maintenance treatments in line with asset management objectives and inform asset valuations for the Whole of Government Accounts (WGA).

Specialist equipment and surveys will be utilised to measure the condition of the carriageways, footways and cycleways, in order to provide assessments of overall performance, maintenance requirements and relevant data for national performance indicators.

2.4 Risk assessment

Whenever a safety, service or specialist inspection is undertaken the basic principles of risk assessment are carried out, not only for the inspection process but also for the assessment of any observed defects and for any proposed remedies.

Safe working procedures are available for walked and driven inspections where potential common hazards have been identified, however inspectors are expected to ensure any unforeseen events are assessed to ensure safe working practices are maintained.

With regards to responses to individual hazardous defects a judgement can be made by evaluating them in terms of their significance, the likely impact should an incident occur and the probability of it actually happening.

Each inspection could be critical to the safety of users of the highway and may also potentially be subject to legal scrutiny in the event of an accident occurring at or near the site. Complete and accurate records are therefore essential. It will be necessary therefore, for those undertaking inspections, to judge whether any individual observed defect / hazard should be recorded as urgent defect and the consequent urgent action initiated.

Any items identified with a defect level which corresponds to or is in excess of the suggested defect investigatory levels in Appendix A, should be assessed taking into consideration the degree of deficiency, local traffic conditions and the location within the highway network.

Further additional assessments may also need to be undertaken, with respect to any remedial actions or required works, to enable safe working procedures to be adopted.

2.5 Type and frequency of safety inspections

Safety inspections are undertaken to meet the key objective of network safety. They are used to identify defects likely to be hazardous or cause serious inconvenience to users of the highway network or the communities served; details on defect categories and response times are given in Section 2.12.

The inspection regime takes account of potential risks to all road users, and in particular those most vulnerable. To achieve this, inspection types and frequencies have been based on;

- the maintenance hierarchy which takes into consideration the needs, priorities and actual use of each part of the network; and
- a risk-based analysis of highway related insurance claims.

The regime will be subject to reviews to ensure changes in network characteristics and use are reflected in the inspection regime.

The following tables indicate the type of safety inspection required (walked or driven) and the designated inspection frequency. Driven safety inspections should be undertaken from a slow-moving vehicle, taking into consideration other users of the highway and will require a driver in addition to the Inspector.

2.5.1 Carriageway safety inspection

2.5.1 Carriageway safety inspection					
Carriageway Maintenance Hierarchy	Description	Urban			Rural
		Principal Towns pop > 10,000	Towns pop > 3,000 pop < 10,000	Villages pop > 1,000 pop < 3,000	
2a	Strategic Route	Monthly walked inspection*	2 monthly walked inspection*	4 monthly walked inspection*	monthly driven inspection
2b	Strategic Route				
3a	Main Distributor				
3b	Secondary Distributor	4 monthly walked inspection	4 monthly walked inspection	Not applicable	6 monthly driven inspection
4a	Local Roads				
4b	Local Access Roads				
5a	Minor Access Roads	Not applicable	Not applicable	Not applicable	Annual inspection
5b	Lanes				Not applicable
6a	Tracks	Not applicable	Not applicable	Not applicable	Not applicable
6b	Abandoned Tracks				

* Note: In addition to the urban walked inspections, a monthly driven safety inspection is undertaken of all Maintenance Hierarchy 2a, 2b & 3a roads.

2.5.2 Footway safety inspection

2.5.2 Footway safety inspection					
Footway Maintenance Hierarchy	Description	Urban			Rural
		Principal Towns pop > 10,000	Towns pop > 3,000 pop < 10,000	Villages pop > 1,000 pop < 3,000	
1a	Prestige walking zone	Not applicable	Not applicable	Not applicable	Not applicable
1	Primary walking route	Monthly walked inspections	2 monthly walked inspections	4 monthly walked inspections	Not applicable
2	Secondary walking route				
3	Link footway	4 monthly walked inspection	4 monthly walked inspection	4 monthly walked inspection	6 monthly walked inspection
4	Local access footway				

2.5.3 Cycleway safety inspections

2.5.3 Cycleway safety inspections					
Cycleway Maintenance Hierarchy	Description	Urban			Rural
		Principal Towns pop > 10,000	Towns pop > 3,000 pop < 10,000	Villages pop > 1,000 pop < 3,000	
A	Cycle lane forming part of the carriageway	Walked inspection with adjoining carriageway	Walked/driven inspection with adjoining carriageway	Walked/driven inspection with adjoining carriageway	Driven inspection with adjoining carriageway
B	Cycle track remote from carriageway (surfaced)	4 monthly walked inspection	4 monthly walked inspection	4 monthly walked inspection	6 monthly walked inspection
C	Cycle trails remote from carriageway (un-surfaced)	The responsibility of the Environment Service			

2.5.4 Safety inspection tolerance

All safety inspections are based upon categories within the network hierarchy and they should be wherever possible, evenly spaced throughout the year. It is accepted however that some inspections will not be achievable due to unforeseen circumstances or extreme weather conditions. If this should occur, details of the event should be made against the appropriate inspection record.

2.5.4 Safety inspection tolerance		
Inspection Type	Inspection Frequency	Tolerance
Safety	Monthly	+/- 6 days
	2 Monthly	+/- 6 days
	4 Monthly	+/- 15 days
	6 Monthly	+/- 15 days
	Annual	+/- 30 days

2.6 Type and frequency of service inspections

Service Inspections are primarily intended to identify issues that may have an effect on the reliability, quality, comfort and ease of use of the road network.

They form an integral part of the asset management regime by identifying and prioritising programmes of routine work on the highway network; details of service inspection assessment by treatment type are provided in Appendix B. Any safety defects encountered during a service inspection will be dealt with in accordance with the safety inspection procedures.

Inspection types and frequencies have been based on the maintenance hierarchy which takes into consideration the needs, priorities and actual use of each part of the network. This will also be subject to reviews to ensure changes in network characteristics and use are reflected in the inspection regime.

The following tables are based on the maintenance hierarchy and indicate the type of service inspection required (walked or driven) and the designated inspection frequency.

Driven service inspections should be undertaken from a slow-moving vehicle, taking into consideration other users of the highway, and will require a driver in addition to the Inspector.

2.6.1 Carriageway service inspection

2.6.1 Carriageway service inspection					
Carriageway Maintenance Hierarchy	Description	Urban			Rural
		Principal Towns pop > 10,000	Towns pop > 3,000 pop < 10,000	Villages pop > 1,000 pop < 3,000	
2a	Strategic Route	Annual driven inspection walked where appropriate			Annual driven inspection
2b	Strategic Route				
3a	Main Distributor				
3b	Secondary Distributor				
4a	Local Roads				
4b	Local Access Roads				
5a	Minor Access Roads				
5b	Lanes				
6a	Tracks	Not applicable	Not applicable	Not applicable	Annual inspection
6b	Abandoned Tracks				Not applicable

2.6.2 Footway service inspection

2.6.2 Footway service inspection					
Footway Maintenance Hierarchy	Description	Urban			Rural
		Principal Towns pop > 10,000	Towns pop > 3,000 pop < 10,000	Villages pop > 1,000 pop < 3,000	
1a	Prestige walking zone	Not applicable	Not applicable	Not applicable	Not applicable
1	Primary walking route				
2	Secondary walking route	Annual walked inspection or with adjoining carriageway			Not applicable
3	Link footway				
4	Local access footway				

2.6.3 Cycleway service inspection

2.6.3 Cycleway service inspection					
Cycleway Maintenance Hierarchy	Description	Urban			Rural
		Principal Towns pop > 10,000	Towns pop > 3,000 pop < 10,000	Villages pop > 1,000 pop < 3,000	
A	Cycle lane forming part of the carriageway	Driven with adjoining carriageway			
B	Cycle track remote from carriageway (surfaced)	Annual walked inspection			
C	Cycle trails remote from carriageway (un-surfaced)	The responsibility of the Environment Service			

2.6.4 Service inspection tolerance

All service inspections are based upon categories within the network hierarchy and should be evenly spaced throughout the year. It is accepted however that some inspections will not be achievable due to unforeseen circumstances or extreme weather conditions. If this should occur, details of the event should be made against the appropriate inspection record.

2.6.4 Service inspection tolerance		
Inspection	Inspection Frequency	Tolerance
Service	6 monthly	+/- 15 days
	Annual	+/- 30 days

2.7 Specialist inspections

Specialist inspections encompass those service inspections that require more detail relating to particular highway elements. They will require a risk-based approach to be adopted to identify issues critical to the network performance and with regard to the key objectives of network serviceability and sustainability. It will often be necessary for inspectors to have specialist knowledge in a particular field and may require the use of specialist equipment. Specialist inspections will be considered in the following areas: -

- Highway drainage
- Embankments and cuttings
- Landscaped areas and trees
- Fences and barriers
- Traffic signs and bollards
- Road markings and studs
- Traffic signals and pedestrian crossings

- Street lighting*
- Bridges and structures*

*contained within specific maintenance/management manuals appended.

2.7.1 Frequency of specialist inspection

Details of all the specialist inspections are provided in Appendix C, however the following table indicates which of the specialist inspections will be achievable dependent upon finances and resources.

2.7.2 Inventory items requiring specialist inspection

2.7.2 Inventory items requiring specialist inspection				
Section	Element of Network	Inventory Items to be Inspected	Section reference	Achievable within current budget constraints
Highway Drainage	Culverts (span < 900mm)	Small Culvert	C.1	No
	Grips, Ditches and Boltholes	Ditch	C.2	No
		Grip		
		Bolthole		
	SUDS Piped Drainage, Soakaways and Associated Systems	Piped Grip	C.3	No
		Piped Drainage		
		Filter Drain		
		Soakaway		
Manholes				
Gullies	Catchpits / interceptors	C.4	Urban 2a – 5a Rural 2a – 4a only	
	Gully			
	Weir			
	Oil Interceptors	Oil Interceptor	C.5	Routine maintenance only
Embankment and cuttings Landscaped Areas and Trees	Embankments and Cuttings	Embankment	C.6	No
	> 2.5m in height	Cutting	C.7	Yes
	Trees (Urban)	Street Tree		
		Highway Tree		
	Trees (Rural)	Highway Tree		Yes
	Noxious and Invasive Weeds	Verge	C.8	Selected sites only
		Hedge		
Embankment				
Cutting				
Fences and Barriers	Vehicle Restraint System	Vehicle Restraint System	C.9	Height & structural integrity only
Traffic Signs and Bollards	Illuminated and Non Illuminated Signs and Bollards	Illuminated Sign	C.10	No
		Non Illuminated Sign		
		Bollard		
		Hazard Post		
Illuminated Traffic Signs and Bollards	Illuminated Signs and Bollards	Electrical components only	C.11	Yes
Road Marking and Studs	Road Markings	Pedestrian Crossing	C.12	No
		Transverse/Special Marks		
		Longitudinal Markings		
		Hatched Road Markings		
		Dragons Teeth		
	Mini Roundabout			
Road Studs	Road Studs	C.13	No	
Traffic Signals and Pedestrian Crossings	Traffic Signals and Pedestrian & cycle crossings	Traffic Signals Pedestrian Crossing	C.14	Yes
Street Lighting	Street Lighting	Lighting point	C.15	N/A
Bridges and Structures			C.16	N/A
Level crossings	Level crossing	Signs, road markings and studs associated with Level crossing	C.17	No
Ford	Ford	Carriageway and signs associated with Ford	C.18	No
Cattle grid	Cattle grid	Structural elements of cattle grid together with associated carriageway, signs and fencing	C.19	No
Bus Shelters	Bus Shelter	To be developed	C.20	No

2.7.3 Inspection tolerance

2.7.3 Inspection tolerance		
Inspection Type	Inspection Frequency	Tolerance
Specialist Inspections	3 monthly	+/- 15 days
	6 monthly	+/- 15 days
	Annual	+/- 30 days
	2 yearly	+/- 1 month
	3 yearly	+/- 6 months
	5 yearly	+/- 6 months
	6 yearly	+/- 6 months
	10 yearly	+/- 12 months

2.8 Inspection standards

The inspection regime is based on risk assessment and provides a practical and reasonable approach to potential hazards, it is important therefore that inspections and records are consistent across the network. To this end inspectors will be required to demonstrate competence, have experience in highway maintenance and to have received basic instruction on data collection prior to the commencement of inspection duties. For specialist inspections it will often be necessary for inspectors to have specialist knowledge in a particular field and may require the use of specialist equipment.

2.9 Inspection records

For both safety and service inspections it is necessary to record details of the inspection, irrespective of whether there are any defects or not. The information to be recorded includes:

- The inspection route
- Street / section within the route
- Date of inspection
- Name of inspector
- Weather conditions
- Road conditions

When a defect is found additional information to be recorded includes:

- More specific location details
- Type and nature of defect
- Date and time located
- Action / remedial work

This information will be stored within a database in a systematic format either by the use of data capture devices (DCD's) or by standard forms.

2.10 Inventory set items to be inspected during safety and service inspections

Safety and service inspections will generally only include the extent of the inventory item that is visible from the carriageway or verge. With regard to utilities, these are generally under the control and the responsibility of statutory undertakers. However, if during a safety inspection a defect is identified that does not comply with the local authority's policy for network safety, it will be recorded and Notice served under Section 81 of NRSWA (1991) requiring remedial action to be undertaken.

2.10 Inventory set items to be inspected during safety and service inspections	
Inventory Set	Inventory Items
Carriageways	Carriageway Central Reserve Central Island Lay-by Parking Bays Speed Humps Roundabout Kerbs Channels
Drainage	Gully Weir Catchpit / Interceptor Manhole Filter Drain Ditch Grip Piped Grip Piped Drainage Small Culvert Bolthole Outlet / Headwall Soakaway
Footways & Cycleways	Footway Cycleway
Verges etc	Verge Embankment and Cutting Trees Hedges
Fences, Barriers & Bus Stops	Vehicle Restraint System Barriers, Fences and Walls Pedestrian Guardrail Bus Shelters Bus stop posts
Traffic Signs	Sign (non-illuminated) Signs and Bollards (illuminated) Hazard Post Blockwork Chevrons Finger Posts Milestones Boundary Stones, Crosses etc.
Road Markings	Transverse and Special Marks Longitudinal Road Markings Hatched Road Markings Dragons Teeth Studs
Traffic Signals and Pedestrian Crossings	Traffic Signals Pedestrian Crossing
Street Lighting	Street Light
Level Crossing	Level Crossing
Fords	Ford
Cattle Grids	Cattle Grid
Grit Bins	Grit / Salt Bin
Utilities	Utility Covers, Frames & Boxes

2.11 Defects

Relevant defects and treatments are listed in the Appendix A. Dimensions are not intended to be regarded as prescriptive nor the list of defects and defect categories exhaustive or mandatory. Each defect must be assessed individually and assigned an appropriate defect category. The defect category will be dependent upon its significance, the likely effect should an incident occur and the probability of it actually happening. Treatment selection should be based on engineering principles and serve to maintain the highway in a safe and serviceable condition in relation to its use.

2.12 Defect categories and response times

Having identified a defect, the inspector will be required to use their judgement in risk assessing when remedial action will be necessary and to make recommendations on what work is required and record their decisions. The categories below are to be used to denote the level of condition and the level of response to be provided for each defect. These will fall into two main categories. When temporary signing or guarding is employed to make safe, further remedial works should be undertaken to enable the removal of the signing and guarding within 28 days, unless there are exceptional circumstances. For example, should the inspector determine that a section of highway has numerous defects constituting major deterioration for a considerable distance they should sign the carriageway and record their actions with one defect rather than to note each individual defect of a certain type. It will then be up to the highways client via a nomination to either add the scheme to a suitable short or long programme of works or to permanently sign the section of highway.

2.12 Defect categories and response times			
Description		Defect Category	Response Time
Category 1 defects that require prompt attention because they represent an immediate or imminent hazard with a corresponding high level of probability that an incident may occur and with a consequential high level of impact should it actually happen.	Urgent	Cat 1 (2a, 2b & 3a)	make safe within 48 hours
		Cat 1 (urban)	make safe within 48 hours
		Cat 1 (rural)	make safe within 72 hours
Category 2 defects which have safety implications less significant than a Category 1, or have an effect on the reliability, quality, comfort and ease of use of the road network.	Essential	Cat 2.0	make safe or repair within 7 days
		Cat 2.1	make safe or repair within 28 days
Although noted as defects for information purposes these are desirable works to the network and are not required to be rectified within a specific time period, but will normally be placed on a programme of future works, for completion depending on availability of finance and resources (except trees which are managed in accordance with the Tree Risk Management Framework).	Desirable	Cat 2.2 (2.2a)	add to programmes of work (professional assessment within 28 days and or make safe within 180 days)

2.13 Condition assessment

The purpose of condition assessment is to address the key objective of network sustainability and to ensure that value for money is achieved when undertaking structural repairs. By following asset management principles and providing information on the nature and severity of the condition, the timing and nature of appropriate treatments can be determined. Data from these surveys are also used in the production of National Performance Indicators and repeatable condition surveys allow for analysis of trends within the network.

There are a number of different types of survey, each providing information from a differing perspective, and which in combination can provide a comprehensive picture of the condition of the asset.

2.14 Carriage and footway Condition survey type and procedures

Condition surveys involve a diverse range of surveying and investigatory techniques including:

<p>SCANNER and MRM</p>	<p>Surface Condition Assessment of the National Network of Roads (SCANNeR) and the Multi-functional Road Monitor (MRM) are traffic speed condition surveys. The vehicles record longitudinal and transverse profile, rut depth, texture depth, gradient, crossfall and radius of curvature. In addition, the SCANNER also records the extent of surface cracking. The data is used in the calculation of the Best Value Performance Indicator PI130-01 and PI130-02. This data is a prime factor in determining maintenance requirements on the County road network.</p> <p>Detailed guidance on the survey procedures and interpretation of the results is provided in the DfT specification for SCANNER surveys for local roads Volume 4 & 5, 2011.</p>
<p>Deflectograph</p>	<p>A structural survey that measures the deflection of the road surface under a load. The data is no longer used as a national PI for the Principal road network but can provide supplementary data for specific schemes requiring structural maintenance. With additional information about the road construction and traffic loading, the data can be used to determine residual life, design overlays and future maintenance requirements. Detailed guidance on procedures and the interpretation of results is provided in the Design Manual for Roads and Bridges (DMRB) Volume 7 HD 29/08.</p>
<p>SCRIM</p>	<p>Sideway-force Coefficient Routine Investigation Machine (SCRIM) measures wet road skidding resistance, which can then be compared to investigatory levels. It should be noted that there is no value at which a surface passes from being safe to unsafe, however some sites due to geometric or other constraints often require higher levels of skidding resistance to reduce accident risks. This data is a prime factor in determining maintenance requirements on the main and strategic road networks (resilient network). Detailed guidance on the procedures and interpretation of results is provided in the Design Manual for Roads and Bridges (DMRB) Volume 7 HD 28/04. Together with the policy document for the management of skid resistance in Cornwall and the Procedure for the management of skid resistance of road surfaces on the county road network.</p>
<p>FNS</p>	<p>The Footway Network Survey (FNS) is a detailed visual inspection for footways and cycletracks which provides a comprehensive survey of the condition to support effective asset management. Detailed guidance on the survey procedures and interpretation of the results is provided in the UKPMS User Manual 2007, visual data collection for UKPMS, Volume 2 Chapter 9.</p>

2.15 Scope of highway condition surveys

The highway condition survey strategy should provide as a minimum the condition information necessary to determine and monitor relevant performance indicators and should also provide data to support detailed assessment and monitoring of the highway network.

2.16 Application of condition surveys by maintenance hierarchy

2.16.1 Application of condition surveys by maintenance hierarchy							
Carriageway Maintenance Hierarchy	Description	Network Section Lengths Km.	Survey type				
			SCANNER	MRM (Uncl rds)	Deflectograph	SCRIM	FNS
2a	Strategic Route	225	✓		✓	✓	
2b	Strategic Route	336	✓			✓	
3a	Main Distributor	759	✓			✓	
3b	Secondary Distributor	915	✓				
4a	Local Roads	827	✓	✓			
4b	Local Access Roads	2411	✓	✓			
5a	Minor Access Roads	1359	✓	✓			
5b	Lanes	349	✓	✓			
6a	Tracks	125					
6b	Abandoned Tracks	9					

2.16.2 Application of condition surveys by maintenance hierarchy							
Footway Maintenance Hierarchy	Description	Footway length km.	Survey type				
			SCANNER	MRM (Uncl rds)	Deflectograph	SCRIM	FNS
Footway 1 and 2	Primary walking route	Approx.600					✓
	Secondary walking route						✓
Footway 3 and 4	Link footway	Approx. 1450					✓
	Local access footway						✓

2.17 Defect risk assessment

When undertaking inspections or responding to reported incidents a judgement has to be made with regards to categorising any observed defects and the consequential responses required. Every decision could be critical to the safety of users and may potentially be subject to legal scrutiny in the event of an accident occurring at or near the site. Consequently, it is important that inspectors are competent, provided with appropriate training and guidance in undertaking safety inspections, including guidance on items to be inspected and the application of risk management in determining the degree of deficiency and the nature of response in order to make safe and maintain the highway in a serviceable condition in relation to its use.

An example of a typical process is shown below and examples of parameters that may be taken into consideration 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 defect, if it could adversely affect non-highway features such as neighbouring properties
- The location of the defect relative to the positioning of users, especially vulnerable users, such as in traffic lanes or wheel tracks
- The nature of interaction with other defects
- Forecast weather conditions, especially potential for freezing of surface water

2.18 Risk evaluation

All defects identified through the inspection process may 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 A provides an initial register of highway defects and range of defect category available for a certain defect type. Local conditions and knowledge will need to be evaluated. The risk matrix in Table 2.22 may help the inspector to assess the risk factor.

2.19 Risk factor

The risk factor for a particular hazard is the product of the “Risk of Impact” and the “Risk Probability”, which can be measured in the range of 1 to 25. This

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

2.20 Risk impact

The impact of a risk occurring can be quantified on a scale 1 to 5

1	No impact
2	Minimal impact
3	Limited impact
4	Moderate impact
5	Catastrophic impact

Consideration can 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 increasing speeds.

2.21 Risk probability

The probability of a risk occurring can be quantified on a scale 1 to 5

1	Remote
2	Unlikely
3	Possible
4	Probable
5	Certain

Consideration can be given to the likelihood of users passing by or encountering the hazard, including location, maintenance hierarchy, vehicular and pedestrian flows.

2.22 Risk matrix table

Hazard is something with the potential to cause harm.

Risk is the likelihood or chance of that harm occurring.

Risk Factor = Impact x Probability

2.22 Risk matrix table						
Risk Matrix		Probability				
		1 Remote	2 Unlikely	3 Possible	4 Probable	5 Certain
Impact	1 No impact	1	2	3	4	5
	2 Minimal	2	4	6	8	10
	3 Limited	3	6	9	12	15
	4 Moderate	4	8	12	16	20
	5 Catastrophic	5	10	15	20	25

2.23 Defect risk management

Having identified a particular hazard, the defect category and response time can be allocated based on the assessment of risk in relation to the likely impact and probability of an incident occurring. Generally, a Risk Factor => 16 would be considered as a Category 1 defect.

The “Defect Category” items given in Appendix A have been provided as an indication of what may constitute a hazardous defect.

All defects therefore need to be carefully assessed and appropriate actions applied in order to make safe and maintain the highway network in a serviceable condition in relation to its use.

3.0 Service standards

Whilst levels of service for highway maintenance are primarily determined by Cornwall Council's statutory obligations as a Local Highway Authority to mitigate risk to those using their network, the promotion of core corporate objectives of accessibility, inclusion and sustainable economic growth are also key determining elements. The requirement to provide a safe, serviceable and sustainable network in relation to its use underpins service standards namely; what, when and how highway maintenance is delivered.

The following tables illustrate how the levels of service from the Maintenance Plan in Section 1 of this manual are used to structure service standards, set outputs and highlight the risks to the network, the service user and the Council in setting these levels of service across the various highways inventory sets. The risks in setting certain levels of service feed directly into the Highways and Infrastructure Service risk register and ultimately Cornwall Council's corporate risk register. Outline details of maintenance activities and treatment types used, together with current frequencies are shown in Appendix D.

3.1 Highway maintenance levels of service

3.1.1 Objectives, standards & impacts

	<i>Objective</i>	<i>Standard/Provision</i>	<i>Works Output</i>	<i>Risk</i>	<i>Impact</i>
Safety, serviceability and sustainability issues	<i>Comply with statutory obligations, provide network safety, serviceability and sustainability and inclusive of a fully integrated customer service.</i>	Fully comply with 2013 code of practice and adherence to notes for guidance. Asset management techniques applied to optimise whole life costs. Areas for targeted treatment identified, prioritised and long-term programmes created. Routine and Programmed maintenance undertaken.	Safety works carried out to meet statutory obligation. Longer term programmes of capital works carried out.	Larger works programme will lead to decrease in network availability whilst works undertaken. Environmental risk of increased material usage and carbon usage.	Highway network maintained to meet all the requirements of safety and serviceability together with addressing Sustainability issues
Safety related and serviceability issues	<i>Comply with statutory obligations; provide network safety and serviceability issues, based on asset management objectives.</i>	Areas for targeted treatment identified, prioritised and short-term programmes created. Routine and programmed maintenance undertaken.	Safety works carried out to meet statutory obligation. Short term programmes of capital works carried out.	Highways safety and wider network treatment leading to asset damage. Demand and programmed based works carried out a high to medium increase in cost. Some environmentally friendly treatments.	Increase in highway defects, with potential for third party insurance claims. Increase in maintenance backlog.
	<i>Comply with statutory obligations; provide network safety and serviceability issues.</i>	Areas for targeted treatment identified and prioritised. Routine and programmed maintenance undertaken.	Safety works carried out to meet statutory obligation. Restricted programmes of capital works carried out.	Highways safety issues repaired, and inconsistent treatment strategy will lead to asset damage. Demand and programmed based works carried out a high to medium cost. Less environmentally friendly treatments.	Increase in highway defects, with potential for increase of third party insurance claims. Increase in maintenance backlog.
Safety related issues only	<i>Comply with statutory obligations and to provide network safety.</i>	Provision of reactive maintenance in response to inspections, complaints or emergencies.	Safety works carried out to meet statutory obligation.	Only highway safety issues addressed will lead to asset damage and loss. Demand based works carried out at a higher cost. Non-environmentally friendly treatments.	Increase in highway defects, with increase of third party insurance claims. Increase in maintenance backlog.

3.1.2 Maintenance service standards for Carriageway surface

Inventory set	Carriageway surface			
	Standard/Provision	Works Output	Risk	Impact
Safety, serviceability and sustainability issues	Undertake safety and service inspections. Additional routine and programmed maintenance undertaken. Undertake condition surveys to inform Cipfa valuation and medium to long term programmes of work to improve asset performance.	Optimised carriageway treatment strategy that includes future needs and whole life costing.	Larger works programme will decrease network availability whilst works undertaken. Increase material and carbon usage. Asset loss and damage unlikely.	Preservation and enhancement of the infrastructure to meet the needs of current and future customers. Greater ability to mitigate third party claims.
Safety related and serviceability issues	Undertake safety and service inspections. Routine and programmed maintenance undertaken. Undertake condition surveys to inform Cipfa valuation and short-term programmes of work.	All safety related defects risk assessed and defects that represent a immediate, imminent or short term safety hazards treated. Short term programme of serviceability works carried out.	Definable increase to the highway maintenance backlog. Estimated Cipfa valuation. Possible asset loss and damage.	Potential for structural defects. Decline in structural residual life. Higher potential to mitigate third party claims. Programmed repairs leading to cost effective treatments.
	Undertake safety and service inspections. React to defects that represent an immediate or imminent safety hazard. Undertake limited condition surveys to inform a limited treatment programme.	Repair of carriageway defects that represent an immediate or imminent safety hazard. Limited routine and programmed maintenance.	Probable to possible asset loss or damage. Definable increase to carriageway maintenance backlog. Estimated Cipfa valuation. Ill-informed treatment strategy leading to inefficient treatments. Demand and programmed based works leading to a high to medium treatment cost.	Increase in structural defects. Decline in structural residual life. Potential increase of third party claims.
Safety related issues only	Undertake safety inspections. React to defects that represent an immediate safety hazard.	Repairs carried out or carriageway defects signed/guarded that represent an immediate safety hazard.	Certain to probable asset loss or damage. Undefined increase to carriageway maintenance backlog and Cipfa valuation. Demand based works leading to higher treatment cost.	Reduced network availability. Increase in structural defects e.g. potholes. Decline in structural residual life. Increase of third party claims.

3.1.3 Maintenance service standards for Drainage

Inventory set	Drainage			
	Standard/Provision	Works Output	Risk	Impact
Safety, serviceability and sustainability issues	Routine scheduled inspection network wide to ascertain condition and repair defects likely to impact on drainage performance. Safety and service inspections. Planned reactive on listed maintenance sites.	Extended prioritised treatment to systems on wider network to optimise future condition.	Larger works programme will decrease network availability whilst works undertaken. Increase material and carbon usage. Asset loss and damage unlikely.	Preservation and enhancement of the infrastructure to meet the needs of current and future customers. Greater ability to mitigate third party claims.
Safety related and serviceability issues	Routine scheduled inspection on the wider network to ascertain condition and repair defects likely to impact on drainage performance. Including planned reactive on listed sites. Priority given to resilient and higher-level network. Safety and service inspections.	Condition assessment enables structured prioritised work to systems on the wider network to be carried out.	Definable increase to maintenance backlog. Possible asset damage.	Potential for structural defects. Higher potential to mitigate third party claims. Programmed repairs leading to cost effective treatments.
	Undertake safety and service inspections Including planned reactive on listed sites. Reactive inspection and cleansing in response to flooding. Restricted routine scheduled inspection to ascertain condition and repair defects likely to impact on drainage performance. Priority given to resilient network.	Limited condition assessment enabling structured prioritised works on resilient network.	Probable to possible asset loss or damage. Definable increase to maintenance backlog. Ill-informed treatment strategy leading to inefficient treatments. Demand and programmed based works leading to a high to medium treatment cost.	Increase in structural defects. Potential increase of third party claims.
Safety related issues only	Undertake safety inspections. Reactive cleansing in response to flooding. React to drainage defects that represent an immediate safety hazard.	Drainage features inspected and cleansed during or after flooding event.	Certain to probable asset loss or damage. Undefinable increase to maintenance backlog. No routine or programmed maintenance. Demand based works leading to higher treatment cost.	Reduced network availability. Increase in structural defects e.g. collapsed pipe. Increase of third party claims.

3.1.4 Maintenance service standards for footways and cycleways

Inventory set	Footways & Cycle ways			
	Standard/Provision	Works Output	Risk	Impact
Safety, serviceability and sustainability issues	Undertake safety and service inspections. Additional routine and programmed maintenance undertaken. Undertake condition surveys to inform Cipfa valuation and medium to long term programmes of work to improve asset performance.	Optimised treatment strategy that includes future needs and whole life costing.	Larger works programme will decrease network availability whilst works undertaken. Increase material and carbon usage. Asset loss and damage unlikely.	Preservation and enhancement of the infrastructure to meet the needs of current and future customers. Greater ability to mitigate third party claims.
Safety related and serviceability issues	Undertake safety and service inspections. Routine and programmed maintenance undertaken. Undertake condition surveys to inform Cipfa valuation and short-term programmes of work.	Limited programme of repairs to defects prioritised and carried out as outcome of specialist inspection.	Definable increase to maintenance backlog. Estimated Cipfa valuation. Possible asset damage.	Potential for structural defects. Higher potential to mitigate third party claims. Programmed repairs leading to cost effective treatments.
	Undertake safety and service inspections. React to defects that represent an immediate or imminent safety hazard.	Repair of defects that represent an immediate or imminent safety hazard. Limited routine and programmed maintenance.	Probable to possible asset loss or damage. Definable increase to maintenance backlog. Estimated Cipfa valuation. Ill-informed treatment strategy leading to inefficient treatments. Demand and programmed based works leading to a high to medium treatment cost.	Increase in structural defects. Potential increase of third party claims.
Safety related issues only	Undertake safety inspections. React to defects that represent an immediate safety hazard.	Repairs carried out to defects signed/guarded that represent an immediate safety hazard.	Certain to probable asset loss or damage. Undefined increase to maintenance backlog and Cipfa valuation. Demand based works leading to higher treatment cost.	Reduced network availability. Increase in structural defects e.g. potholes. Increase of third party claims.

3.1.5 Maintenance service standards for verges, landscaped highway, hedges and trees

Inventory set	Verges, landscaped highway, hedges and trees			
	Standard/Provision	Works Output	Risk	Impact
Safety, serviceability and sustainability issues	Undertake safety, service and additional specialist inspections. React to defects that represent an immediate or imminent hazard. Condition led programmed maintenance.	Scheduled routine verge cutting for visibility, scheduled tree condition inspections and works carried out. Planned and reactive treatment of noxious weeds carried out. Routine verge cutting on cycle routes and for major events (e.g. Royal Cornwall Show). General weed and moss treatment.	Larger works programme will decrease network availability whilst works undertaken. Increase material and carbon usage.	Greater ability to mitigate third party claims. Improved habitat management.
Safety related and serviceability issues	Undertake safety, service and some specialist inspections. React to defects that represent an immediate or imminent hazard. Limited condition led programmed reactive maintenance.	Repair defects that represent an immediate or imminent safety hazard. Limited routine and programmed maintenance. Planned and reactive treatment of noxious weeds.	Definable increase to the highway maintenance backlog. Asset loss and damage unlikely.	Higher potential to mitigate third party claims. Programmed treatment leading to cost effective treatments. Increased consideration of habitats.
	Undertake safety and service inspections. React to defects that represent an immediate or imminent hazard.	Limited routine and programmed maintenance. Reactive treatment of noxious weeds carried out.	Probable to possible asset loss or damage. Definable increase to maintenance backlog. Demand and programmed based works leading to a high to medium treatment cost.	Potential of third party claims and restricted habitat consideration.
Safety related issues only	Undertake safety inspections. React to defects that represent an immediate safety hazard.	Treatment of defects that represent an immediate hazard.	Certain to probable asset loss, damage or prosecution (noxious weeds). Undefined increase to maintenance backlog. Demand based works leading to higher treatment cost.	Increase of third party claims. Little habitat consideration. Prosecution for non-treatment of noxious weeds.

3.1.6 Maintenance service standards for embankments and cuttings (including retaining structures <1.4m)

Inventory set	Embankments and cuttings (including retaining structures <1.4m)			
	Standard/Provision	Works Output	Risk	Impact
Safety, serviceability and sustainability issues	Undertake safety, service and specialist inspections. Additional routine and programmed maintenance undertaken. Undertake condition surveys and programmes of work to reduce backlog of maintenance. Improve asset performance.	Scheduled routine vegetation clearance affecting current and future stability. Defects that represent an immediate or imminent hazard treated. Programmed reactive maintenance to treat defects identified from specialist inspections.	Larger works programme will decrease network availability whilst works undertaken. Increase material and carbon usage.	Greater ability to mitigate third party claims. Improved habitat management.
Safety related and serviceability issues	Undertake safety, service and some specialist inspections. React to defects that represent an immediate and imminent hazard. Limited condition led programmed reactive maintenance.	Repair defects that represent an immediate or imminent safety hazard. Limited routine and programmed maintenance.	Definable increase to the highway maintenance backlog. Asset loss and damage unlikely.	Higher potential to mitigate third party claims. Programmed repairs leading to cost effective treatments. Increased consideration of habitats.
	Undertake safety and service inspections. React to defects that represent an immediate and imminent hazard.	Repair defects that represent an immediate or imminent safety hazard. Limited routine and programmed maintenance.	Probable to possible asset loss or damage. Definable increase to maintenance backlog. Demand and programmed based works leading to a high to medium treatment cost.	Potential of third party claims and restricted habitat consideration.
Safety related issues only	Undertake safety inspections. React to defects that represent an immediate safety hazard.	Repairs carried out or defects signed/guarded that represent an immediate safety hazard.	Certain to probable asset loss or damage. Undefinable increase to maintenance backlog. Demand based works leading to higher treatment cost.	Reduced network availability. Increase in structural failure. Increase of third party claims.

3.1.7 Maintenance service standards for Fences & barriers

Inventory set	Fences & barriers		Vehicle restraint systems, fences, boundary, pedestrian guardrail, bus shelters		
	Standard/Provision	Works Output	Risk	Impact	
Safety, serviceability and sustainability issues	Undertake safety, service and specialist inspections. Condition and specification led programmed maintenance/replacement or removal.	Defects repaired, whole barrier replacement or removal prioritised and carried out as outcome of specialist inspection (VRS only).	Larger works programme will decrease network availability whilst works undertaken. Increase material and carbon usage.	Greater ability to mitigate third party claims.	
Safety related and serviceability issues	Undertake safety, service and specialist inspections (VRS only). React to defects that represent an immediate and imminent hazard. Limited condition led programmed reactive maintenance.	Limited programme of repairs to defects including accident damage prioritised and carried out as outcome of specialist inspection (VRS only).	Definable increase to the highway maintenance backlog.	Higher potential to mitigate third party claims. Programmed repairs leading to cost effective treatments.	
	Undertake safety and service inspections. React to defects that represent an immediate and imminent hazard.	Repair defects that represent an immediate or imminent safety hazard. Limited routine and programmed maintenance.	Probable to possible asset loss or damage. Definable increase to maintenance backlog. Demand and programmed based works leading to a high to medium treatment cost.	Potential for third party claims.	
Safety related issues only	Undertake safety inspections. React to defects that represent an immediate safety hazard.	Repairs carried out or defects signed/guarded that represent an immediate safety hazard.	No condition assessment to assess whether fit for purpose. Undefined increase to maintenance backlog. Demand based costs leading to high treatment cost.	Increase of third party claims.	

3.1.8 Maintenance service standards for traffic signs

Inventory set	Traffic signs	Mandatory, regulatory, warning, information and hazard post, block work chevrons			
		Standard	Output	Risk	Impact
Safety, serviceability and sustainability issues		Undertake safety, service and further specialist inspections. Generate condition and specification led programme.	Treatment of defects, whole system replacement or removal prioritised and carried out as outcome of specialist inspection.	Larger works programme will decrease network availability whilst works undertaken. Increase material and carbon usage.	Greater ability to mitigate third party claims. Reduction in sign clutter.
		Undertake safety, service and some specialist inspections. React to defects that represent an immediate and imminent hazard. Generate a limited condition led programme.	Limited programme of repairs to defects prioritised and carried out as outcome of specialist inspection.	Definable increase to the highway maintenance backlog. Asset loss and damage unlikely.	Higher potential to mitigate third party claims. Programmed repairs leading to cost effective treatments.
Safety related and serviceability issues		Undertake safety and service inspections. React to defects that represent an immediate or imminent safety hazard.	Repair defects that represent an immediate or imminent safety hazard. Limited routine and programmed maintenance.	Definable increase to maintenance backlog. Demand and programmed based works leading to a high to medium treatment cost.	Potential for third party claims.
		Undertake safety inspections. React to defects that represent an immediate safety hazard.	Repairs carried out or defects signed/guarded that represent an immediate safety hazard.	Certain to probable asset loss or damage. No condition assessment to assess whether fit for purpose. Undefined increase to maintenance backlog. Demand based costs leading to higher treatment cost.	Increase of third party claims.

3.1.8 Maintenance service standards for road markings and studs

Inventory set	Road markings & studs			
	Standard	Works Output	Risk	Impact
Safety, serviceability and sustainability issues	Undertake safety, service and further specialist inspections. Generate condition and specification led programme.	Treatment of defects, whole system replacement or removal prioritised and carried out as outcome of specialist inspection.	Larger works programme will decrease network availability whilst works undertaken. Increase material and carbon usage.	Greater ability to mitigate third party claims.
Safety related and serviceability issues	Undertake safety, service and some specialist inspections. React to defects that represent an immediate and imminent hazard. Generate a limited condition led programme.	Limited programme of repairs to defects prioritised and carried out as outcome of specialist inspection.	Definable increase to the highway maintenance backlog.	Higher potential to mitigate third party claims. Programmed repairs leading to cost effective treatments.
	Undertake safety and service inspections. React to defects that represent an immediate or imminent safety hazard.	Repair defects that represent an immediate or imminent safety hazard. Limited routine and programmed maintenance.	Definable increase to maintenance backlog. Demand and programmed based works leading to a high to medium treatment cost.	Potential for third party claims.
Safety related issues only	Undertake safety inspections. React to defects that represent an immediate safety hazard.	Repairs carried out or defects signed/guarded that represent an immediate safety hazard.	No condition assessment to assess whether fit for purpose. Undefinable increase to maintenance backlog. Demand based costs leading to higher treatment cost.	Increase of third party claims.

Appendices

Appendix A

Safety Inspection Defect types

Carriageway Running Surface			
Defect Description	Notes	Measure	Units
Pothole	Pothole depth >40 mm	area	m ²
Major deterioration depth > 40 mm	Cracking, coarse crazing, severe fretting & loss of aggregate allowing serious permeability of water	area	m ²
Debris, excessive mud, oil/diesel spillage, dead animal, other obstruction	Scattered fragments, wreckage, spillage likely to cause a hazard	area	m ²
Flooding / Standing Water	Excess of water likely to cause a hazard or structural problems	area	m ²
Edge deterioration	Cracking, fretting and deformation of carriageway. Including loss of edge material. If >40mm depth of 2a, 2b & 3a then Cat 1	length	m
Surface irregularity	Local settlement or subsidence producing a difference in level. Loss of surfacing material causing a difference in level	length	m
Encroachment of verge, hedge or tree	Gradual inroad onto the carriageway footway or cycleway	length	m
Single crack	In surface that may allow serious permeability of water	length	m
Cracking around ironwork	Localised cracking, fine crazing and fretting allowing permeability of water	area	m ²
Defective Trench / Patch depth	Spalling and fretting around edge, difference in level. If > 40 mm Cat 1	area	m ²
Litter	Accumulation of paper, cans, bottles etc.	area	m ²
Vegetation Growth	Undergrowth, small bushes, and trees etc. causing an obstruction. Small vegetation growing in an inappropriate location	area	m ²
Minor deterioration	Localised cracking, fine crazing and fretting Loss of surface aggregate, applied chippings or fatting up of bituminous binder. Cracking, fretting, and deformation of edge of carriageway (Black top only)	area	m ²

Carriageway Central Reserve inc. roundabouts			
Defect Description	Notes	Measure	Units
Pothole	Pothole depth >40mm	area	m ²
Major deterioration depth > 40 mm	Cracking, coarse crazing, severe fretting & loss of aggregate allowing serious permeability of water	area	m ²
Long Grass causing safety problem	Normally addressed by swathe or visibility cut.	area	m ²
Defective Trench / Patch depth	Spalling and fretting around edge, difference in level. If > 40 mm Cat 1	area	m ²
Flooding / Standing Water	Excess of water likely to cause a hazard or structural problems	area	m ²
Weed growth	vegetation growing in a location that may cause hazard	area	m ²
Noxious and Invasive weeds *	Ragwort, Broad leaved Dock, Curled Dock, Creeping, Spear Thistle & Japanese Knotweed	area	m ²
Vegetation Growth	Undergrowth, small bushes, and trees etc. causing an obstruction	area	m ²
Major deterioration depth < 40 mm	Cracking, coarse crazing, severe fretting & loss of aggregate allowing serious permeability of water	area	m ²
Minor deterioration	Localised cracking, fine crazing and fretting	area	m ²
Surface Deformation	By overriding, poor reinstatements or accident damage	area	m ²

Carriageway kerbs			
Defect Description	Notes	Measure	Units
Horizontal projection > 50mm	Individual misalignment or displacement of kerb	length	m
Missing		length	m
Vertical projection > 20 mm	Individual misalignment or displacement of kerb	item	no.
Open joints width > 20 mm		item	no.
Loose / rocking difference in level > 20 mm		length	m
Loose / rocking difference in level < 20 mm		length	m
Flooding / Standing Water	Excess of water likely to cause a hazard or structural problems	area	m ²
Open joints width < 20 mm		item	no.
Weed growth	Small vegetation growing in an inappropriate location	area	m ²

Carriageway Channels			
Defect Description	Notes	Measure	Units
Impeded water flow	<i>Detritus at the edge preventing run-off or flow along the channel including Beany kerb</i>	length	m
Vertical projection > 20 mm	<i>Individual misalignment or displacement of channel</i>	item	no.
Loose / rocking difference in level > 20 mm		length	m
Open joints width > 20 mm		item	no.
Missing		length	m
Flooding / Standing Water	<i>Excess of water likely to cause a hazard or structural problems</i>	area	m ²
Horizontal projection > 50mm	<i>Misalignment or displacement of channel</i>	length	m
Open joints width < 20 mm		item	no.
Impeded water flow	<i>Including blockages due to detritus including Beany</i>	length	m
Scour	<i>Damage to invert of channel caused by flow of water</i>	length	m
Weed growth	<i>Small vegetation growing in an inappropriate location</i>	area	m ²
Loose / rocking difference in level < 20 mm		length	m

Footway/Footpath (non-PROW)			
Defect Description	Notes	Measure	Units
Major deterioration depth > 20 mm	<i>Cracking, coarse crazing, severe fretting & loss of aggregate allowing serious permeability of water</i>	area	m ²
Pothole	<i>Pothole on an urban or rural depth >20 mm footway > 300 x 300 mm</i>	area	m ²
Defective Trench / Patch depth > 20 mm	<i>Spalling around edge, difference in level</i>	area	m ²
Debris, excessive mud, oil/diesel spillage, dead animal, other obstruction	<i>Scattered fragments, wreckage, spillage likely to cause a hazard</i>	area	m ²
Flooding / Standing Water useable width < 0.9 m	<i>Water greater than 10mm deep which restricts the footway to < 0.9m</i>	area	m ²
Surface irregularity	<i>Local settlement or subsidence producing a difference in level. Loss of surfacing material causing a difference in level</i>	area	m ²
Cracking around ironwork	<i>Localised cracking, fine crazing and fretting allowing permeability of water</i>	area	m ²
Single crack	<i>In surface that may allow serious permeability of water</i>	length	m
Litter	<i>Accumulation of paper, cans, bottles etc.</i>	area	m ²
Encroachment of verge	<i>Gradual inroad of verge onto the carriageway footway or cycleway</i>	length	m
Weed growth	<i>Vegetation growing in an location that may cause a hazard</i>	area	m ²
Minor deterioration	<i>Localised cracking, fine crazing and fretting. Loss of surface aggregate, applied chippings or fatting up of bituminous binder</i>	area	m ²
Flooding / Standing Water useable width > 0.9 m	<i>Excess of water likely to cause a hazard or structural problems</i>	area	m ²

Cycleways			
Defect Description	Notes	Measure	Units
Major deterioration depth > 20 mm	<i>Cracking, coarse crazing, severe fretting & loss of aggregate allowing serious permeability of water</i>	area	m ²
Pothole	<i>Pothole on an urban or rural depth >20 mm footway > 300 x 300 mm</i>	area	m ²
Defective Trench / Patch depth > 20 mm	<i>Spalling around edge, difference in level</i>	area	m ²
Debris, excessive mud, oil/diesel spillage, dead animal, other obstruction	<i>Scattered fragments, wreckage, spillage likely to cause a hazard</i>	area	m ²
Surface irregularity	<i>Local settlement or subsidence producing a difference in level. Loss of surfacing material causing a difference in level</i>	area	m ²
Cracking around ironwork	<i>Localised cracking, fine crazing and fretting allowing permeability of water</i>	area	m ²
Single crack	<i>In surface that may allow serious permeability of water</i>	length	m
Litter	<i>Accumulation of paper, cans, bottles etc.</i>	area	m ²
Encroachment of verge	<i>Gradual inroad of verge onto the carriageway footway or cycleway</i>	length	m
Weed growth	<i>Vegetation growing in an location that may cause a hazard</i>	area	m ²
Minor deterioration	<i>Localised cracking, fine crazing and fretting. Loss of surface aggregate, applied chippings or fatting up of bituminous binder</i>	area	m ²
Flooding / Standing Water useable width > 0.9 m	<i>Excess of water likely to cause a hazard or structural problems</i>	area	m ²

Highway Drainage Gully			
Defect Description	Notes	Measure	Units
Difference in level with road > 20 mm	<i>Differential levels between items and abutting carriageway, footway or cycle track surface</i>	item	no.
Ironwork Missing		item	no.
Parallel gratings Gap > 20mm	<i>Parallel to normal line of pedal & motor cycles. (Unless in conservation area)</i>	item	no.
Ironwork Cracked or broken	<i>Level of cracking to be assessed</i>	item	no.
Rocking under load	<i>If relative movement exceeds 10mm record as cat 1</i>	item	no.
Flooding / Standing Water	<i>Excess of water likely to cause a hazard or structural problems</i>	area	m ²
Silted /Blockage / Obstruction	<i>Restriction of the free flow of water or excessive silt within chamber restricting the free flow of water</i>	item	no.
Weed Growth	<i>Vegetation growing in a location that may cause a hazard or damage</i>	area	m ²
Fleeced over	<i>Grating restricted by silt and weed growth</i>	item	no.
Difference in level with road < 20 mm	<i>Differential levels between items and abutting carriageway, footway or cycle track surface</i>	item	no.
Cracking around ironwork	<i>Localised cracking, fine crazing and fretting allowing permeability of water</i>	area	m ²
Smooth surface	<i>Worn covers which may cause skidding in wet conditions</i>	item	no.
Litter	<i>Accumulation of paper, cans, bottles etc.</i>	area	m ²
Roots present *	<i>Causing restricted flow</i>	item	no.
Damaged Chamber *		item	no.
Collapsed (sp. Ins)	<i>Inner chamber collapsed</i>	item	no.
Scour *		item	no.

Highway Drainage Weir			
Defect Description	Notes	Measure	Units
Difference in level with road > 20 mm	<i>Differential levels between items and abutting carriageway, footway or cycle track surface</i>	item	no.
Ironwork Missing		item	no.
Parallel gratings Gap > 20mm	<i>Parallel to normal line of pedal & motor cycles. (Unless in conservation area)</i>	item	no.
Ironwork Cracked or broken	<i>Level of cracking to be assessed</i>	item	no.
Rocking under load	<i>If relative movement exceeds 10mm record as cat 1</i>	item	no.
Flooding / Standing Water	<i>Excess of water likely to cause a hazard or structural problems</i>	area	m ²
Silted /Blockage / Obstruction	<i>Restriction of the free flow of water or excessive silt within chamber restricting the free flow of water</i>	item	no.
Weed Growth	<i>Vegetation growing in a location that may cause a hazard or damage</i>	area	m ²
Fleeced over	<i>Grating restricted by silt and weed growth</i>	item	no.
Difference in level with road < 20 mm	<i>Differential levels between items and abutting carriageway, footway or cycle track surface</i>	item	no.
Cracking around ironwork	<i>Localised cracking, fine crazing and fretting allowing permeability of water</i>	area	m ²
Smooth surface	<i>Worn covers which may cause skidding in wet conditions</i>	item	no.
Litter	<i>Accumulation of paper, cans, bottles etc.</i>	area	m ²
Roots present *	<i>Causing restricted flow</i>	item	no.
Damaged Chamber *		item	no.
Collapsed (sp. Ins)	<i>Inner chamber collapsed</i>	item	no.
Scour *		item	no.

Highway Drainage Catch pit, Interceptor, Manhole			
Defect Description	Notes	Measure	Units
Difference in level with road > 20 mm	Differential levels between items and abutting carriageway, footway or cycle track surface	item	no.
Ironwork Missing		item	no.
Parallel gratings Gap > 20mm	Parallel to normal line of pedal & motor cycles. (Unless in conservation area)	item	no.
Ironwork Cracked or broken		item	no.
Rocking under load	If relative movement exceeds 10mm record as cat 1	item	no.
Flooding / Standing Water	Excess of water likely to cause a hazard or structural problems	area	m ²
Silted / Blockage / Obstruction	Restriction of the free flow of water or excessive silt within chamber restricting the free flow of water	item	no.
Weed Growth	Vegetation growing in a location that may cause a hazard or damage	area	m ²
Fleeced over	Grating restricted by silt and weed growth	item	no.
Difference in level with road < 20 mm	Differential levels between items and abutting carriageway, footway or cycle track surface	item	no.
Cracking around ironwork	Localised cracking, fine crazing and fretting allowing permeability of water	area	m ²
Smooth surface	Worn covers which may cause skidding in wet conditions	item	no.
Litter	Accumulation of paper, cans, bottles etc.	area	m ²
Roots present *	Causing restricted flow	item	no.
Damaged Chamber *		item	no.
Collapsed (sp. Ins)	Inner chamber collapsed	item	no.
Scour *		item	no.

Highway Drainage Filter Drain			
Defect Description	Notes	Measure	Units
Flooding / Standing Water	Excess of water likely to cause a hazard or structural problems	area	m ²
Displaced Filter material	Granular material displaced onto the live carriageway	length	m
Weed Growth / Fleeced	Vegetation growing in a location likely to cause a hazard	area	m ²
Collapsed *	Breakage or collapse of pipe restricting the free flow of water	length	m
Silted / Blockage / Obstruction *	Restriction of the free flow of water. Excessive silt restricting the free flow of water	length	m
Deformation *	Deformation of pipe and joints restricting the free flow of water	length	m
Scour *	Damage to pipe or channel caused by flow of water	length	m
Roots Present *	Restriction of the free flow of water due to presence of roots	length	m
Pipe Cracked / Broken *	Physical damage requiring remedial treatment	length	m

Highway Drainage Ditch			
Defect Description	Notes	Measure	Units
Flooding / Standing Water	Excess of water likely to cause a hazard or structural problems	area	m ²
Silted / Blockage / Obstruction	Restriction of the free flow of water. Excessive silt restricting the free flow of water	length	no.
Vegetation Growth	Undergrowth, small bushes, and trees etc. causing an obstruction	area	m ²
Scour	Damage to invert of channel caused by flow of water	length	m
Litter	Accumulation of paper, cans, bottles etc.	area	m ²
Collapsed	Collapse of sidewall restricting the free flow of water	length	m

Highway Drainage Grip			
Defect Description	Notes	Measure	Units
Silted / Blockage / Obstruction	Restriction of the free flow of water. Excessive silt restricting the free flow of water	length	no.
Vegetation Growth	Undergrowth, small bushes, and trees etc. causing an obstruction	area	m ²
Scour	Damage to invert of channel caused by flow of water	length	m
Collapsed	Collapse of sidewall restricting the free flow of water	length	m
Flooding / Standing Water	Excess of water likely to cause a hazard or structural problems	area	m ²
Litter	Accumulation of paper, cans, bottles etc.	area	m ²

Highway Drainage Piped Grip			
Defect Description	Notes	Measure	Units
Flooding / Standing Water	Excess of water likely to cause a hazard or structural problems	area	m ²
Weed Growth / Fleeced	Vegetation growing in a location likely to cause a hazard	area	m ²
Collapsed *	Collapse or breakage of pipe restricting the free flow of water	length	m
Silted / Blockage / Obstruction *	Restriction of the free flow of water. Excessive silt restricting the free flow of water	length	m
Deformation *	Deformation of pipe and joints restricting the free flow of water	length	m
Scour *	Damage to pipe or channel caused by flow of water	length	m
Roots Present *	Restriction of the free flow of water due to presence of roots	length	m
Pipe Cracked / Broken *	Physical damage requiring remedial treatment	length	m

Highway Drainage Piped Drainage			
Defect Description	Notes	Measure	Units
Flooding / Standing Water	Excess of water likely to cause a hazard or structural problems	area	m ²
Weed Growth / Fleeced	Vegetation growing in a location likely to cause a hazard	area	m ²
Collapsed *	Collapse or breakage of pipe restricting the free flow of water	length	m
Silted / Blockage / Obstruction *	Restriction of the free flow of water. Excessive silt restricting the free flow of water	length	m
Deformation *	Deformation of pipe and joints restricting the free flow of water	length	m
Scour *	Damage to pipe or channel caused by flow of water	length	m
Roots Present *	Restriction of the free flow of water due to presence of roots	length	m
Pipe Cracked / Broken *	Physical damage requiring remedial treatment	length	m

Highway Drainage Small Culvert (<0.9m span / dia.)			
Defect Description	Notes	Measure	Units
Flooding / Standing Water	Excess of water likely to cause a hazard or structural problems	area	m ²
Weed Growth / Fleeced	Vegetation growing in a location likely to cause a hazard	area	m ²
Collapsed *	Collapse or breakage of pipe restricting the free flow of water	length	m
Silted / Blockage / Obstruction *	Restriction of the free flow of water. Excessive silt restricting the free flow of water	length	m
Deformation *	Deformation of pipe and joints restricting the free flow of water	length	m
Scour *	Damage to pipe or channel caused by flow of water	length	m
Roots Present *	Restriction of the free flow of water due to presence of roots	length	m
Pipe Cracked / Broken *	Physical damage requiring remedial treatment	length	m

Highway Drainage Bolthole			
Defect Description	Notes	Measure	Units
Silted / Blockage / Obstruction	Restriction of the free flow of water. Excessive silt restricting the free flow of water	length	no.
Vegetation Growth	Undergrowth, small bushes, and trees etc. causing an obstruction	area	m ²
Scour	Damage to invert of channel caused by flow of water	length	m
Collapsed	Collapse of sidewall restricting the free flow of water	length	m
Flooding / Standing Water	Excess of water likely to cause a hazard or structural problems	area	m ²
Litter	Accumulation of paper, cans, bottles etc.	area	m ²

Highway Drainage Outlet / Headwall			
Defect Description	Notes	Measure	Units
Silted / Blockage / Obstruction	Restriction of the free flow of water. Excessive silt restricting the free flow of water	length	m
Vegetation Growth	Undergrowth, small bushes, and trees etc. causing an obstruction	area	m ²
Scour	Damage to invert of channel caused by flow of water	length	m
Collapsed	Collapse of sidewall restricting the free flow of water	length	m
Flooding / Standing Water	Excess of water likely to cause a hazard or structural problems	area	m ²
Litter	Accumulation of paper, cans, bottles etc.	area	m ²

Highway Drainage Soakaway / Attenuation			
Defect Description	Notes	Measure	Units
Silted / Blockage / Obstruction *	Restriction of the free flow of water. Excessive silt restricting the free flow of water	length	no.
Vegetation Growth *	Undergrowth, small bushes, and trees etc. causing an obstruction	area	m ²
Scour *	Damage to invert of channel caused by flow of water	length	m
Collapsed *	Collapse of sidewall restricting the free flow of water	length	m
Flooding / Standing Water	Excess of water likely to cause a hazard or structural problems	area	m ²
Litter *	Accumulation of paper, cans, bottles etc.	area	m ²

Embankment and Cutting >2.5m in height and retaining structures			
Defect Description	Notes	Measure	Units
Vegetation Growth	Undergrowth, small bushes, and trees etc. causing an obstruction. Normally addressed by swathe or visibility cut. Vegetation growing in a location that may cause a hazard or causing spalling material	area	m ²
Noxious and Invasive weeds *	Ragwort, Broad leaved Dock, Curled Dock, Creeping, Spear Thistle & Japanese Knotweed	area	m ²
Surface Deformation	By overriding, poor reinstatements or accident damage	area	m ²
Debris, excessive mud, oil/diesel spillage, dead animal, other obstruction	Scattered fragments, wreckage, spillage likely to cause a hazard	area	m ²
Unstable tree / branch *	Broken or damaged	item	no.
Dead tree / branch *		item	no.
Flooding / Standing Water	Excess of water likely to cause a hazard or structural problems	area	m ²
Slip *	Deep seated slippage of material (identified by a slip circle)	length	m
Slide *	Material (non rock) sliding down the surface	length	m
Rock Slide *	Rock sliding down the surface	length	m
Seepage *	Water percolating from the side slopes	length	m
Litter	Accumulation of paper, cans, bottles etc.	area	m ²
Parapet Masonary	Leaning or missing/collapsed sections	item	no.
Parapet Fencing	Rotten or broken wooden post and rail fence; rusty, bent of broken hand rails likely to cause hazard.	item	no.

Landscaped Areas and Trees - Verge			
Defect Description	Notes	Measure	Units
Surface Deformation	By overriding, poor reinstatements or accident damage	area	m ²
Verge rutting > 75mm (adjacent to high speed carriageway)	Longitudinal deformation of the verge adjacent to high speed carriageway	length	m
Long Grass causing safety problem	Normally addressed by swathe or visibility cut.	area	m ²
Vegetation Growth	Undergrowth, small bushes, and trees etc. causing an obstruction	area	m ²
Noxious and Invasive weeds *	Ragwort, Broad leaved Dock, Curled Dock, Creeping, Spear Thistle & Japanese Knotweed	area	m ²
Slip *	Deep seated slippage of material (identified by a slip circle)	length	m
Debris, excessive mud, oil/diesel spillage, dead animal, other obstruction	Scattered fragments, wreckage, spillage likely to cause a hazard	area	m ²
Unstable tree / branch *	Broken or damaged	item	no.
Dead tree / branch *		item	no.
Defective Trench / Patch depth > 40 mm	Spalling around edge, Difference in level	area	m ²
Flooding / Standing Water	Excess of water likely to cause a hazard or structural problems	area	m ²
Litter	Accumulation of paper, cans, bottles etc.	area	m ²

Landscape areas and trees - Tree			
Defect Description	Notes	Measure	Units
Major deadwood	<i>With potential to strike highway</i>	item	no.
Dead tree	<i>With potential to strike highway</i>	item	no.
Dying/Diseased tree	<i>With potential to strike highway</i>	item	no.
Broken and hanging branch /stem	<i>With potential to strike highway or obstructing highway</i>	item	no.
Cavities (base)	<i>Within stem base, stem or major limbs or size sufficient to reduce structural integrity of tree within falling distance of highway</i>	item	no.
Partially uprooted tree	<i>With potential to strike highway</i>	item	no.
Fungal fruiting bodies	<i>Of known significant decay fungi associated with tree within falling distance of highway</i>	item	no.
Mechanical damage to stem/stem base (off highway)	<i>From vehicle strike (i.e. road traffic accident)</i>	item	no.
Vegetative growth	<i>Obstructing highway</i>	item	no.
Obstructing highway	<i>Side growth and/or descending growth preventing use of carriageway or footway Generally large diameter woody growth with potential to cause damage to vehicles (often mechanical damage to bark evident)</i>	area	m ²
Woody growth	<i>With potential to strike highway or obstructing highway</i>	area	m ²
Obstructing street light	<i>Preventing light diffusion required to carriageway, footway or signage</i>	area	m ²
Obstructing signage	<i>Regulatory and/ or informative signs</i>	item	no.
Obstructing visibility	<i>At junctions, roundabouts and points of access/egress</i>	area	m ²
Damage roots	<i>Severed/ broken roots and/ or damaged bark</i>	item	no.
Damage caused by roots	<i>Distortion/disruption of surfacing or infrastructure, such as to cause a trip or other hazard</i>	area	m ²

Landscaped Areas and Trees - Hedge			
Defect Description	Notes	Measure	Units
Broken or Hanging limbs	<i>Broken limbs likely to cause a hazard</i>	item	no.
Cavities at Base, Crown or Stem		item	no.
Dead Tree or Branch		item	no.
Dying / diseased tree	<i>Diseased, wilting or die-back</i>	item	no.
Growth Obscuring Visibility	<i>Obscured horizontal or vertical alignment due to tree growth</i>	area	m ²
Growth Restricting Traffic		area	m ²
Obscured Street Light		item	no.
Obscured Street Sign	<i>Regulatory sign - Cat1 Warning or Informative -Cat2</i>	item	no.
Root Damage to Highway	<i>Structural damage causing a safety hazard</i>	area	m ²
Damage to Roots		item	no.

Fences and Barriers - Vehicle Restraint System (defined VRS)			
Defect Description	Notes	Measure	Units
Accident Damage - severe	Severe deformation of beams and posts, deformed / broken items causing an additional hazard to the road user	length	m
Accident Damage - moderate to slight	Moderate deformation to several beams and posts	length	m
Loose assembly	More than 5m of Vehicle Restraint System unstable	length	m
Tensioners – missing *		item	no.
Tensioners – loose *		item	no.
Beam Overlap – incorrect *	Beam overlap not aligned with the direction of traffic	length	m
Beam Height – incorrect *	Beam height measured to centre of beam or wire rope measured to centre of upper pair	length	m
Beam – corrosion *		item	no.
Beam - horizontal misalignment *	Horizontal gaps between beams greater than 10mm	item	no.
Post - misaligned or the wrong way around *		item	no.
Post - incorrect height *		item	no.
Post – deterioration *	Corrosion around metal post or rotting wood	item	no.
Bolt – missing *	Including post bolts, lap bolts, anchor bolts and other bolt assemblies	item	no.
Bolt – loose *	Including post bolts, lap bolts, anchor bolts and other bolt assemblies	item	no.
Bolt – corrosion *	Including post bolts, lap bolts, anchor bolts and other bolt assemblies	item	no.
Shear Bolt – missing *		item	no.
Shear Bolt – loose *		item	no.
Shear Bolt - inadequate tolerance *		item	no.
Washers – missing *		item	no.
Unable to inspect due to vegetation or detritus *		length	m

Fences and Barriers - Other Barriers, Fences and Walls (non-retaining)			
Defect Description	Notes	Measure	Units
Accident Damage - severe	Severe deformation / broken items causing an additional hazard to the user	length	m
Not stock proof		length	m
Accident Damage - slight to moderate	Moderate deformation to the fence or wall but not dangerous	length	m
Rotten - Wood		length	m
Corroded - metal		length	m
Corroded - concrete		length	m

Fences and Barriers - Pedestrian Guard Rail			
Defect Description	Notes	Measure	Units
Accident Damage - severe	Severe deformation of guard rail, deformed / broken items causing an additional hazard to the user	length	m
Accident Damage - slight to moderate	Moderate deformation to the Fence or Wall but not dangerous	length	m
Loose / missing component		item	no.
Corrosion	Causing hazard	item	no.

Traffic Signs and Bollards - Sign (Non-Illuminated)			
Defect Description	Notes	Measure	Units
Missing or damaged (Regulatory sign)		item	no.
Dirty sign	Cat 1 if regulatory completely obscured	item	no.
Poor condition or missing fittings		item	no.
Condition of post		item	no.
Pointing wrong way (Regulatory sign)		item	no.
Surface corrosion		item	no.
Missing or damaged (Warning or Informative sign)		item	no.
Pointing wrong way (Warning or Informative sign)		item	no.
Surface colour *		item	no.
Surface luminance *		item	no.
Legibility distance *		item	no.

Traffic Signs and Bollards - Signs and Bollards (Illuminated)			
Defect Description	Notes	Measure	Units
Missing or damaged (Regulatory sign)		item	no.
Pointing wrong way (Regulatory sign)		item	no.
Exposed wiring		item	no.
Light failure		item	no.
Dirty sign	<i>Cat 1 if regulatory completely obscured</i>	item	no.
Poor condition or missing fittings		item	no.
Condition of post		item	no.
Surface corrosion		item	no.
Missing or damaged (Warning or Informative sign)		item	no.
Pointing wrong way (Warning or Informative sign)		item	no.
Surface colour *		item	no.
Surface luminance *		item	no.
Legibility distance *		item	no.

Traffic Signs and Bollards - Hazard Post			
Defect Description	Notes	Measure	Units
Missing		item	no.
Damaged post or Reflector		item	no.
Dirty Reflector		item	no.
Pointing wrong way		item	no.
Surface colour *		item	no.
Surface luminance *		item	no.
Legibility distance *		item	no.

Traffic Signs and Bollards - Blockwork Chevrons			
Defect Description	Notes	Measure	Units
Damaged		length	m
Dirty		item	no.
Missing Block		length	m
Weed growth		area	m ²
Surface colour *		item	no.
Surface luminance *		item	no.
Legibility distance *		item	no.

Road Markings and Studs - Transverse / Special Marks			
Defect Description	Notes	Measure	Units
Worn road markings Stop Lines	<i>Are lines conspicuous?</i>	length	m
Giveway lines on junctions	<i>Are lines conspicuous?</i>	length	m
Worn road markings Others	<i>Are lines conspicuous?</i>	length	m
Retro-reflectivity *	<i>Night time inspection of line visibility</i>	length	m

Road Markings and Studs - Longitudinal Markings			
Defect Description	Notes	Measure	Units
Worn road markings	<i>Are lines conspicuous?</i>	length	m
Retro-reflectivity *	<i>Night time inspection of line visibility</i>	length	m

Road Markings and Studs - Hatched Markings			
Defect Description	Notes	Measure	Units
Worn road markings	<i>Are lines conspicuous?</i>	length	m
Retro-reflectivity *	<i>Night time inspection of line visibility</i>	length	m

Road Markings and Studs - Dragons Teeth			
Defect Description	Notes	Measure	Units
Worn road markings	<i>Are lines conspicuous?</i>	length	m
Retro-reflectivity *	<i>Night time inspection of line visibility</i>	length	m

Road Markings and Studs - Studs (Cats eyes)			
Defect Description	Notes	Measure	Units
Loose cats eye casing or stud		item	no.
Missing / loose cats eye rubber		item	no.
Perished rubber		item	no.
Missing cats eye, stud, reflector		item	no.
Level incorrect		item	no.
Conspicuity cats eye *	<i>Night time inspection of cats eye visibility</i>	item	no.
Conspicuity stud *	<i>Night time inspection of stud visibility</i>	item	no.

Traffic Signals and Pedestrian crossings			
Defect Description	Notes	Measure	Units
Light failure		item	no.
Signal failure		item	no.
Condition of signal head		item	no.
Condition of cabinet		item	no.
Condition of buttons / detectors		item	no.
Condition of poles and fittings		item	no.
Alignment, cleanliness and visibility of signal heads		item	no.

Street Lighting			
Defect Description	Notes	Measure	Units
Exposed wiring		item	no.
Damaged post / column		item	no.
Missing (door, lamp, bowl)		item	no.
Lamp on during day	<i>Record lamp number</i>	item	no.

Level Crossings			
Defect Description	Notes	Measure	Units
Damage to Rail Track property, Barriers & Lights	<i>That will cause hazard to highway user</i>	item	no.

Fords			
Defect Description	Notes	Measure	Units
Scour *	<i>Damage to river bed or apron caused by flow of water</i>	area	m ²
Condition of depth gauge *		item	no.
River bed condition *		area	m ²

Cattle Grids			
Defect Description	Notes	Measure	Units
Difference in level with road > 20 mm	<i>Differential levels between items and abutting carriageway, footway or cycle track surface</i>	item	no.
Difference in component levels > 20 mm	<i>Differential levels between different components</i>	item	no.
Ironwork Missing		item	no.
Parallel gratings Gap > 20mm	<i>Parallel to normal line of pedal & motor cycles. (Unless in conservation area)</i>	item	no.
Flooding / Standing Water	<i>Excess of water likely to cause a hazard or structural problems</i>	area	m ²
Ironwork Cracked or broken		item	no.
Silted/Blockage/Obstruction/Fleeced over	<i>Restriction of the free flow of water</i>	item	no.
Weed Growth	<i>Small vegetation growing in an inappropriate location</i>	area	m ²
Cracking around ironwork	<i>Localised cracking, fine crazing and fretting allowing permeability of water</i>	area	m ²
Rocking under load	<i>If relative movement exceeds 10mm record as cat 1</i>	item	no.
Litter	<i>Excessive rubbish restricting the free flow of water</i>	area	m ²
Damaged Chamber *		item	no.

Utility Covers, Frames & Boxes			
Defect Description	Notes	Measure	Units
Difference in level with c/way > 20 mm	<i>Differential levels between items and abutting carriageway, footway or cycle track surface</i>	item	no.
Difference in component levels > 20 mm	<i>Differential levels between different components</i>	item	no.
Ironwork Missing		item	no.
Smooth surface	<i>Worn covers which may cause skidding in wet conditions</i>	item	no.
Rocking under load	<i>If relative movement exceeds 10mm record as cat 1</i>	item	no.
Ironwork Cracked or broken		item	no.
Cracking around ironwork	<i>Localised cracking, fine crazing and fretting allowing permeability of water</i>	area	m ²

Bus Stop, Posts & Shelters			
Defect Description	Notes	Measure	Units
Severe Structural Damage	<i>Structural damage representing an immediate hazard</i>	item	no.
Sharps and Needles		item	no.
Broken Glass		item	no.
Exposed wiring		item	no.
Pothole or difference in surface level depth >20 mm		area	m ²
Debris, excessive mud, oil/diesel spillage, dead animal, other obstruction	<i>Scattered fragments, wreckage, spillage likely to cause a hazard</i>	area	m ²
Flooding / Standing Water useable width > 0.5 m	<i>Excess of water likely to cause a hazard or structural problems</i>	area	m ²
Electrical Fault		item	no.
Litter	<i>Accumulation of paper, cans, bottles etc.</i>	area	m ²
Moderate to minor structural Damage		item	no.

Grit Bin			
Defect Description	Notes	Measure	Units
Inappropriate location	<i>Causing an obstruction</i>	item	no.
Broken	<i>In need of removal</i>	item	no.

*Specialist Inspection

Appendix B

Service Inspections: Assessment & Treatments

Service Inspection by Treatment		Carriageway	
Treatment	Notes and Typical defects	Measure	Units
Overlay > 40mm	Cracking, coarse crazing, severe fretting & loss of aggregate allowing serious permeability of water	area	m ²
Patching & Thin Surfacing	Localised cracking, fine crazing and fretting with localised spalling and fretting	area	m ²
Thin Surfacing	Localised cracking, fine crazing and fretting (or loss of surface aggregate or applied chippings, fattening up of bituminous binder in urban areas)	area	m ²
Patching & Surface Dressing	Loss of surface aggregate, applied chippings or fattening up of bituminous binder with localised crazing, spalling and fretting	area	m ²
Surface Dress	Loss of surface aggregate or applied chippings, fattening up of bituminous binder or fine crazing	area	m ²
Haunching, Patching & Thin Surfacing	Cracking, fretting, and deformation of edge of carriageway, (Black top only) with localised cracking, fine crazing and fretting with localised spalling and fretting	area	m ²
Haunching & Surface Dress	Cracking, fretting, and deformation of edge of carriageway (Black top only) with loss of surface aggregate, applied chippings or fattening up of bituminous binder	area	m ²
Haunching, Patching & Surface Dress	Cracking, fretting, and deformation of edge of carriageway (Black top only) with loss of surface aggregate, applied chippings or fattening up of bituminous binder with localised spalling and fretting	area	m ²
Haunching	Cracking, fretting, and deformation of edge of carriageway (Black top only)	length	m
Patching	Localised cracking or spalling and fretting, difference in level	area	m ²
Refurbish Traffic Calming features	Damaged road cushions, difference in levels, incorrect height, coloured surfacings, loss of surface aggregate	Item	no.

Service Inspection by Treatment		Kerbs	
Treatment	Notes and Typical defects	Measure	Units
Reinstate	(Repair existing) Damaged, misaligned or displaced kerbs	length	m
Renew	(Replace Old for New) Damaged, misaligned or displaced kerbs	length	m

Service Inspection by Treatment		Footway	
Treatment	Notes and Typical defects	Measure	Units
Patching	Localised spalling and fretting, difference in level	area	m ²
Thin Surfacing	Localised cracking, fine crazing and fretting	area	m ²
Patch & Thin Surfacing	Localised cracking, fine crazing and fretting with localised spalling and fretting	area	m ²
Overlay > 40mm	Difference in level, cracking, coarse crazing, severe fretting & loss of aggregate	area	m ²
Inlay < 40mm	Difference in level, cracking, coarse crazing, severe fretting & loss of aggregate	area	m ²
Reinstate Sets / Slabs	(Repair existing) Difference in level or profile, excessive joints, loose, rocking, cracked or missing	area	m ²
Renew Sets / Slabs	(Replace Old for New) Difference in level or profile, excessive joints, loose, rocking, cracked or missing	area	m ²
Reconstruct	(Replace Old for New - Blacktop only) Difference in level or profile, excessive joints, loose, rocking, cracked or missing	area	m ²

Service Inspection by Treatment		Footway & Kerbs	
Treatment	Notes and Typical defects	Measure	Units
Patching and Kerb reinstatement	Localised spalling and fretting, difference in level, with damaged kerbs	area	m ²
Thin Surfacing and Kerb reinstatement	Localised cracking, fine crazing and fretting, with damaged kerbs	area	m ²
Patch & Thin Surfacing and Kerb reinstatement	Localised cracking, fine crazing and fretting with localised spalling and fretting, with damaged kerbs	area	m ²
Overlay > 40mm and Kerb reinstatement	Difference in level, cracking, coarse crazing, severe fretting & loss of aggregate, with damaged kerbs	area	m ²
Inlay < 40mm and Kerb reinstatement	Difference in level, cracking, coarse crazing, severe fretting & loss of aggregate, with damaged kerbs	area	m ²
Reinstate Sets / Slabs and Kerb reinstatement	(Repair existing) Difference in level or profile, excessive joints, loose, rocking, cracked or missing, with damaged kerbs	area	m ²
Renew Sets / Slabs and Kerb reinstatement	(Replace Old for New) Difference in level or profile, excessive joints, loose, rocking, cracked or missing, with damaged kerbs	area	m ²
Reconstruct and Kerb reinstatement	(Replace Old for New - Blacktop only) Difference in level or profile, excessive joints, loose, rocking, cracked or missing, with damaged kerbs	area	m ²

Service Inspection by Treatment		Cycleway	
Treatment	Notes and Typical defects	Measure	Units
Patching	Localised spalling and fretting, difference in level	area	m ²
Thin Surfacing	Localised cracking, fine crazing and fretting	area	m ²
Patch & Thin Surfacing	Localised cracking, fine crazing and fretting with localised spalling and fretting	area	m ²
Overlay > 40mm	Difference in level, cracking, coarse crazing, severe fretting & loss of aggregate	area	m ²
Inlay < 40mm	Difference in level, cracking, coarse crazing, severe fretting & loss of aggregate	area	m ²
Reconstruct	Difference in level, cracking, coarse crazing, severe fretting & loss of aggregate	area	m ²

Service Inspection by Treatment		Highway Drainage	
Treatment	Notes and Typical defects	Measure	Units
Investigate	Flooding or standing water, blocked drainage systems and outlets	item	no.
Reinstate	(Repair existing) Ironwork cracked or broken, differential levels, damaged or blocked chambers & pipes	item	no.
Renew	(Replace Old for New) Ironwork cracked or broken, differential levels, damaged or blocked chambers & pipes, worn covers which may cause skidding in wet conditions	item	no.
Provide New	(New) Additional drainage systems to prevent ponding or flooding (Safety)	item	no.
Reinstate Piped Drainage	(Repair existing) Blocked or obstructed, scour damage caused by flow of water, excessive build up of silt, partial collapse	length	m
Reinstate Filter Drain	(Repair existing) Displaced or contaminated filter material, blocked or obstructed pipe work	length	m
Reinstate Ditch	(Repair existing) Undergrowth causing obstruction, scour damage caused by flow of water, excessive build up of silt, partial collapse	length	m

Service Inspection by Treatment		Landscaped Areas & Trees	
Treatment	Notes and Typical defects	Measure	Units
Siding	Encroachment of verge onto the carriageway	length	m
Swathe Cut	Long Grass or vegetation causing a potential hazard	length	m
Visibility Cut Required	Long Grass or vegetation causing a potential hazard	area	m ²
Request Specialist Inspection	Trees that appear to be diseased, wilting or die-back requiring a Specialist Inspection	item	no.
Remove Damaged/Dead tree	Obvious damaged or dead branches etc causing a potential hazard	item	no.

Service Inspection by Treatment		Fences & Barriers	
Treatment	Notes and Typical defects	Measure	Units
Reinstate Wood Fence	<i>(Repair existing) Damaged Wood Fence - check ownership</i>	length	m
Reinstate Vehicle Restraint System	<i>(Repair existing) Damaged Vehicular Vehicle Restraint System</i>	length	m
Reinstate Ped. Guard Rail	<i>(Repair existing) Damaged Pedestrian Guard Rail</i>	length	m
Reinstate Wall	<i>(Repair existing) Damaged Wall - check ownership</i>	length	m

Service Inspection by Treatment		Signs	
Treatment	Notes and Typical defects	Measure	Units
Renew Signs (small)	<i>(Replace Old for New) Small Plates < 0.4sq.m.</i>	item	no.
Renew Signs (medium)	<i>(Replace Old for New) Medium signs 0.4 - 4.0sq.m. Damaged, surface corrosion, missing, surface luminance</i>	item	no.
Renew Signs (large)	<i>(Replace Old for New) Large signs > 4.0sq.m. Damaged, surface corrosion, missing, surface luminance</i>	item	no.
Renew Posts, Pillars and Bollards	<i>(Replace Old for New) Damaged, surface corrosion or missing</i>	item	no.

Service Inspection by Treatment		Road Markings	
Treatment	Notes and Typical defects	Measure	Units
Renew Jct Markings	<i>(Replace Old for New) Missing or inconspicuous, poor retro-reflectivity</i>	item	no.
Renew Long Rd Markings	<i>(Replace Old for New) Missing or inconspicuous, poor retro-reflectivity</i>	length	m
Renew Hatched Rd Markings	<i>(Replace Old for New) Missing or inconspicuous, poor retro-reflectivity</i>	length	m
Renew Specialist markings	<i>(Replace Old for New) Missing or inconspicuous, poor retro-reflectivity</i>	length	m
Renew Catseye / Studs	<i>(Replace Old for New) Missing, incorrect level, poor reflectivity</i>	length	m

Service Inspection by Treatment		Cattle Grids	
Treatment	Notes and Typical defects	Measure	Units
Reinstate	<i>(Repair existing) Differential levels between components, damaged ironwork or chamber, blockages and obstructions, rocking under load</i>	item	no.
Renew	<i>(Replace Old for New) Differential levels between components, damaged ironwork or chamber, blockages and obstructions, rocking under load</i>	item	no.
Adjust Ironwork	<i>Differential levels between components, damaged ironwork or chamber, blockages and obstructions, rocking under load</i>	item	no.

Service Inspection by Treatment		Routine Maintenance	
Treatment	Notes and Typical defects	Measure	Units
Provide Weed Control	<i>Weed growth restricting free drainage or causing a potential hazard, noxious or invasive weeds,</i>	length	m
Provide Amenity Grass Cutting	<i>Long grass or vegetation causing a potential hazard</i>	area	m ²
Provide Sweeper	<i>Loose debris, Excessive mud, Spillages</i>	length	m
Provide Siding	<i>Encroachment of verge onto the carriageway</i>	length	m
Provide Gully Emptier	<i>Blockages or obstructions, flooding, standing water</i>	length	m
Provide Sign Cleaning	<i>Dirty signs</i>	item	no.
Provide Night Inspection - Sign Reflectivity	<i>Poor sign retro-reflectivity, worn white lines, missing or damaged roads studs / cats eyes</i>	item	no.
Contact Waste Team	<i>Excessive litter, fly tipping, removal of dead animals, wreckage and debris</i>	item	no.

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Night Time Inspection		Road Markings		
Treatment		Notes and Typical defects	Measure	Units
Renew - Catseyes / Studs	Mandatory	Cats eyes / studs are mandatory where solid continuous white lines are present, missing, incorrect level, poor reflectivity	length	m
Renew - Catseyes / Studs	Other	Missing, incorrect level, poor reflectivity	length	m
Renew - Center Line	Broken	All centre line markings where there is <u>no</u> solid continuous white line, missing or inconspicuous, poor retro-reflectivity	length	m
Renew - Center Line	Solid	All centre line markings where there is at least one solid continuous white line either with a second solid or a broken line. Missing or inconspicuous, poor retro-reflectivity	length	m
Renew - Edge Lines		Missing or inconspicuous, poor retro-reflectivity	length	m
Renew - Hatched Markings		Missing or inconspicuous, poor retro-reflectivity	length	m
Renew - Stop / Give Way Junction markings		Missing or inconspicuous, poor retro-reflectivity	item	no.
Renew - Words & Specialist road markings		Missing or inconspicuous, poor retro-reflectivity	item	no.

Night Time Inspection		Signs		
Treatment		Notes and Typical defects	Measure	Units
Provide Sign Cleaning		Dirty signs causing loss of surface luminance	item	no.
Renew - Hazard Marker Posts		Damaged, surface corrosion, missing,	item	no.
Renew - Large	Informatory sign	Majority of these Signs are Rectangular, Large signs > 4.0 sq.m. Damaged, surface corrosion, missing, surface luminance	item	no.
Renew - Medium	Informatory sign	Majority of these signs are rectangular, Medium signs 0.4 - 4.0 sq.m. Damaged, surface corrosion, missing, surface luminance	item	no.
Renew - Small	Informatory sign	Majority of these signs are rectangular, small signs < 0.4 sq.m. Damaged, surface corrosion, missing, surface luminance	item	no.
Renew -	Mandatory sign	Majority of these signs are round. (If missing possibly record as Cat 1 in Safety Insp) Damaged, surface corrosion, surface luminance.	item	no.
Renew -	Regulatory sign	Majority of these signs are triangular. Damaged, surface corrosion, missing, surface luminance	item	no.
Hazardous Defect		Any other hazardous defect which needs to be recorded. Please ensure adequate information is recorded on the DCD	Item	no.

Gully Emptying		Gully		
Treatment		Notes and Typical defects	Measure	Units
Cleaned	- NO Defects	Standard cleaning operation. No further action required	item	no.
Cleaned plus jetting	- NO Defects	Standard cleaning operation including nominal jetting. No further action required	length	m
Cleaned	- With Defect	Standard cleaning operation. Item requires further actions to remedy defect	item	no.
Cleaned plus Jetting	- With Defect	Standard cleaning operation including nominal jetting. Item requires further actions to remedy defect	length	m
Not cleaned	- With Defect	Unable to clean. Item requires further actions to remedy defect	item	no.
Not cleaned	- Parked Vehicle	Inaccessible due to parked cars	item	no.
Not cleaned	- T/M Required	Unable to clean, traffic management required	item	no.
Not cleaned	- Unsuitable Access	Unable to clean, unsuitable access for gully emptier. Transfer section to hand cleaning route.	item	no.
Not cleaned Unavailable	- Road Space	Unable to clean, other road works or road closures	item	no.
No Gullies Present		No gullies present on this section. Section to be removed from gully cleansing route	item	no.
Provide Sweeper		Routine maintenance required to facilitate future gully emptying	length	m
Provide Siding		Routine maintenance required to facilitate future gully emptying	length	m

Vehicle Restraint System		Vehicle Restraint System Fencing Inspection		
Defect	(Item Detail)	Notes and descriptions	Measure	Units
Accident Damage -	severe	<i>Severe deformation of beams and posts, deformed / broken items causing an additional hazard to the road user</i>	length	m
Accident Damage -	moderate	<i>Moderate deformation to several beams and posts</i>	length	m
Accident Damage -	slight	<i>Minor damage to single beam or post, may be slightly out of alignment but S/F substantially sound</i>	item	no.
Loose assembly		<i>More than 5m of Vehicle Restraint System unstable</i>	length	m
Beam Overlap - incorrect		<i>Beam overlap not aligned with the direction of traffic</i>	length	m
Beam Height - incorrect		<i>Beam height measured to centre of beam wire rope measured to centre of upper pair</i>	length	m
Beam - corrosion			item	no.
Beam - horizontal misalignment		<i>Horizontal gaps between beams greater than 10mm</i>	item	no.
Post - misaligned or the wrong way around			item	no.
Post - incorrect height			item	no.
Post - deterioration		<i>Corrosion around metal post or rotting wood</i>	item	no.
Bolt - missing		<i>Including post bolts, lap bolts, anchor bolts and other bolt assemblies</i>	item	no.
Bolt - loose		<i>Including post bolts, lap bolts, anchor bolts and other bolt assemblies</i>	item	no.
Bolt - corrosion		<i>Including post bolts, lap bolts, anchor bolts and other bolt assemblies</i>	item	no.
Shear Bolt - missing			item	no.
Shear Bolt - loose			item	no.
Shear Bolt - inadequate tolerance			item	no.
Tensioners - missing			item	no.
Tensioners - loose			item	no.
Washers - missing			item	no.
Unable to inspect due to vegetation or detritus			length	m
Other		<i>eg damaged support brackets</i>	item	no.

Appendix C

Specialist Inspections

C.1 Specialist inspection of culverts (span <900mm)

The primary objective of the specialist inspection of culverts (span <900mm) is to identify structural defects, blockages or subsidence that may compromise safety or prevent the system from operating satisfactorily.

Inventory items to be inspected:

- Small culvert

C.1.1 Type and frequency of inspection

Specialist inspection of culverts (span <900mm)					
Carriageway Maintenance Hierarchy	Description	Urban			Rural
		Principal Towns pop > 10,000	Towns pop > 3,000 pop < 10,000	Villages pop > 1,000 pop < 3,000	
2a	Strategic Route	5 yearly plus cctv			5 yearly plus cctv
2b	Strategic Route				
3a	Main Distributor				
3b	Secondary Distributor				
4a	Local Roads				
4b	Local Access Roads				
5a	Minor Access Roads				
5b	Lanes				
6a	Tracks	Not Applicable			

C.1.2 Inspection standards

In addition to the standard requirements, CCTV equipment should be operated by competent personnel who will also be accredited to work within the highway.

C.2 Specialist inspection of grips, ditches and boltholes

The primary objective of the specialist inspection of grips, ditches and boltholes is to identify damage by traffic, vegetation growth and structural defects that may compromise safety or prevent the system from operating satisfactorily.

Inventory items to be inspected:

- Grip
- Ditch
- Bolthole

C.2.1 Type and frequency of inspection

Specialist inspection of grips, ditches and boltholes					
Carriageway Maintenance Hierarchy	Description	Urban			Rural
		Principal Towns pop > 10,000	Towns pop > 3,000 pop < 10,000	Villages pop > 1,000 pop < 3,000	
2a	Strategic Route	10 yearly			
2b	Strategic Route				
3a	Main Distributor				
3b	Secondary Distributor				
4a	Local Roads				
4b	Local Access Roads				
5a	Minor Access Roads				
5b	Lanes				
6a	Tracks	Not Applicable			

C.2.2 Inspection standards

There are no additional requirements for this specialist inspection.

C.3 Specialist inspection of Sustainable Urban Drainage (SUDS) and other piped drainage systems

The primary objective of the specialist inspection of SUDS and other piped drainage is to identify blockages, subsidence, contamination and structural defects that may compromise safety or prevent the system from operating satisfactorily.

Inventory items to be inspected:

- Piped Grip
- Piped Drainage
- Filter Drain
- Soakaway
- Manhole
- Catch-pit / Interceptor

C.3.1 Type and frequency of inspection

Specialist inspection of Sustainable Urban Drainage (SUDS) and other piped drainage systems					
Carriageway Maintenance Hierarchy	Description	Urban			Rural
		Principal Towns pop > 10,000	Towns pop > 3,000 pop < 10,000	Villages pop > 1,000 pop < 3,000	
2a	Strategic Route	10 yearly plus cctv 5 yearly at critical locations			
2b	Strategic Route				
3a	Main Distributor				
3b	Secondary Distributor				
4a	Local Roads				
4b	Local Access Roads				
5a	Minor Access Roads				
5b	Lanes				
6a	Tracks	Not Applicable			

C.3.2 Inspection standards

In addition to the standard requirements, CCTV equipment should be operated by competent personnel who will also be accredited to work within the highway.

C.4 Specialist inspection of gullies

The primary objective of the specialist inspection for gullies is to identify structural defects that may compromise safety or prevent the system from operating satisfactorily.

Inventory items to be inspected:

- Gully
- Weir

C.4.1 Type and frequency of inspection

Specialist inspection of gullies					
Carriageway Maintenance Hierarchy	Description	Urban			Rural
		Principal Towns pop > 10,000	Towns pop > 3,000 pop < 10,000	Villages pop > 1,000 pop < 3,000	
2a	Strategic Route	Annual			
2b	Strategic Route				
3a	Main Distributor				
3b	Secondary Distributor				
4a	Local Roads	2 yearly			
4b	Local Access Roads				
5a	Minor Access Roads				
5b	Lanes				
6a	Tracks	Not Applicable			

C.4.2 Inspection standards

There are no additional requirements for this specialist inspection.

C.5 Specialist inspection of oil interceptors

The primary objective of the specialist inspection of oil interceptors is to identify structural defects that may compromise safety or prevent the system from operating satisfactorily.

Inventory items to be inspected:

- Oil interceptor

C.5.1a Type and frequency of inspection – Routine

Routine inspection should check correct functioning and adjustment of interceptor.

Specialist inspection of oil interceptors					
Carriageway Maintenance Hierarchy	Description	Urban			Rural
		Principal Towns pop > 10,000	Towns pop > 3,000 pop < 10,000	Villages pop > 1,000 pop < 3,000	
2a	Strategic Route	2 yearly			
2b	Strategic Route				
3a	Main Distributor				
3b	Secondary Distributor				
4a	Local Roads				
4b	Local Access Roads				
5a	Minor Access Roads				
5b	Lanes				
6a	Tracks	Not Applicable			

C.5.1b Type and frequency of inspection – Programmed

Programmed inspection should assess structural integrity of interceptor and will require the interceptor to be emptied.

Type and frequency of inspection – Programmed					
Carriageway Maintenance Hierarchy	Description	Urban			Rural
		Principal Towns pop > 10,000	Towns pop > 3,000 pop < 10,000	Villages pop > 1,000 pop < 3,000	
2a	Strategic Route	6 yearly			
2b	Strategic Route				
3a	Main Distributor				
3b	Secondary Distributor				
4a	Local Roads				
4b	Local Access Roads				
5a	Minor Access Roads				
5b	Lanes				
6a	Tracks	Not Applicable			

C.5.2 Inspection standards

Specialist knowledge of the functioning and correct adjustment of oil interceptors will be required, together with knowledge of working in confined spaces regulations.

C.6 Specialist inspection of embankments and cuttings >2.5m

The primary objective of the specialist inspection of embankment and cuttings is to identify potential risks of slippages or rockslides that may compromise safety or stability.

Inventory items to be inspected:

- Embankment
- Cutting

C.6.1 Type and frequency of inspection

Specialist inspection of embankments and cuttings >2.5m					
Carriageway Maintenance Hierarchy	Description	Urban			Rural
		Principal Towns pop > 10,000	Towns pop > 3,000 pop < 10,000	Villages pop > 1,000 pop < 3,000	
2a	Strategic Route	5 yearly inspection of significant sites			
2b	Strategic Route				
3a	Main Distributor	Sites to be identified and risk assessed			
3b	Secondary Distributor				
4a	Local Roads				
4b	Local Access Roads				
5a	Minor Access Roads				
5b	Lanes				
6a	Tracks	Not Applicable			

C.6.2 Inspection standards

In addition to the standard requirements, the inspector should have specialist geotechnical experience and knowledge.

C.7 Specialist inspection of trees

The primary objective of the specialist inspection of trees is to identify dead, dying or diseased trees that may compromise safety.

The following inspections apply to those trees sited within the highway and for which the Council is responsible. However, defects which affect the structural integrity of adjacent trees should also be noted and the land owners informed. Notices under Section 154 of the Highways Act (1980) may be served if considered necessary.

Inventory items to be inspected:

- Street Tree
- Highway Tree

C.7.1 Type and frequency of inspection

Specialist inspection of trees					
Carriageway Maintenance Hierarchy	Description	Urban			Rural
		Principal Towns pop > 10,000	Towns pop > 3,000 pop < 10,000	Villages pop > 1,000 pop < 3,000	
2a	Strategic Route	18 months (and reactive)			
2b	Strategic Route				
3a	Main Distributor				
3b	Secondary Distributor	36 months (and reactive)			
4a	Local Roads				
4b	Local Access Roads				
5a	Minor Access Roads				
5b	Lanes				
6a	Tracks	Reactive only			

C.7.2 Inspection standards

In addition to the standard requirements, inspectors should hold specialist arboriculture qualifications.

C.8 Specialist inspection of noxious and invasive weeds

The control of injurious and noxious weeds is a statutory responsibility for authorities under the Weeds Act 1959 and the Wildlife and Countryside Act 1981.

The primary objective of the specialist inspection is therefore to identify areas of prescribed weeds that may be hazardous to users of the highway.

The prescribed weeds are:

- Ragwort
- Broad leaved dock
- Curled dock
- Creeping thistle
- Spear thistle

Inventory items to be inspected:

- Verge
- Hedge
- Embankment
- Cutting

C.8.1 Type and frequency of inspection

Ragwort is the only weed that is actively treated through the inspection system, other prescribed weeds will be treated only when reports are received that they are causing a nuisance.

In addition to the above, certain invasive species such as Japanese Knotweed are also actively treated in Cornwall and therefore are included within this specialist inspection regime.

C.8.2 Inspection standards

Inspectors should be able to identify weeds at early stage of growth.

C.9 Specialist inspection of vehicle restraint systems (fences)

The primary objective of the specialist inspection of vehicle restraint systems is to identify structural defects that may compromise safety or prevent the system from operating satisfactorily. Other VRS in the form of arrester beds will be inspected as part of the routine safety and service inspections.

Inventory items to be inspected:

- Vehicle restraint system (fences)

C.9.1 Type and frequency of inspection

Specialist inspection of vehicle restraint systems (fences)					
Carriageway Maintenance Hierarchy	Description	Urban			Rural
		Principal Towns pop > 10,000	Towns pop > 3,000 pop < 10,000	Villages pop > 1,000 pop < 3,000	
2a	Strategic Route	(a) 2 yearly inspection where applicable to check and adjust torque			
2b	Strategic Route				
3a	Main Distributor	(b) 5 yearly inspection with regard to mounting height and integrity			
3b	Secondary Distributor				
4a	Local Roads	(c) 10 yearly inspection to check fitness for purpose			
4b	Local Access Roads				
5a	Minor Access Roads				
5b	Lanes				
6a	Tracks	Not Applicable			

C.9.2 Inspection standards

Inspectors should hold a current vehicle restraint system supervisors' certificate.

C.10 Specialist inspection of traffic signs and bollards (illuminated and non illuminated)

The primary objective of the specialist inspection of traffic signs is to identify legibility defects such as surface colour, surface luminance and sight line distances, which may compromise safety. This will involve night time inspections.

- Inventory items to be inspected:
- Sign (non-illuminated)
- Signs & Bollards (illuminated)
- Hazard posts

Note: The specialist inspections listed below relate to the condition of the sign face and the overall integrity of the signing regime. Electrical components are subject to separate inspection scheduled by the Highways Electrical Section.

C.10.1a Type and frequency of inspection

(Visual assessment only) - Degradation of colour, retro reflectivity and surface luminance

C.10.1b Type and frequency of inspection

(integrity of signing regime)

Specialist inspection of traffic signs and bollards (illuminated and non illuminated)					
Carriageway Maintenance Hierarchy	Description	Urban			Rural
		Principal Towns pop > 10,000	Towns pop > 3,000 pop < 10,000	Villages pop > 1,000 pop < 3,000	
2a	Strategic Route	(a) Annual inspection (b) 5 yearly inspection			
2b	Strategic Route				
3a	Main Distributor				
3b	Secondary Distributor				
4a	Local Roads	(a) 2 yearly inspection (b) 5 yearly inspection			
4b	Local Access Roads				
5a	Minor Access Roads				
5b	Lanes				
6a	Tracks	Not Applicable			

C.10.2 Inspection standards

In addition to the standard requirements, the inspector should have specialist experience and knowledge in the use of appropriate specialist equipment.

C.11 Specialist inspection of illuminated traffic signs and bollards

(relates to electrical components only)

Inspection requirements relating to the electrical elements of traffic signs and bollards are specifically excluded from this document. For information in this regard refer to highway electrical term maintenance contract for street lighting and illuminated traffic signs.

C.12 Specialist inspection of road markings

The primary objective of the specialist inspection of road markings is to identify conspicuously and retro-reflectivity, which may compromise safety. This will involve night time inspections.

Inventory items to be inspected:

- Pedestrian Crossing
- Transverse/special marking
- Longitudinal marking
- Hatched marking
- Dragons teeth
- Mini roundabout

C.12.1 Type and frequency of inspection

Specialist inspection of road markings					
Carriageway Maintenance Hierarchy	Description	Urban			Rural
		Principal Towns pop > 10,000	Towns pop > 3,000 pop < 10,000	Villages pop > 1,000 pop < 3,000	
2a	Strategic Route	Annual inspection			
2b	Strategic Route				
3a	Main Distributor	2 yearly inspection			
3b	Secondary Distributor				
4a	Local Roads				
4b	Local Access Roads				
5a	Minor Access Roads				
5b	Lanes	Not Applicable			
6a	Tracks				

C.12.2 Inspection standards

In addition to the standard requirements, the inspector should have specialist experience and knowledge in the use of appropriate specialist equipment.

C.13 Specialist inspection of road studs

The primary objective of the specialist inspection of road studs is to identify conspicuously and retro-reflectivity, which may compromise safety. This will involve night time inspections.

Inventory items to be inspected:

- Road stud

C.13.1 Type and frequency of inspection

Specialist inspection of road studs					
Carriageway Maintenance Hierarchy	Description	Urban			Rural
		Principal Towns pop > 10,000	Towns pop > 3,000 pop < 10,000	Villages pop > 1,000 pop < 3,000	
2a	Strategic Route	Annual inspection			
2b	Strategic Route				
3a	Main Distributor				
3b	Secondary Distributor				
4a	Local Roads	2 yearly inspection			
4b	Local Access Roads				
5a	Minor Access Roads				
5b	Lanes				
6a	Tracks	Not Applicable			

C.13.2 Inspection standards

In addition to the standard requirements, the inspector should have specialist experience and knowledge in the use of appropriate specialist equipment.

C.14 Specialist inspection of traffic signals, pedestrian and cycle crossings

(relates to electrical components only)

Inspection requirements relating to the electrical elements of traffic signals, pedestrian and cycle crossings are specifically excluded from this document. For information in this regard refer to Highway Electrical Term Maintenance Contract for street lighting and illuminated traffic signs.

C.15 Specialist inspection of street lighting

Inspection requirements relating to street lighting are specifically excluded from this document. For information in this regard refer to Highway Electrical Term Maintenance Contract for street lighting and illuminated traffic signs.

C.16 Bridges and structures

Inspection requirements relating to bridges and structures are specifically excluded from this document. For information in this regard refer to the Structures Code of Practice.

C.17 Specialist inspection of level crossings

The primary objective of the specialist inspection of level crossings is to identify highway defects which may compromise safety.

Note Maintenance and inspection of a level crossing and associated inventory items is the responsibility of Network Rail. The following associated inventory items however should be inspected as detailed below.

Inventory items to be inspected:

- Signs
- Road markings
- Studs

C.17.1 Type and Frequency of Inspection

Specialist inspection of level crossings					
Carriageway Maintenance Hierarchy	Description	Urban			Rural
		Principal Towns pop > 10,000	Towns pop > 3,000 pop < 10,000	Villages pop > 1,000 pop < 3,000	
2a	Strategic Route	Annual inspection including fitness for purpose			
2b	Strategic Route				
3a	Main Distributor				
3b	Secondary Distributor				
4a	Local Roads				
4b	Local Access Roads				
5a	Minor Access Roads				
5b	Lanes				
6a	Tracks	Not Applicable			

C.17.2 Inspection standards

Additional requirements for this specialist inspection will include knowledge of The Traffic Signs Regulations and General Directions 2016.

C.18 Specialist inspection of fords

The primary objective of the specialist inspection of fords is to identify defects which may compromise safety.

Inventory items to be inspected:

- Carriageway
- Signs (associated with Ford)

C.18.1 Type and frequency of inspection

Specialist inspection of fords					
Carriageway Maintenance Hierarchy	Description	Urban			Rural
		Principal Towns pop > 10,000	Towns pop > 3,000 pop < 10,000	Villages pop > 1,000 pop < 3,000	
2a	Strategic Route	Annual inspection including fitness for purpose			
2b	Strategic Route				
3a	Main Distributor				
3b	Secondary Distributor				
4a	Local Roads				
4b	Local Access Roads				
5a	Minor Access Roads				
5b	Lanes				
6a	Tracks	Not Applicable			

C.18.2 Inspection standards

Additional requirements for this specialist inspection will include knowledge of The Traffic Signs Regulations and General Directions 2016.

C.19 Specialist inspection of cattle grids

The primary objective of the specialist inspection of cattle grids is to identify structural defects which may compromise safety.

Inventory items to be inspected:

- Cattle Grids (including structural elements)
- Signs
- Road markings
- Fences

C.19.1 Type and frequency of inspection

Specialist inspection of cattle grids					
Carriageway Maintenance Hierarchy	Description	Urban			Rural
		Principal Towns pop > 10,000	Towns pop > 3,000 pop < 10,000	Villages pop > 1,000 pop < 3,000	
2a	Strategic Route	3 yearly inspection including fitness for purpose			
2b	Strategic Route				
3a	Main Distributor				
3b	Secondary Distributor				
4a	Local Roads				
4b	Local Access Roads				
5a	Minor Access Roads				
5b	Lanes				
6a	Tracks	Not Applicable			

C.19.2 Inspection standards

Additional requirements for this specialist inspection will include knowledge of structural requirements and the Traffic Signs Regulations and General Directions 2016.

C.20 Specialist inspection of bus shelters

The primary objective of the specialist inspection of bus shelters is to identify structural defects that may compromise safety or prevent the system from operating satisfactorily.

Inventory items to be inspected:

- Bus Shelter
- Posts

C.20.1 Type and frequency of inspection

Specialist inspection of bus shelters					
Carriageway Maintenance Hierarchy	Description	Urban			Rural
		Principal Towns pop > 10,000	Towns pop > 3,000 pop < 10,000	Villages pop > 1,000 pop < 3,000	
2a	Strategic Route	5 yearly inspection with regard to structural integrity			
2b	Strategic Route				
3a	Main Distributor				
3b	Secondary Distributor				
4a	Local Roads				
4b	Local Access Roads				
5a	Minor Access Roads				
5b	Lanes				
6a	Tracks	Not Applicable			

C.20.2 Inspection standards

To be developed.

Appendix D

Service Standards: Maintenance Activity & Frequency by Environment

D.1 Maintenance Activity & Frequency by Environment

Maintenance activities are structured by hierarchy and environment in accordance with asset management principles. Frequencies of scheduled routine maintenance and priorities for programmed maintenance are governed by available finance.

D 1.1 Rural Environment

D 1.1 Rural Environment		
Hierarchy 2a, 2b & 3a	Activity	Frequency
Reactive maintenance	All - from customer reports	Daily/ad hoc
	All – from safety inspections	As scheduled
Planned reactive	Flood spot locations	Ad hoc
	Salting Routes	Ad hoc
	Ragwort	Ave = 1 per 12months
Scheduled Routine Maintenance	Gully emptying	Ave 1 in 12 months
	Other drainage e.g. Ditch and grip cleansing	Min 1 in 12 months
	Visibility cutting	Min 1 in 12 months
	Swathe cut	Ave 1 in 12 months
	Knotweed treatment	2 treatments per year
Programmed Maintenance	Carriageway surface treatment	Rolling prioritised programme
	Footway/ cycleway treatment	Rolling prioritised programme
	Sign & line replacement	Rolling prioritised programme
	Repairs to drainage systems	Rolling prioritised programme
	Edge Maintenance (siding)	Linked to surfacing
Hierarchy 3b & 4a	Activity	Frequency
Reactive maintenance	All - from customer reports	Daily/ ad hoc
	All – from safety inspections	As scheduled
Planned reactive	Flood spot locations	Ad hoc
	Ragwort	Ave =1 in 12 months
Routine Maintenance	Gully emptying	Ave =1 in 12 months
	Other drainage e.g. Ditch and grip cleansing	Min 1 in 12 months
	Visibility cutting	Min 1 in 12 months
	Knotweed treatment	2 treatments per year
Programmed Maintenance	Carriageway surface treatment	Rolling prioritised programme
	Footway/ cycleway treatment	Rolling prioritised programme
	Repairs to drainage systems	Rolling prioritised programme
	Edge Maintenance (siding)	Linked to surfacing
Hierarchy 4b, 5a & 5b	Activity	Frequency
Reactive maintenance	All - from customer reports	Daily/ ad hoc
	All - from safety inspections	As scheduled
Planned reactive	Flood spot locations	Ad hoc
	Ragwort	Ave = 1 per 12months
Routine Maintenance	Maintenance of gullies and drainage	Ad hoc
	Visibility cutting	Ave 1 in 12 months
	Knotweed treatment	2 treatments per year
Programmed Maintenance	Carriageway surface treatment	Rolling prioritised programme
	Footway/ cycleway treatment	Rolling prioritised programme
	Repairs to drainage systems	Rolling prioritised programme
	Edge Maintenance (siding)	Linked to surfacing
Hierarchy 6a & 6b	Activity	Frequency
Reactive maintenance	All - from customer reports	Daily/ad hoc
	6a only from safety inspections	As scheduled

D.1.2 Urban Environment

D.1.2 Urban Environment		
Hierarchy 2a, 2b & 3a	Activity	Frequency
Reactive maintenance	All - from customer reports	Daily/ ad hoc
	All- from safety inspections	As scheduled
Planned reactive	Flood spot locations	Ad hoc
	Salting Routes	Ad hoc
Scheduled Routine Maintenance	Gully emptying	Ave 1 in 12 months
	Other drainage	1 in 12 months
	Visibility cutting	Min 2 in 12 months
	Cutting of grassed amenity areas	4 in 12 months
	Knotweed treatment	2 treatments per year
	Sweeping/ street cleansing	Zones only
Programmed Maintenance	Carriageway surface treatment	Rolling prioritised programme
	Footway/ cycleway treatment	Rolling prioritised programme
	Sign & line replacement	Rolling prioritised programme
	Repairs to drainage systems	Rolling prioritised programme
Hierarchy 3b & 4a	Activity	Frequency
Reactive maintenance	All - from customer reports	Daily/ ad hoc
	All- inventory safety inspections	As scheduled
Planned reactive	Flood spot locations	Ad hoc
	Cutting of grassed amenity areas	4 in 12 months
Routine Maintenance	Gully emptying	Mixed < 24 months
	Other drainage	Mixed
	Visibility cutting	Ave 2 in 12 months
	Knotweed treatment	2 treatments per year
	Sweeping/ street cleansing	Zones only
	Cutting of grassed amenity areas	4 in 12 months
Programmed Maintenance	Carriageway surface treatment	Rolling prioritised programme
	Footway/ cycleway treatment	Rolling prioritised programme
	Repairs to drainage systems	Rolling prioritised programme
Hierarchy 4b, 5a & 5b	Activity	Frequency
Reactive maintenance	All inventory - Customer reports	Daily/ ad hoc
	All inventory – from safety inspections	As scheduled
Planned reactive	Flood spot locations	Ad hoc
Routine Maintenance	Visibility cutting	Ave 2 in 12 months
	Maintenance of gullies & drainage other	Mixed <24months
	Visibility cutting	Ave 2 in 12 months
	Knotweed treatment	2 treatments per year
Programmed Maintenance	Carriageway surface treatment	Rolling prioritised programme
	Footway/ cycleway treatment	Rolling prioritised programme
	Repairs to drainage systems	Rolling prioritised programme
	Edge Maintenance (siding)	Linked to surfacing

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