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East Sussex
County Council

Highway Asset Management

Drainage Strategy 2015-2018

Contents

Highway Drainage – A Critical Asset

The highway drainage asset is critical to ensuring the controlled removal of water from the carriageway to allow customers to use it safely. The impact that failure of the drainage asset can have on other highway assets, wider transport infrastructure and private property is significant.

The Highways Act 1980 empowers highway authorities to construct and maintain drainage systems to remove surface water from the highway. More recently, the **Flood and Water Management Act 2010** gives local authorities a role for the management of local flood risk.

The biggest challenge facing highway authorities in managing highway drainage and local flood risk is **defining the asset to identify the need**. In many cases the location and condition of highway drainage assets are far from understood which presents real challenges in making the case for investment.

Highway drainage assets across East Sussex have suffered from significant under investment over many years. As a result **we have a dated drainage system that we have very little knowledge about** which is costing us more to maintain year on year. Our existing approach to maintaining highway drainage assets is largely reactive. This is very costly and does not address the issue of needing to understand where to invest to halt the deterioration.

Council Priorities

The Highway Asset Management function and approach to highway drainage is following the **'One Council'** approach and will be steered by the Council's Priorities:

- Helping People Help Themselves
- Driving Economic Growth
- Making Best Use of Our Resources
- Keeping Vulnerable People Safe

The East Sussex County Council **Highway Asset Management Policy** establishes the Council's commitment to Highway Asset Management and demonstrates how this approach aligns with the Council Plan. The Policy has been published alongside the **Highway Asset Management Strategy** on the Council's website.

Drainage Objectives

To help deliver the Council Priorities and implement the relevant recommendations from the **Highways Maintenance Efficiency Programme (HMEP) – Guidance on the Management of Highway Drainage Assets (2012)**, the objectives for highway drainage in East Sussex are as follows:

- Define the Highway Drainage Asset
- Deliver an Efficient & Effective Highway Drainage Service
- Work in collaboration with People & Partnerships

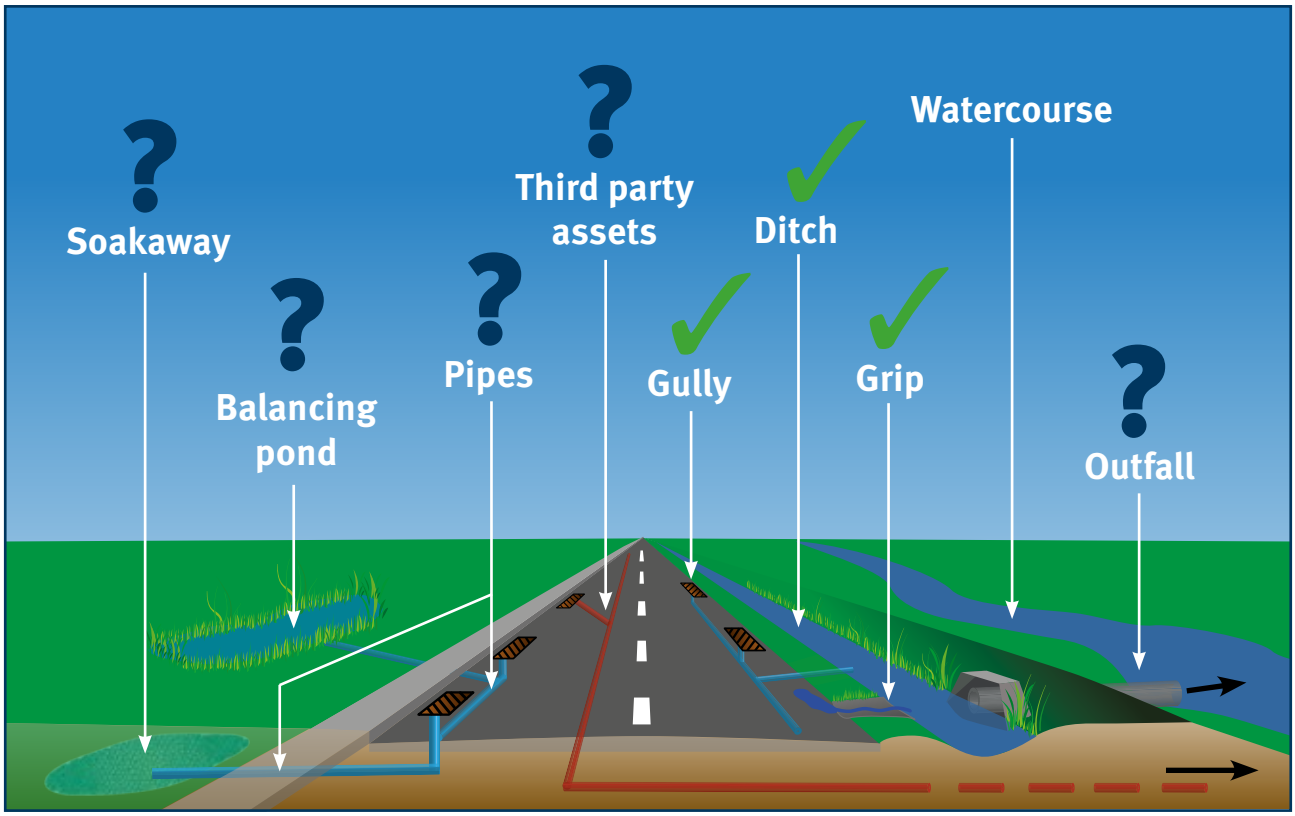
These objectives will guide the approach to highway drainage asset management in East Sussex and will focus the delivery of the actions identified within this strategy.

Objective 1 – Define the Highway Drainage Asset

Improving our understanding

The current inventory of highway drainage assets across East Sussex includes approximately **98,000 gullies**, **10,000 grips** and **500km of ditch**. In addition to details about the location and specification of these assets there is a good understanding of their condition from inspections and surveys. In particular, observation of silt levels in gullies at regular inspections provides useful statistics to help focus, support and inform our maintenance approach. What we do not know is the location, specification and most importantly, the condition of other connecting drainage assets (see **Figure.1**).

Figure.1 Illustration of highway drainage system (known/unknown assets).



To direct resources to define the highway drainage asset in areas of **greatest risk first**, targeted surveys will be undertaken in areas of East Sussex which are at risk of local flooding. We use a **'whole system'** approach to build an inventory of drainage assets from inputs (e.g. gullies) to outputs (e.g. ditches) and every element in between (e.g. pipes). An understanding of the drainage asset as whole systems in areas at risk of local flooding will help to identify issues and constraints while focusing, supporting and informing maintenance activities.

Objective 2 – Deliver an Efficient & Effective Highway Drainage Service

Historically, the approach in East Sussex to repairing and improving our highway drainage assets has been **predominantly reactive**, rather than pro-active.

We are now shifting our focus to proactively maintain our drainage asset and **deliver a safe, serviceable and sustainable drainage service** into the future.

To achieve an efficient and effective drainage service we will deliver the following:

- **Safety** – Ensuring the controlled removal of water from the carriageway to allow customers to use it safely.
- **Serviceability** – Maintaining the drainage asset to a condition in which it remains functional for draining the highway.
- **Sustainability** – Designing, constructing and maintaining drainage assets to meet both current and future needs in a changing environment while making effective use of limited budgets.

Future Delivery

The principles of Asset Management are at the core of the new Highways Contract beginning in May 2016. With a focus upon outcome delivery and performance, the new contract has been structured to accommodate the limited understanding of asset condition, meanwhile encouraging collaborative working between both Employer (County Council) and Contractor to improve this understanding through the life of the contract (2016-2023).

We will work with the incoming Contractor to deliver a safe, serviceable and sustainable drainage service while improving our understanding of the drainage asset.

Efficiency and Effectiveness

The two elements of efficiency and effectiveness must be balanced appropriately to ensure the effective use of limited budgets.

We are addressing this balance by ensuring that our gully cleansing operations are undertaken efficiently by targeting **all** gullies along a whole road instead of individual gullies. Whole roads are visited on a prioritised basis informed by recorded silt levels. Effectiveness of the operation is monitored by recording silt levels after cleansing in addition to site audits.

We will continue to target our gully cleansing resource to areas where the gullies need cleansing more often. By **applying a risk factor to every one of our gullies based on flood risk and road hierarchy** we have been able to prioritise which gullies need to be fixed first when a problem is reported.

Data & Systems

It is recognised that effective Asset Management planning and decision making relies on having the appropriate data available to those who need it and for that data to be appropriate, reliable and accurate.

We have worked with external software providers to build a **Data Management System** which holds our current drainage inventory along with condition information. We will continue to develop this system further by mapping know areas at risk of flooding (hotspots) which will focus maintenance activities. The development of this system will ensure that we address the causes of failing drainage assets rather than just the symptoms.

Source – horizons.yotta.co.uk

Objective 3 – Work in collaboration with People & Partnerships

County Council employees and other organisations responsible for drainage assets and flood risk management are a valuable source of asset management information. Therefore, both individuals and partnering organisations will be engaged and their knowledge captured and incorporated into data records.

We will be working with the Council's **Flood Risk Management Team** to draw upon flood history records from **Surface Water Management Plans**. These have been undertaken in areas at risk of local flooding across the County. Furthermore, we will assist in delivering the actions identified within the **Local Flood Risk Management Strategy**.

External organisations such as the Environment Agency and Southern Water will be engaged to address water management issues and share information and data to help **achieve shared objectives**.

The Drainage Challenge

Due to historic under investment in the maintenance of our highway drainage systems there is a **significant backlog** of defective drainage assets across the county. Addressing this backlog will put pressure on limited revenue budgets and therefore we will **target capital investment** to resolve the cause of the drainage issues rather than just the symptoms.

By investing in capital drainage schemes, savings will be realised through reducing the maintenance cost to other highway infrastructure, especially carriageway which often suffers from accelerated deterioration as a result of failing drainage systems.

The immediate future (2015-2016)

Asset Management will be at the core of the new Highways Contract beginning in May 2016. In preparation for this, we will begin building our understanding of the drainage asset by undertaking a series of targeted inventory surveys in areas at risk of local flooding. We will work to co-ordinate maintenance activities across our teams and drainage assets whilst collecting on-the-go inventory and condition data for use in the future. This will improve the performance of this critical asset in the short term and begin to set the building blocks in place for **future programmes of prioritised maintenance**.

Department for Transport (DfT) - Future Funding

We will be improving our knowledge of drainage infrastructure across the county to develop **capital schemes of between £5-20m**. These schemes will demonstrate evidence based decisions on drainage improvements, enabling us to bid for capital funding under the **DfT Challenge Fund in 2017** and meet the requirements for the **DfT Incentive Fund**.

Action Plan (2015-2018)

To achieve the County Council's Priorities and the objectives for highway drainage asset management in East Sussex a plan has been developed which will be delivered between 2015 and 2018.

Action Plan (2015-2018)

Drainage Objectives	Action	Timescale	Links to County Council Priority Outcomes	Links to the HMEP – Guidance on the Management of Highway Drainage Assets (2012)
Define the Highway Drainage Asset	Define investment required and **areas at risk of local flooding** for targeted inventory and condition surveys to be undertaken.	August 2016	Making Best Use of Our Resources Keeping Vulnerable People Safe	Recommendation 3 Recommendation 4
	Undertake targeted **inventory & condition surveys** in areas at risk of local flooding	December 2018	Making Best Use of Our Resources Keeping Vulnerable People Safe	Recommendation 3 Recommendation 4
Deliver an Efficient & Effective Highway Drainage Service	Complete the agreed two-year targeted cyclical **gully cleansing** programme on-time.	April 2017	Making Best Use of Our Resources Keeping Vulnerable People Safe	Recommendation 1 Recommendation 6 Recommendation 9 Recommendation 11
	Implement new process for **prioritising investigation of drainage defects**	October 2015	Making Best Use of Our Resources Keeping Vulnerable People Safe	Recommendation 1 Recommendation 6 Recommendation 11
	Develop **prioritised programme** of capital schemes in advance of **DfT's Challenge Fund 2017**.	March 2017	Making Best Use of Our Resources	Recommendation 1 Recommendation 6
Work in collaboration with People & Partnerships	Engage with **internal teams and external organisations** especially in relation to flood risk management	December 2015	Making Best Use of Our Resources Helping People Help Themselves	Recommendation 2 Recommendation 7 Recommendation 8 Recommendation 10
	Develop existing **Data Management System** to include all known drainage asset inventory and mapped areas at risk of flooding to focus maintenance activities.	December 2018	Helping People Help Themselves	Recommendation 5

Glossary

The following terms are used in this strategy:

Asset management

A strategic approach which identifies the optimal allocation of resources for the management, operation, preservation and enhancement of the highway infrastructure to meet the needs of current and future customers.

Critical asset

An asset without which you cannot deliver a statutory service.

Cyclical maintenance

Works which are carried out on a planned and regular basis.

Deterioration

The change in physical condition of an asset resulting from use or ageing.

Grip

A grip is a shallow ditch/channel connecting the road edge to the roadside ditch.

Gully

A drainage pit covered by an open metal grating located on the road edge. Its purpose is to drain rain water from the highway.

Inventory

A list of assets with details of location, specification and condition.

Local Flood Risk Management Strategy

A high level strategy which assesses local flood risk across the county and sets out objectives and actions for managing it.

Outfall

A structure through which a drainage system discharges into ditch or watercourse.

Proactive maintenance

Maintenance undertaken before the function of an asset is affected.

Reactive maintenance

Maintenance undertaken when the function of an asset has already been affected.

Soakaway

A pit, typically filled with hard core, into which water is piped so that it drains slowly out into the surrounding soil.

Surface Water Management Plans

A study to understand the flood risk that arises from local flooding, which is defined by the Flood and Water Management Act 2010 as flooding from surface runoff, groundwater, and ordinary watercourses.

East Sussex Highway Asset Management Drainage Strategy

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October 2015 • 15-16 265

TRANSPORT ASSET MANAGEMENT PLAN
-
MAINTENANCE MANAGEMENT POLICY DOCUMENTS

MAINTENANCE STANDARDS & WARNING LEVELS

CHAPTER TWO

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INTRODUCTION

Under section 58(2) of the Highways Act[1] the highway authority has a special defence against an action for damages for non-repair of highway, if the following criteria have been considered;

(a) the character of the highway, and traffic which was reasonably to be expected to use it;
(b) the standard of maintenance appropriate for a highway of that character and used by such traffic;
(c) the state of repair in which a reasonable person would have expected to find the highway;
(d) whether the highway authority knew, or could reasonably have been expected to know, that the condition of the part of the highway to which the action relates was likely to cause danger to users of the highway;
(e) where the highway authority could not reasonably have been expected to repair that part of the highway before the cause of action arose, what warning notices of its condition had been displayed;

This section defines the maintenance standards approved by this Highway Authority for roads, footways and cycleways in consideration of (b) and (c) above.

MAINTENANCE STANDARDS

The main reference document for maintenance standards is the 'Well-maintained Roads Code of Practice for Highway Maintenance Mangement[2]', which contain national standards that have been established after research and represent a range of values, thus enabling a highway authority to select standards appropriate to its policies and local circumstances.

The maintenance standards and warning levels which follow have been grouped into the county's maintenance budget headings for ease of reference.

1. *Routine Maintenance*

Cyclic Maintenance

These can be grouped into the following types of work:-

a. *Gully Emptying, Drain Cleaning and Minor Repairs*

The emptying of gullies and catchpits and hydraulic jetting of gully connections and drain runs, and minor repairs to gullies catchpits, grip clearing and cleaning gully tops and the drainage system.

b. *Traffic Signs*

The cleaning of traffic signs.

2. *Preventative and Structural Maintenance*

Preventative and structural maintenance although two separate types of work are, for the purposes of setting maintenance standards, interlinked. If preventative maintenance is not undertaken at a certain stage in the life of a carriageway or footway then at a later stage more expensive structural maintenance measures will have to be undertaken.

There are two different types of standard which can be set for carriageway or footway, these are;

1. *Warning Levels*

These are an engineering measurement and are used as a method for prioritising work on a needs basis, within the resources available.

2. *Intervention Levels*

These are levels at which intervention needs to be considered and can include the size of particular defects which the highway authority would be expected to take immediate action to make safe. These can be found in **TAMPMMPD-04 - Guidance Notes for Inspectors when Undertaking 'Safety' Inspections**.

a. Carriageways

There are a number of modes of deterioration for carriageways with the condition being measured in the following ways;

(i) Loss of Anti-skid Surfacing

The loss or stripping off of anti-skid material which has normally been laid at sensitive locations.

(ii) Surface Fatting Up

The surface of the road becoming bitumen rich. This can occur due to a combination of excess bitumen migrating to the surface with the aggregate moving below the surface.

(iii) Heavy Crazing/Cracking

The cracking and coarse crazing of the surface leading to the ingress of water into the road foundation.

(iv) Pushing/Rutting and Deformation

This is the pushing of the top surface due to the action of the vehicles. The formation of ruts or channels in the wheel tracks and deformation due to a week foundation.

(v) Minor Potholing

Extensive areas of minor potholing which would not be identified within the safety inspections as a category 1 defect.

(vi) Verge Damage

Excessive damage to the verge by overriding of vehicles.

(vii) Drainage Competence

Ponding of water on the surface showing either inadequate drainage or poor vertical alignment.

(viii) Road Marking Visibility

The loss of road markings at junctions and solid white lines in the centre of the road.

The following are the warning levels for each category of road taken from the road hierarchy[2],

CARRIAGEWAY - WARNING LEVELS			
Location	**Warning Category**	**Road Category**	
		1 & 2	**3 & 4**
Loss of Anti-Skid Surfacing			
Whole Road	High	Length ***greater than 25metres*** in either lane	Length ***greater than 50metres*** in either lane
	Medium	Length between ***10metres to 25metres*** in either lane	Length between ***25metres to 50metres*** in either lane
	Low	Length between ***5metres to 10metres*** in either lane	Length between ***10metres to 25metres*** in either lane
Surface Fatting Up			
On a sharp bend (warning sign present), or the approaches to pedestrian crossing or signalised junction.	High	Length ***greater than 25metres*** in either lane	Length ***greater than 50metres*** in either lane
	Medium	Length between ***10metres to 25metres*** in either lane	Length between ***25metres to 50metres*** in either lane
	Low	Length between ***5metres to 10metres*** in either lane	Length between ***10metres to 25metres*** in either lane
Approaches to sharp bend (warning sign present) or major junctions (A or B roads)	High	Length ***greater than 100metres*** in either lane	Length ***greater than 200metres*** in either lane
	Medium	Length between ***50metres to 100metres*** in either lane	Length between ***100metres to 200metres*** in either lane
	Low	Length between ***25metres and 50metres*** in either lane	Length between ***50metres and 100metres*** in either lane
Non-event section of road	High	Length ***greater than 200metres*** in either lane	Length ***greater than 300metres*** in either lane
	Medium	Length between ***100metres to 200metres*** in either lane	Length between ***200metres to 300metres*** in either lane
	Low	Length between ***50metres and 100metres*** in either lane	Length between ***100metres and 200metres*** in either lane
Heavy Crazing/Cracking			
Whole Road	High	Length ***greater than 50metres*** in either lane	Length ***greater than 100metres*** in either lane
	Medium	Length between ***25metres to 50metres*** in either lane	Length between ***50metres to 100metres*** in either lane
	Low	Length between ***10metres to 25metres*** in either lane	Length between ***25metres to 50metres*** in either lane

CARRIAGEWAY - WARNING LEVELS

Location	Warning Category	Road Category	
		1 & 2	3 & 4
Pushing/Rutting/Deformation			
On sharp bend (warning sign present), or the approaches to pedestrian crossing or signalised junction.	High	Length ***greater than 25metres*** in either lane	Length ***greater than 50metres*** in either lane
	Medium	Length between ***10metres to 25metres*** in either lane	Length between ***25metres to 50metres*** in either lane
	Low	Length between ***5metres to 10metres*** in either lane	Length between ***10metres to 25metres*** in either lane
Approaches to sharp bend (warning sign present) or major junctions (A or B road)	High	Length ***greater than 100metres*** in either lane	Length ***greater than 200metres*** in either lane
	Medium	Length between ***50metres to 100metres*** in either lane	Length between ***100metres to 200metres*** in either lane
	Low	Length between ***25metres and 50metres*** in either lane	Length between ***50metres and 100metres*** in either lane
Non-event section of road	High	Length ***greater than 200metres*** in either lane	Length ***greater than 300metres*** in either lane
	Medium	Length between ***100metres to 200metres*** in either lane	Length between ***200metres to 300metres*** in either lane
	Low	Length between ***50metres and 100metres*** in either lane	Length between ***100metres and 200metres*** in either lane
Minor Potholing			
Whole Road	High	Length ***greater than 50metres*** in either lane	Length ***greater than 100metres*** in either lane
	Medium	Length between ***25metres to 50metres*** in either lane	Length between ***50metres to 100metres*** in either lane
	Low	Length between ***10metres to 25metres*** in either lane	Length between ***25metres to 50metres*** in either lane
Verge Damage			
Either Verge	High	Length ***greater than 50metres***	Length ***greater than 100metres***
	Medium	Length between ***25metres to 50metres***	Length between ***50metres to 100metres***
	Low	Length between ***10metres to 25metres***	Length between ***25metres to 50metres***
Drainage Competence			
Whole Road	High	Length ***greater than 25metres*** in either lane	length ***greater than 50metres*** in either lane
	Medium	Length between ***10metres to 25metres*** in either lane	Length between ***25metres to 50metres*** in either lane
	Low	Length between ***5metres to 10metres*** in either lane	Length between ***10metres to 25metres*** in either lane

CARRIAGEWAY - WARNING LEVELS			
Location	**Warning Category**	**Road Category**	
		1 & 2	**3 & 4**
Road Marking Visibility			
Junctions including right turn hatched marking lanes	High	***At least 50%*** of the junction road markings lost	***At least 75%*** of the junction road markings lost
	Medium	***Between 25% and 50%*** of the junction road markings lost	***Between 50% and 75%*** of the junction road markings lost
	Low	***Between 10% and 25%*** of the junction road markings lost	***Between 25% and 50%*** of the junction road markings lost
Solid white line centre markings	High	Length ***greater than 25metres***	length ***greater than 50metres***
	Medium	Length between ***10metres to 25metres***	Length between ***25metres to 50metres***
	Low	Length between ***5metres to 10metres***	Length between ***10metres to 25metres***

b. Footways & Kerbs

There are a number of modes of deterioration for footways;

(i) Cracked/Broken Paving Slabs

Extensive cracked or broken slabs.

(ii) Heavy Crazing/Cracking Blacktop Footway

The cracking and coarse crazing of the surface leading to the ingress of water into the road foundation.

(ii) Displaced Kerbs

Lengths of kerbs which have been displaced.

The following are the warning levels for each category of footway taken from the footway hierarchy[3],

FOOTWAY - WARNING LEVELS			
Location	**Warning Category**	**Footway Category**	
		1 & 2	**3 & 4**
Cracked/Broken Paving Slabs			
Whole Footway	High	Length ***greater than 25metres***	Length ***greater than 50metres***
	Medium	Length between ***10metres to 25metres***	Length between ***25metres to 50metres***
	Low	Length between ***5metres to 10metres***	Length between ***10metres to 25metres***

FOOTWAY - WARNING LEVELS			
Location	**Warning Category**	**Footway Category**	
		1 & 2	**3 & 4**
Heavy Crazing/Cracking Blacktop Footway			
Whole Footway	High	Length ***greater than 25metres***	Length ***greater than 50metres***
	Medium	Length between ***10metres to 25metres***	Length between ***25metres to 50metres***
	Low	Length between ***5metres to 10metres***	Length between ***10metres to 25metres***
Displaced Kerbs			
Whole Footway	High	Length ***greater than 50metres***	Length ***greater than 100metres***
	Medium	Length between ***25metres to 50metres***	Length between ***50metres to 100metres***
	Low	Length between ***10metres to 25metres***	Length between ***25metres to 50metres***

c. *Drainage*

The objective of highway drainage is supporting the principal objectives of structural maintenance by ensuring that surface water is removed from the carriageway as quickly as possible and not allowed to pond or penetrate to the foundations of the road.

d. Roadmarkings and Roadstuds.

Maintenance and replacement of the existing roadmarkings and roadstuds.

ROADMARKING AND ROADSTUD - MAINTENANCE STANDARDS

Replacement due to Maintenance Works

i. Temporary warning signs must be provided where mandatory markings are removed and shall be retained until the permanent markings have been replaced.

ii. Markings and road studs should be replaced as soon as economically practicable after completion of the surfacing works, but not more than 28days.

e. Traffic Signs (non-illuminated)

Maintenance and replacement of the existing non-illuminated traffic signs and bollards.

TRAFFIC SIGNS (NON-ILLUMINATED) - MAINTENANCE STANDARDS

	Description	Standard
I	Cleaning	When required
ii	Replacement and repair of signs and bollards	The speed of permanent repair or replacement will depend on the degree of danger.
iii	Painting of fingerposts, supports and frames	When required (condition reported when cleaned) but not exceeding 10 years interval

f. Fences, Barriers and Walls

Those safety barriers, pedestrian barriers, fences and small retaining walls owned by the Highway Authority.

FENCES, BARRIERS AND WALLS - MAINTENANCE STANDARDS

	Description	Standard
i.	Painting	When required
ii	Cleaning	This is only expected to occur where safety barriers or guard railings are being used in lieu of chevron warning signs.

Note

1 A small retaining wall has a retained height less than 1.0m

3 *Structural Maintenance*

The standards and warning levels for carriageway and footway works are the same as for preventative maintenance.

4 *Winter Maintenance*

The main reference document for national standards is the Winter Maintenance Chapter to the Code of Practice[2].

Detailed arrangements for winter maintenance are published annually by the Transport and Environment department within a Winter Service Policy & Plan. This document sets out the standards for salt, plant and vehicles, weather information, performance monitoring and communications. The following is a summary of the main standards adopted:-

WINTER - MAINTENANCE STANDARDS

Precautionary Salting Roads

The following categories of road will be included within the schedule of routes to be precautionary salted:

Category 2	-	Strategic Routes
Category 3A	-	Main Distributors
Category 3B	-	Secondary Distributors
Category 4A	-	Link Road

Precautionary Salting Response and Treatment Times

Response Time

1 hour — period between a decision being taken to begin treatment and vehicles leaving the depot

Treatment Time

3 hours — period vehicles leaving the depot and the completion of treatment on all priority routes.

This authority aims to:

(i) complete precautionary salting of priority carriageways by 7.30am.

These targets are designed to ensure that precautionary salting is completed before the morning rush hour, but there will be occasions when weather conditions dictate otherwise.

Weather Forecast

This shall include as a minimum the following requirements:-

(i) a detailed 24 hour road weather forecast;
(ii) a 2 to 5 day forecast for planning purposes;
(iii) a 24 hour Consultancy service;
(iv) the timing of forecasts to ensure that they meet the authority's decision making needs.

Road Danger Warnings are also to be received in October and April

5 Traffic Signals

The following standards have been adopted for traffic signal and signalised pedestrian crossings;

TRAFFIC SIGNAL - MAINTENANCE STANDARDS

	Description	Standard
i	Lamp changing	Lamps are changed at 6 monthly intervals
ii	Mechanism/Electrical	Annually or when a fault is suspected
iii	External cleansing	6 monthly or when a fault is suspected
iv	Fault logging	Daily

Notes

1. Remote monitoring systems linked to controllers via telephone lines report most faults which can occur.

[1] For the definitions of footway and road hierarchies see TAMPMMPD-02 - Guidelines for Determining Approved Maintenance Hierarchies for Roads, Footways and Cycleway.

TRANSPORT ASSET MANAGEMENT PLAN
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MAINTENANCE MANAGEMENT POLICY DOCUMENTS

GUIDANCE NOTES ON SCRIM AND SKIDDING RESISTANCE

CHAPTER SIX

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INTRODUCTION

This document sets out the policy on measuring the skidding resistance of the County Road network. It identifies the survey type and the frequency of surveys utilised to determine skidding resistance and action to be taken with the results of the survey.

STRATEGY

Roads to be Surveyed

The category of roads, on which a SCRIM survey will be undertaken on the following category of roads as defined in **TAMPMMPD-01**[12]:-

Category 2: ***Strategic Routes***, including local authority motorways, primary routes and the most important urban traffic links with more than local significance.

Category 3: ***Distributor Roads***, both main and secondary serving a local purpose and connecting to strategic routes.

This shall be known as the SCRIM network.

A list of all roads to be surveyed will be kept along with a list of roads, or sections of road, that are to be excluded from the survey with a reason for this exclusion. Reasons for exclusions could include traffic calming schemes, speed humps and tables, width, height or weight restrictions, 20 mph zones or road layouts where it is not possible or safe to maintain the survey speed.

Additional lengths of road may be surveyed at the request of the Area Network Manager or Traffic and Safety. However, these surveys will only be undertaken in the year they are requested and will not be permanently included in the survey schedule.

Survey Type and Methodology

Skidding resistance will be measured by employing a SCRIM survey. East Sussex will employ the Mean Summer SCRIM Coefficient (MSSC) method which is based on the average of three readings taken from surveys carried out on three separate occasions during the test season. The test season runs from 1st May to 30 September.

The testing speed for the whole SCRIM survey will be 50 km/hr. The survey at 20 km/hr will no longer be undertaken. Testing will be undertaken in the left hand lane and in both directions.

Approximately one third of the network will be surveyed each year, with the whole SCRIM network being surveyed every 3 years.

INVESTIGATORY LEVELS

Definition of Investigatory Level

The Investigatory Level is the level of skid resistance, measured as MSSC, at or below which a site investigation is to be considered.

Standards

In developing these guidance notes reference has been made to skidding resistance standards HD28/04[13] developed by the Department for Transport's Highways Agency. The site categories and associated Investigatory Levels defined in HD 28/04 have been developed for motorways and trunk roads. Therefore in formulating these guidance notes it has been recognized that these standards may not be applicable to the more diverse nature of local authority roads. A table of approved Investigatory Levels is contained in Appendix 1. A schedule detailing the rationale for the Investigatory Levels and variations from HD 28/04 can be found in Appendix 2.

All Investigatory Levels will be reviewed on a three year cycle, which shall identify significant changes to the network, such as new traffic lights and pedestrian crossings and changes to speed restrictions.

The following conventions shall be applied:-

- Where more than one site category is considered to be appropriate at a location then the site category with the higher Investigatory Level will be selected.

- Site categories Q and K will as a rule is the 50m approach to the feature, though this may be extended where it is justified by site characteristics.

- When defining site categories, no site shall be defined as being less than 50% of its averaging length. Where this occurs then the site should be included in either the preceding or following site, whichever has an investigatory level nearest to and at or above the investigatory level of the site being defined.

ACTION TO BE TAKEN AT SITES AT OR BELOW MSSC

Site Investigation

An investigation will be undertaken of each site where the MSSC is at or below the IL for the site category. The objective of the site investigation is to consider:-

a) Whether the measured skidding resistance for the site is representative and, if necessary, an assessment of reasons why the survey may not be representative. The following may have an adverse affect on the MSSC:-

   i. an especially dry summer can create conditions for a lower than normal MSSC.
   ii. housing, industrial or off road development where mud and detritus is carried onto the highway.
   iii. in rural areas vehicular movement out of fields where mud and detritus is carried onto the highway.
   iv. mud and detritus being washed onto the highway from adjacent fields.

b) The site will need to be assessed to see whether it has reached its equilibrium level of skidding resistance, or whether it is likely to fall still further.

c) Whether some form of action is required or whether the site should be kept under review.

A record of the technical assessment shall be retained by the network office for future reference.

Warning Signs

Where the MSCC is found to be 0.10 units below the Investigatory Level for the site slippery road signs shall be erected.

Slippery road signs shall be removed as soon as they are no longer required. This should be after the remedial action has been taken and the area office is satisfied that skidding resistance levels have been returned to an appropriate level.

Remedial Action

Where skidding resistance is found to be 0.10 units below the Investigatory Level and there are clear indications that improving the condition of the surface is likely to significantly reduce the risk of accidents occurring then remedial treatment should be prioritised as a matter of urgency.

Priority shall be given to treating the following sites:-

- Category K, G2 and S2r where the skid resistance is at least 0.05 MSCC below the Investigatory Level.
- Where the accident history shows there to be a clearly increased risk of wet or skidding accidents.

Where investigations show that treatment is necessary, consideration should be given to whether surface treatment or other measures are appropriate. This assessment shall include whether the site can more effectively treated by:-

i. improving the skidding resistance;
ii. improvements to the site in other respects; or
iii. a combination of both.

INVESTIGATORY LEVELS FOR SKIDDING RESISTANCE

Appendix 1

Site Category	Definition	Investigatory Level At 50 km/hr					
		0.30	0.35	0.40	0.45	0.50	0.55
B	Dual Carriageway, non-event section						
Cs	Single Carriageway (Strategic Routes), non-event section						
Cd	Single Carriageway (Distributor Routes), non-event section						
Q	Approaches to and across minor[1] and major[2] junctions and approaches to un-surveyable[3] roundabouts						
K	Approaches to Pedestrian Crossings, traffic lights, survey-able roundabouts and other high risk situations.						
R	Roundabouts						
G1	Gradient 5-10%, longer than 50m						
G2	Gradient >10%, longer than 50m						
S1	Bend radius <500m, longer than 50m – Dual Carriageway						
S2	Bend radius <500m, longer than 50m – Single Carriageway						
S2r	Bend radius <100m, longer than 30m not subject to 40mph or less speed restriction						

[1] - In urban areas, those subject to 40 mph or less speed restrictions, minor junctions will only include junctions with category 3a, 3b and 4a roads. In rural areas minor junctions shall include all main interconnecting roads.

[2] - In both urban and rural areas major junctions shall include all junctions with category 2 roads.

[3] - An 'unsurveyable' roundabout is one where the survey speed of 50 km/hr cannot be safely maintained.

Notes:

i. Investigatory levels are for the MSSC within the appropriate averaging lengths.

ii. Investigatory levels for site categories B, Cs and Cd are based on 100m averaging lengths.

iii. Investigatory levels for site categories Q, K, G1, G2, S1, S2 and S2r are based on 50m averaging lengths.

iv. Investigatory levels for site category R are based on 10m lengths.

v. Residual lengths less than 50% of a complete averaging length may be attached to the penultimate full averaging length, providing the site category is the same.

Survey Regime & Site Category Investigatory Level Ranges

Survey Regime	-	HD28/04 has been developed for trunk roads and motorways and favours the Single Annual Survey Method. Under this method the entire SCRIM network is surveyed every year with a single run and a correction factor applied to give a characteristic SCRIM coefficient (CSC). This survey methodology has been adopted in order to try and remove both the in-year seasonal variations and larger cycle year-on-year variations. This is achieved by undertaking the surveys in successive years in the early, middle and late part of the test season respectively and over a three year period deriving a correction factor that can then be applied to the single readings. This method will take three years to become established and provide reliable results. In the case of the County Road network it is considered that that there could be problems with the accuracy of applying one correction factor to the numerous surfacing types present. Therefore if this method were adopted several correction factors would need to be maintained along with a detailed record kept of surfacing materials over the entire SCRIM network. The county has been employing the current policy of surveying the network using three runs within a year to obtain a Mean Summer SCRIM Coefficient (MSSC) for a number of years and as such has a high level of confidence in the results obtained. Surveying the network in this manner also highlights possible variations in results due to local circumstances to be highlighted when site investigations are undertaken. It is therefore considered that the Mean Summer SCRIM Coefficient method of surveying is the more appropriate and reliable technique of undertaking the surveys.
Ranges for Investigatory Level Site Categories	-	The ranges of Investigatory Levels shown for each site category in HD 28/04 have not been used. A single value Investigatory Level for each site category has been chosen to define the appropriate Investigatory Levels.

Site Categories and Investigatory Levels			
Adopted Site Category and Definition		**HD 28/04 Site Category**	**Comments**
B	Dual Carriageway, non-event section	B	Investigatory level defined as 0.35 and set at the lowest ranking Investigatory Level in HD 28/04 as it is considered that on the more lightly trafficked county road dual carriageway network there is a diminished safety risk from lower Investigatory Levels than on the more heavily trafficked trunk roads.
Cs	Single Carriageway (Strategic Routes), non-event section	C	Investigatory Level of 0.40 defined and set at the lowest ranking Investigatory Level in HD 28/04 as it is considered that on the more lightly trafficked county road single carriageway strategic network there is a diminished safety risk from lower Investigatory Levels than on more heavily trafficked trunk roads.
Cd	Single Carriageway (Distributor Routes), non-event section	C	Investigatory Level of 0.35 defined for distributor routes as this type of road is more lightly trafficked than strategic routes and there is a diminished risk to safety in adopting this level. This Investigatory Level compares with the lowest rank for category C in HD28/04.
Q	Approaches to and across minor and major junctions and approaches to un-surveyable roundabout.	Q	Minor and major junction approaches have been retained at an Investigatory Level of 0.45 which is considered appropriate for this the more lightly trafficked county road network. The technique adopted in HD28/04 of considering approaches to all roundabouts regardless of size as junctions has been adopted. Previously all roundabout approaches were treated in the same manner, category J, whether they were large roundabouts on rural sections of principal roads or mini-roundabouts on unclassified roads in towns. The approaches to mini-roundabouts and those with a radius too small to be surveyed will be given an Investigatory Level of 0.45.
K	Approaches to Pedestrian Crossings, traffic lights, surveyable roundabout and other high risk situations.	K	Investigatory Level defined as 0.50 as county roads are more lightly trafficked than strategic routes and it is considered that there is a diminished risk to safety in adopting this level. This Investigatory Level compares with the lowest rank for category C in HD28/04.

Site Categories and Investigatory Levels			
Adopted Site Category and Definition		**HD 28/04 Site Category**	**Comments**
R	Roundabouts	R	Surveys will now only being carried out at 50 km/hr and as such only the largest of roundabouts will be able to be surveyed. The higher survey speed has the effect of giving lower skidding resistance readings so it is considered that on the more lightly trafficked county roads the lowest rank Investigatory Level from HD 28/04 is suitable.
G1	Gradients between 5-10%	G1	Investigatory level defined as 0.45 and set at the lowest ranking Investigatory Level in HD 28/04 as it is considered that on the more lightly trafficked county road network where these gradients occur then there is a diminished safety risk from lower Investigatory Levels than on the more heavily trafficked trunk roads.
G2	Gradients greater that 10%	G2	Investigatory level defined as 0.50 and set at the lowest ranking Investigatory Level in HD 28/04 as it is considered that on the more lightly trafficked county road network where these gradients occur then there is a diminished safety risk from lower Investigatory Levels than on the more heavily trafficked trunk roads.
S1	Bend radius <500m, longer than 50m – Dual Carriageway	S1	Bends were not previously considered if they were subject to a 40 mph or lower speed restriction and no differentiation was made between single and dual carriageway roads. Bends on dual carriageways have been given an Investigatory Level of 0.45 compared with the lowest rank in HD 28/04 as it is considered that on the more lightly trafficked county road dual carriageway network there is a diminished safety risk from lower Investigatory Levels than on the more heavily trafficked trunk roads.
S2	Bend radius <500m, longer than 50m – Single Carriageway	S1	HD 28/04 does not differentiate between rural and urban bends and as such this category includes those bends in areas subject to a 40 mph or lower speed restriction that did not previously have a separate category. The bend radius has also been increased from 250m to 500m, dramatically increasing the length of the network now considered to be a bend. An Investigatory Level of 0.40 has been defined as it is considered that on the more lightly trafficked county road single carriageway strategic network there is a diminished safety risk from using a lower rank Investigatory Level than on the more heavily trafficked trunk roads.

Site Categories and Investigatory Levels			
Adopted Site Category and Definition		**HD 28/04 Site Category**	**Comments**
S2r	Bend radius <100m, longer than 30m not subject to 40 mph or less speed restriction.	H2	Within HD 28/04 all bends, whatever their radius, are potentially given the same Investigatory Level. This is considered to be unrealistic for county roads as there are a small number of very sharp bends, with radii less than 100m, in areas not subject to a 40mph or lower speed restriction. A category has been incorporated on safety grounds to allow a higher Investigatory Level to be applied to the sharper bends in rural areas. They will be surveyed at the higher survey speed of 50 km/hr and it is considered that an Investigatory Level of 0.50 is deemed appropriate.

Bibliograph;

[1] **TAMPMMPD-02 – Guidelines for Determining Approved Maintenance Hierarchies for Roads and Footways**

[1] **HD28/04 – Skid Resistance Volume 7, Section 3 of the Design Manual for Roads and Bridges published by the Highways Agency.**

Bibliography

1 Highways Act 1980 published by The Stationery Office

2 See TAMPMMPD-01 - Guidelines for Determining Approved Maintenance Hierarchies for Roads, Footways and Cycleways.

4 Highways Act 1980 published by The Stationery Office.

5 County Structure Plan 1991 - 2011, Urban and Rural Background Papers.

6 Well- maintained Highways Code of Practice for Highway Maintenance Management published in 2005 by the Roads Liaison Group

7 Department of Transport Design Manual for Roads and Bridges Volume 3 - BD 63/94 - Inspection of Highway Structures

8 Management of Highway Structures - A Code of Practice published in 2005 by the Roads Liaison Group

9 Department of Transport Design Manual for Roads and Bridges Volume 3 - BD 21/93 - The Assessment of Highway Bridges and Structures

10 For the definitions of footway and road hierarchies see TAMPMMPD-02 - Guidelines for Determining Approved Maintenance Hierarchies for Roads, Footways and Cycleway.

~~Bibliography~~

~~11 Highways Act 1980 published by The Stationery Office~~

Bibliograph;

12 TAMPMMPD-02 – Guidelines for Determining Approved Maintenance Hierarchies for Roads and Footways.

13 HD28/04 – Skid Resistance Volume 7, Section 3 of the Design Manual for Roads and Bridges published by the Highways Agency.