

# Highway Infrastructure Asset Management Strategy 2023



## Document Control

Version	Approval	Issue Date	Review Date
0.2 (Draft)	Senior Management Team review	Oct. 2016	04/10/16
0.3 (Draft)	Cabinet Member – Highways & Transport	Oct. 2016	08/11/16
0.3 (Draft)	Cabinet Board	Oct. 2016	13/12/16
1.0	Key Decision	Dec. 2016	23/12/16
2.0 (Draft)	Service & Contract Review Update	Draft	Nov. 2020
2.6 (Approved)	<a href="#">Cabinet Member Key Decision</a>	30 Dec. 2020	Dec. 2022

Version	Review Actions	Status	Action By
2.7	Adjusted to meet Accessibility legislation	Complete	GRR
	No material change to approved content		
3.0	Reviewed for corporate policy alignment and data update only Includes accessibility compliance adjustments	March 2023	GRR
4.0	Content table updated	Sept 2023	GRR
5.0	Approved	Sept 2023	

### Highway Infrastructure Asset Management Strategy Review

This strategy will be updated annually with minor amendments and reviewed on a biennial basis to align with the HIAMG and other current national and local good practice requirements.

This process will be managed and implemented by the Highways, Transport and Planning Directorate.

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# 1. Introduction

## 1.1 The importance of Highway Infrastructure to West Sussex

The highway infrastructure in West Sussex provides an important and vital contribution in creating a county of growth and opportunity whilst maintaining and improving the quality of life for all those who live, work and visit West Sussex. Good roads are a vital part of West Sussex's infrastructure and are essential for the county's economic progress and future prosperity.

The [West Sussex Transport Plan 2022 to 2036](#) (WSTP) is the County Council's main policy on transport and supports delivery of Our Council Plan and its priorities. It was adopted on 1 April 2022.

The WSTP sets out how the County Council intends to address key challenges by improving, maintaining and managing the transport network in the period up to 2036. We will do this by working with our strategic partners, particularly in relation to funding.

The WSTP contains five thematic and eight area transport strategies which are intended to deliver the plan's objectives covering the following four themes:

- Prosperous West Sussex
- Healthy West Sussex
- Protected West Sussex
- Connected West Sussex

The local highway network is the most valuable publicly owned asset managed by the County Council. With a total replacement cost of £15.62 billion, the importance of effective and efficient management cannot be overstated.

## 1.2 The Benefits of an Asset Management approach

Our strategic approach to Asset Management seeks to optimise the value of West Sussex's highway infrastructure over its whole life. To deliver our Asset Management approach effectively we will:

- facilitate decision making by supporting engineering judgement with financial, economic and engineering analysis
- enable understanding and management of whole life costs and asset performance
- provide data and evidence for effective and sustainable investment and maintenance decisions
- support reduction of carbon consumption and associated energy and other costs associated with highway infrastructure operation and maintenance

Effective long-term planning and forecasting of asset performance can minimise and prevent expensive short-term repairs. Strategic asset processes ensure the County Council can manage risk and maintain a highway environment that is safe and accessible for customers.

### 1.3 Asset Management Policy

The West Sussex County Council Highway Infrastructure Asset Management Policy is a high-level document that establishes the County Council’s commitment to Infrastructure Asset Management and demonstrates how this approach aligns with the West Sussex Plan. The Policy is a stand-alone document and has been published alongside this strategy on the Council’s website.

### 1.4 Asset Management Strategy

The Asset Management Strategy promotes an efficient, effective and integrated approach to Highway Infrastructure Asset Management and sets out how the Asset Management Policy will be delivered. It is informed by a highway asset management framework and aligns with the guidance in the [Code of Practice – ‘Well-managed Highway Infrastructure’](#), which establishes the activities and process that are necessary to develop, document, implement and continually improve highway maintenance within a risk-based management framework. Aligned to the Council’s objectives, this strategy seeks to follow the latest advice, including from the Highway Infrastructure Asset Management Guidance Document.

### 1.5 Highway Maintenance Plan

The Highway Maintenance Plan articulates the adoption of an integrated asset management approach to highway maintenance and aims to keep the highway safe and meet the required levels of service through risk-based assessment. The development of levels of service appropriate for the local needs, and priorities for West Sussex, are regularly reviewed considering affordability alongside customer expectations, and the condition of different highway infrastructure elements, or asset groups.

### 1.6 Alignment to the West Sussex Plan

West Sussex County Council recognises that an asset management approach supports the achievement of priorities set in [Our Council Plan](#) which is the County Council's corporate plan for 2021-2025 by focusing on these corporate outcomes and cross cutting Highway, Transport and Planning (HTP) Experiential Place Statements (EPS)

### 1.7 Our Council Plan

Keeping people safe from vulnerable situations	A sustainable and prosperous economy	Helping people and communities to fulfil their potential	Making the best use of resources	
The right services and infrastructure are delivered in the right place at the right time	The roads, pavements and paths are safe and well managed	Transport choices are provided for all		

Corporate Priorities and Service Delivery Objectives (Fig. 1)

## **1.8 Resetting the organisation for a better future**

Implementing the Highway Infrastructure Asset Management Policy and Strategy will assist with achieving the objectives detailed in the current Our Council Plan, and looks forward to contributing to delivering services within the developing framework of resetting the organisation for a better future by focusing on the following four foundation priorities underpinned by the cross-cutting theme of climate change:

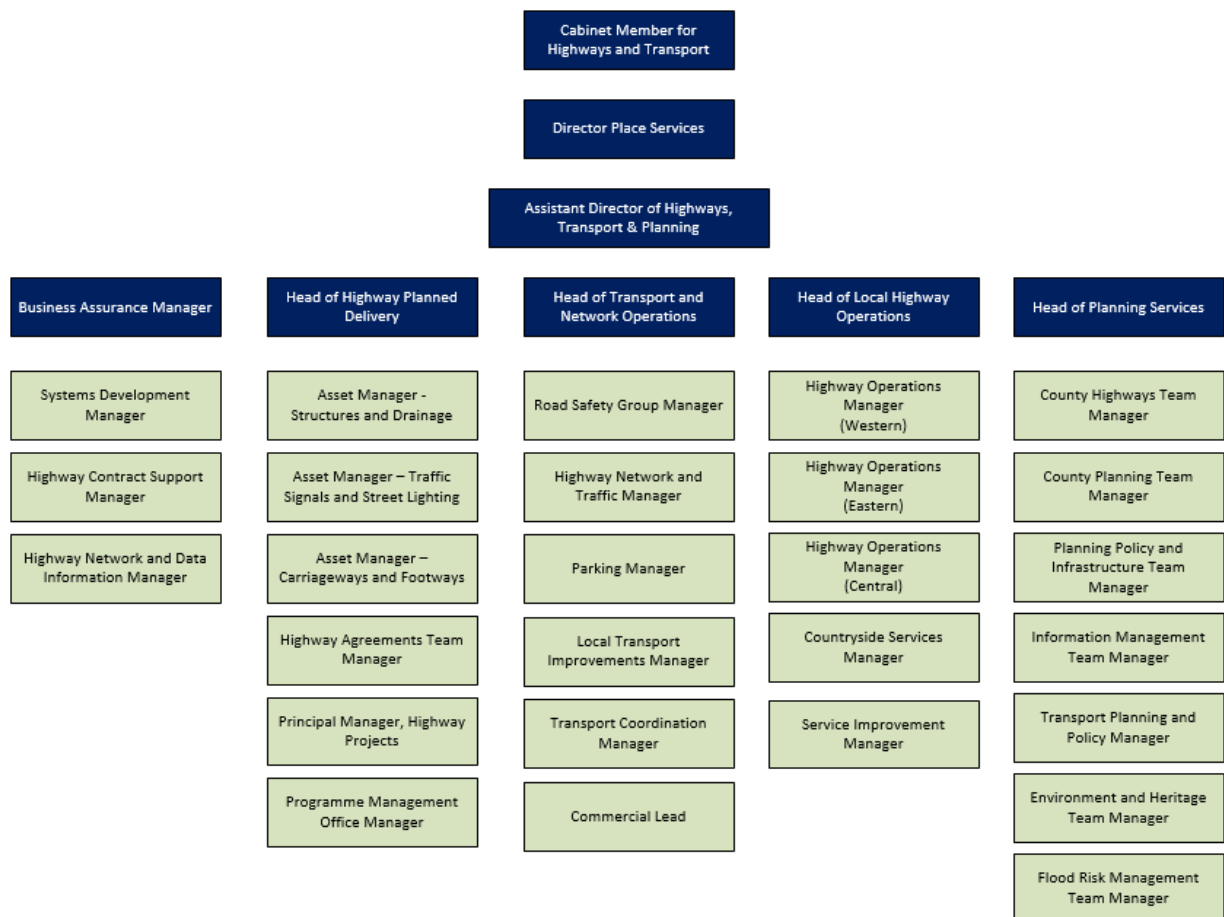
1. Keeping people safe from vulnerable situations
2. A sustainable and prosperous economy
3. Helping people and communities fulfil their potential
4. Making best use of resources

## 2. Highways, Transport and Planning

Our strategic framework reflects the asset management cycle, enabling a flexible approach across all the elements of highway infrastructure we manage and maintain. At strategic, tactical and local delivery levels a Plan Do Check Act cycle is followed allowing the service to respond and understanding when future investment is needed, to maintain the roads and highway infrastructure at the optimum time.

### 2.1 Highway Infrastructure Maintenance

The Highways, Transport and Planning Directorate has an organisational structure that reflects the importance asset management plays in the delivery of highway and transport services. This structure enables the continual development, review and promotion of asset management best practice through asset leads, each with specialist knowledge and understanding of the highway infrastructure they manage.



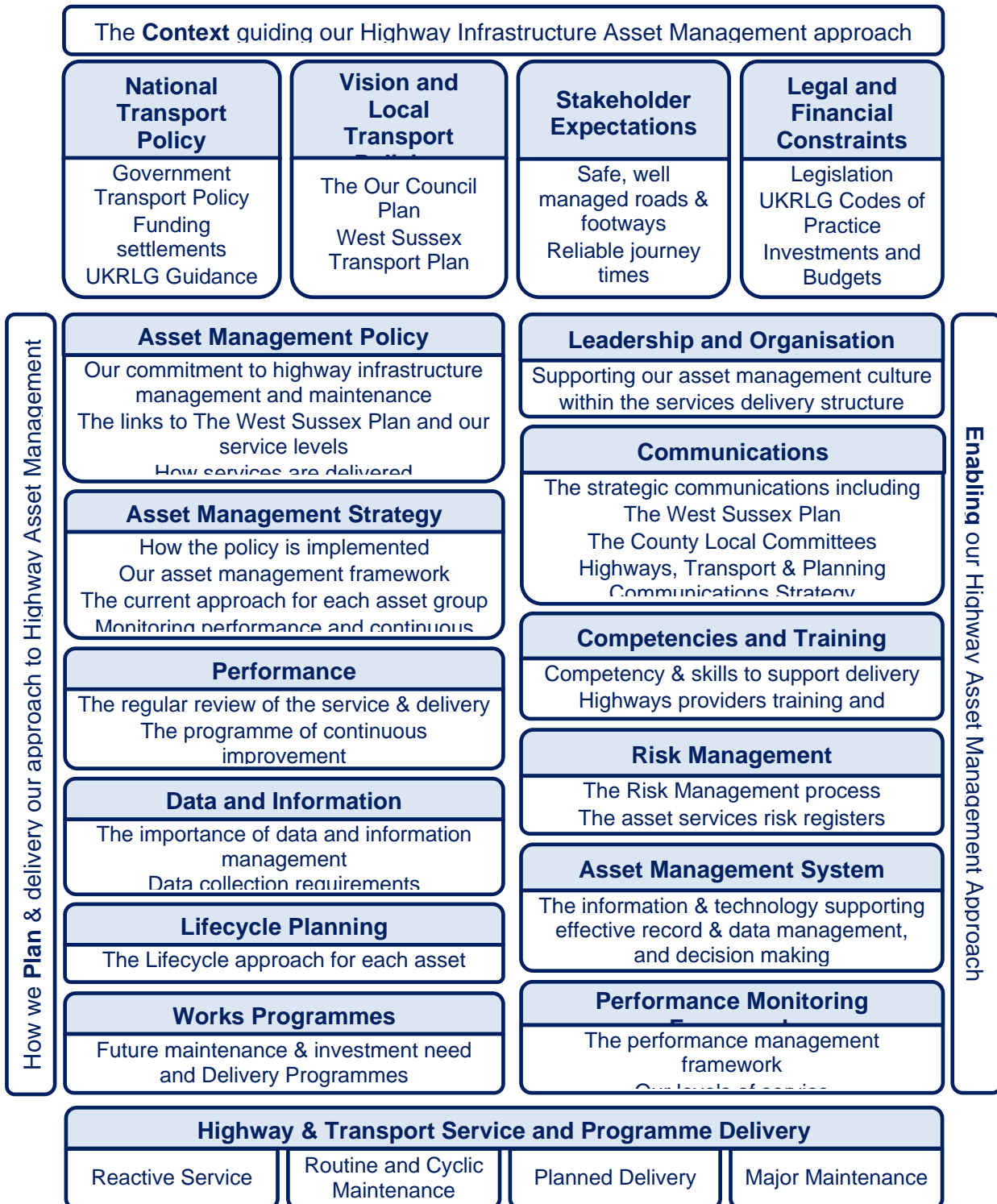
Asset Management Delivery Structure (Fig. 2)



## 2.2 Asset Management Framework

The asset lead officers work within the Asset Management Framework described in Figure 3

Making effective decisions about when to maintain our highway infrastructure assets relies on acquiring appropriate knowledge and using it in this robust decision-making framework.



Asset Management Framework (Fig. 3)

## **2.3 Our service delivery partners and supply chains**

West Sussex County Council works with highway infrastructure delivery partners to support the best use of resources, making decisions in the best interests of our communities and businesses. A strategic approach to delivery is procured through multiple contract and framework "Lots" to enable flexibility in highway infrastructure maintenance, improvements and operational services. The service is a collaboration with a one service, one team ethos – West Sussex Highways.

A thorough contract procurement process that included detailed assessment of quality and price was completed during 2019/2020. Single provider and framework contracts took effect from 1 April 2020.

### **Single Provider Contracts**

Contracts for Highway Core Services (Lot 1), Drainage Cleansing (Lot 2), and Hedge Maintenance and Grass Cutting (Lot 3) are five-year contracts and have an option to extend for a further five years based on successful performance.

### **Framework Agreements**

Framework arrangements enabling delivery of capital funded highway infrastructure maintenance and improvements for Carriageway & Footway Resurfacing (Lot 4), Carriageway Surface Dressing and Carriageway & Footways Treatments (Lot 5), and Infrastructure Improvements – Planned Works (Lot 6) commenced on 1<sup>st</sup> April 2020 for four years.

A Professional Services Framework arrangement provides additional competencies and skills, when needed, to work alongside our own experienced highway teams. This agreement commenced in May 2022.

### **Traffic Signal Maintenance Service**

Maintenance of our traffic signals and traffic system technology is supported by a specialist contract that commenced in October 2016 for five years. The option to extend this arrangement to 2026 (an optional 5 years) was confirmed in 2020.

### **South Coast Street Lighting Partnership**

Approved by the Department for Transport in January 2008 the County Council jointly procured the substantial replacement of most of its street lighting stock through a Private Finance Initiative (PFI) together with Hampshire County Council and Southampton City Council. The PFI covering the investment, maintenance and operation of street lighting as part of the South Coast Partnership over 25 years commenced in April 2010.

### **Highway Asset Condition Surveys**

An important element that informs effective decision making, performance monitoring, and national reporting requires the authority to undertake surveys to monitor the condition of the highway infrastructure and road network. The tender for the procurement of highway infrastructure asset condition and inventory services during 2020 selected specialist and accredited suppliers to collect and analyse data to support the identification of future maintenance priorities and

investment need for the following surveys for 2 years from 1<sup>st</sup> April 2022, with an option of 1 year's extension subject to performance.

- SCANNER surveys on A, B and C Roads
- FMS – Footway Maintenance Survey
- CVI – Coarse Visual Inspection Survey for 'D' (unclassified) Roads and Roundabouts
- SCRIM – Skid resistance testing of road surfaces and data analysis / site investigations
- Highway Inventory Data Collection

## **3. Levels of Service and Target Setting**

### **3.1 Overarching Principles**

The national guidance contained within the Code of Practice – ‘Well-Managed Highway Infrastructure’ promotes authorities to develop levels of service in line with local needs, priorities and affordability through risk-based assessment. Generally, our levels of service are defined within the following core objectives for highway maintenance, ensuring they are achievable for available budgets:

- safety,
- customer service,
- serviceability and
- sustainability.

Maintenance of our highway infrastructure contributes to these core objectives. Levels of Service and delivery arrangements have been established with a focus on these core objectives and are centred on outcomes (rather than inputs) mainly related to the “type” of maintenance.

### **3.2 Levels of Service**

Our Levels of Service set out how the highway infrastructure assets are expected to perform in clear and effective terms, that can be monitored against the public and highway user’s expectations.

Considering appropriate aspects of our highway infrastructure’s performance, including our statutory duties, strategic objectives, condition, available funding, and minimum performance requirements, our levels of service are set out within the Highway Maintenance Plan and are monitored to:

- Ensure adequate focus is given to what is important to the customer
- Measure the effectiveness of our approach to infrastructure management and maintenance
- Link the costs with the benefits of the services provided
- Provide a service that meets statutory obligations
- Ensure operational activities support the achievement of strategic goals

### **3.3 Performance Monitoring**

Performance measures and target setting enable monitoring of the asset management strategy, it’s delivery and the performance of our infrastructure assets. It also enables analysis to support forecasting to understand the levels of capital investment that will mitigate the demand on revenue maintenance spend and determine funding levels required to:

- a) continuously improve the overall network integrity and resilience to meet

- established and future WSCC performance targets, and
- b) maintain a steady state of condition at current levels.
- c) the cost of meeting the strategy in the short, medium and long term

Condition or performance targets, and historical trends are referred to within each main asset group. These are regularly monitored and reviewed by the asset group manager or lead, to inform maintenance priorities and future investment need. In addition to specific infrastructure condition data the service will also monitor the following funding and maintenance elements to support decisions:

**Budget Shortfall** - is a measure of the difference between the annual budget that is calculated to be required to keep an asset in reasonable condition and the actual budget received in the same period.

**The Maintenance Backlog** - The media and annual surveys such as the Asphalt Industry Alliance annual ALARM survey, often refer to the national maintenance backlog. This is generally considered to be an estimate of the average number of years needed to clear a maintenance backlog. The one-time catch-up costs to clear the maintenance backlog returning the asset to the target condition is often quoted alongside the maintenance backlog.

### **3.4 Performance Framework**

West Sussex County Council is committed to the development of good practice and continuous improvement. Monitoring of the County Council's service providers forms an integral part of individual contract framework conditions, with strategic monitoring, performance measures and targets, data and information audits, and compliance monitoring.

Continuous development of our Performance Framework providing visibility of the operational performance of our supply partners aligned to the strategic aims of the authority and tactical delivery of the service, is a critical element of our monitoring approach.

#### National Highways and Transport (NHT) Public Satisfaction Survey

The National Highways and Transport Public Satisfaction Survey collects feedback from the public on their satisfaction with, Highway and Transport Services in the County Council area.

The annual survey provides a unique, standardised, collaboration between Highway Authorities across the UK enabling comparison, knowledge sharing, and the potential to improve efficiencies by the sharing of good practice. It gives the County Council:

- A better understanding of how we are performing in the eyes of the public
- A consistent datum for setting service levels and a means of measuring the impact of service improvements
- Access to the best performers and the opportunity to learn from the good practice of others
- Full transparency of data for benchmarking purposes

The [NHT surveys](#) are key to ensuring the County Council delivers high value services that residents demand.

### **3.5 NHT Customer, Quality, Cost (CQC) Efficiency Network**

The CQC Efficiency Network provides its local authority members with an annual assessment of their efficiency, using satisfied Customer, technical Quality and Cost-effective delivery at its heart to measure performance. The CQC methodology has focused on key areas of carriageway maintenance which is the highest maintenance expenditure for local authorities.

## **4. Strategic Communications**

### **4.1 Background**

Good roads are a vital part of West Sussex's infrastructure and essential for the county's economy, supporting our communities and businesses. West Sussex County Council maintains over 2,500 miles of road, a diverse network ranging from major roads linking coastal communities with economic centres, to rural lanes accessing communities in areas of natural beauty.

### **4.2 Communication Aims and Objectives**

In our approach to asset management and highway maintenance we aim to provide clarity and transparency in order to:

- Inform and support decisions that affect highways management
- Improve the reputation of West Sussex Highways, maintaining a high profile and positive image
- Demonstrate that, as a customer focused organisation, we have acted quickly and decisively
- Ensure good evidence and data is available to support additional national funding opportunities

To help people understand the approach to asset management (where and why roads are being repaired), and to improve understanding of how repairs are being made to roads and pavements we will:

- Communicate to residents and all interested stakeholders that we will continue to explore innovative and sustainable techniques while delivering a value for money service
- Emphasise that we are continuing with the asset management approach, which is more cost effective in the long term.
- Endeavour to show residents that resources are being well used, and they are well informed of the facts, understand the issues, and have realistic expectations
- Engage and consult with stakeholders, listening to feedback

To monitor the services delivery and performance to highlight the work of the county council in:

- Managing resources and targeting priorities to illustrate "the right services and infrastructure are delivered in the right place at the right time"
- Responding to immediate safety concerns so "the roads, pavements and paths are safe and well managed"
- Making the road network more resilient to extreme weather for the long term

### **4.3 Key Messages**

Well maintained roads and pavements are vital for the continued economic prosperity of West Sussex and continued quality of life.

The county council is committed to providing the best possible highways service to communities, residents and businesses.

West Sussex Highways is working towards making its assets resilient to the effects of extreme weather caused by climate change and is aligned to the ambitious target to be carbon neutral by 2030.

The new contract framework arrangements are competitive, offer good value for money for West Sussex's council taxpayers and can deliver the quality of work residents expect and deserve.

This reinforces our focus on sustainability and the benefits of engaging with the local supply chain to deliver a high-performing contract and economic prosperity for the residents of West Sussex.



## 5. Asset Group Strategies – overarching approach

### 5.1 Highway Infrastructure Assets

The asset management framework aligned with national guidance, divides our highway infrastructure assets into asset groups. Each group is managed by asset leads who focus on the asset components and maintenance activities.

Dividing the asset into component parts and identifying the relative costs and demand for planned, routine and reactive maintenance activities is important to achieving continuous improvement in our approach to asset management.

Asset Group	Quantity (April 2022)	Condition & Maintenance
<b>Carriageways</b>	Length: 4,046.23 km (2,514.21 miles) Area: 25,664,739 sqm Kerb length: 4,403.32 km	Principal A-Road network “in need of maintenance” is 0.6% above the target 5%. Classified B & C Road network “in need of maintenance” is at 4.4% and 6.5% respectively Unclassified Road network “in need of maintenance” is estimated at 3.4%
<b>Footways and Cycleways</b>	FW Length: 3,950.77 km FW Area: 7,570,822 sqm CW Length: 80.160 km	The proportion of the Footway Network “in need of maintenance” is approximately 4%.
<b>Structures &amp; Drainage Assets</b>	Bridges: 662 no. Subways: 32 no. Footbridges: 92 no. Retaining Walls: 68 no. Culverts: 28 no. Pumping Stations: 18 no. Reservoirs: 3 no.	Overall Bridge Condition Index (BCI) Average: 92.2366 Critical: 82.6770  Regular and statutory inspections record maintenance needs for future funding considering the impact on the highway network as a whole.
<b>Highway Drainage</b>	Gullies: 130,737 no. Ditches: 224 km Grips: 6746 no.	A cleansing programme of highway gullies and ditches, with a targeted second cleansing is completed annually.
<b>Street Lighting (incl. Illuminated Traffic signs)</b>	Streetlights: 68,974 no. Illuminated Signs: 8,219 no. Illuminated Bollards: 2,943 no.	The Street Lighting PFI completed the core investment from 2010 to 2015. The contract is now in the 20-year maintenance phase from April 2015.
<b>Electronic Traffic Equipment</b>	Signalised Junctions: 122 no. Pedestrian Crossings: 369 no. Vehicle Activated Signs: 185 no.	The traffic signals and vehicle activated signs are managed with a specialist supplier through the Traffic Signals Maintenance Contract. Defects, faults and road traffic collisions are repaired on a reactive basis.
<b>Road Markings, Signs and Street Furniture</b>	Safety Fencing: 80.06 km Pedestrian Barriers: 59.14 km Road Markings: 481,664 sqm Road Studs: 116,642 no. Traffic Signs (Non-Illum): 48,576 Bollards: 15,866 no.	Defects and faults are identified by the Safety Plus Inspection regime and repaired as part of the reactive safety response or revenue funded maintenance programme.
<b>Green Infrastructure</b>	Grass Verges: 5,062.859 km (24,081,414 sqm) H/way Trees: 301,120 no. H/way Hedges: 103,663 sqm Planted Areas: 87,439 sqm	Defects and faults are identified by the safety inspection regime and repaired on a reactive / programmed maintenance basis alongside scheduled, cyclic maintenance

Summary of Highway Infrastructure Asset Groups (Table 1)

## **5.2 Service Delivery Planning**

A key function of the asset management process is to understand the funding needs of each asset group, components and maintenance activities considering:

- Strategic aims and objectives
- Investment need and service delivery
- Performance against the service levels and targets.
- Service delivery and operational risks

Understanding the impact of investment decisions and their effect on the highway infrastructure, and the people and communities who use it is important when setting budgets and identifying maintenance priorities. Wherever possible a needs-based budgeting approach is used for highway maintenance budget allocation decisions. This is supported using proprietary lifecycle management tools for all major assets.

## **5.3 Lifecycle Delivery**

Our approach to maintenance of the highway infrastructure assets considers all aspects from design and construction to disposal. This includes predicting future performance of an asset or group of assets, based on investment scenarios, and maintenance strategies.

Our decisions about the need for maintenance investment are based on the deterioration of the asset, optimum timing for maintenance, choice of treatment, and overall need to prevent deterioration or replace an asset. Considering the whole life of the asset to determine the timing of intervention enables decisions to be made based on the lowest whole life cost and provides good value for money.

Maintenance and funding strategies considering different treatment options over the whole life of the asset are promoted and developed, within individual asset group Life Cycle Plans. These provide:

- A mechanism to support decision-making
- Identify long term investment within an agreed maintenance strategy
- Predict future performance based on investment and strategy scenarios either by:
  - The level of investment needed to attain the required performance, or
  - The performance that will be achieved with a level of funding

Benefits and value for money are achieved by considering both the capital investment, and routine maintenance decisions to maximise the value and minimise asset costs over their lifecycle.

## **5.4 Programme Management Office**

The Programme Management Office (PMO) is a crucial enabler that brings together a robust and consistent approach to programme management.

The development of effective delivery programmes bringing together individual asset groups is completed by:

- Identifying maintenance need and candidate schemes
- Prioritising works in each asset group / service area
- Selection and optimising schemes for the Forward Programme Pipeline
- Selecting schemes for the future delivery programmes aligned to budget availability
- Design and specification of individual schemes and Delivery Programmes
- Procurement via the relevant framework contract arrangements
- Monitoring of programme and works to ensure they meet the delivery and quality requirements

The **Forward Programme Pipeline** provides robust and reliable information to identify the asset maintenance to be carried out within the next three to five years. This programme is used to support forward financial planning, and communicate required maintenance investment to the elected members, and West Sussex communities' businesses and residents.

The [Delivery Programmes](#) are developed and prepared from the Forward Programme pipeline for approval by the Cabinet Member for Highways and Transport. It brings together prioritised maintenance schemes considering available funding for delivery and the relative need across all asset groups.

## **5.5 Local Priorities and Value Management**

The initial criteria used to prioritise and optimise a maintenance need or delivery programme takes account of the condition and serviceability of the asset, alongside safety issues and local transport priorities.

Social, economic and environmental benefits, local community or user demands, and political priorities are also factors used to differentiate between which schemes are prioritised for delivery within the budget limitations. These "soft" influences are identified using Value Management criteria. The level of influence, or weighting, each criterion has within individual asset group programmes is periodically reviewed with the stakeholders and are communicated within the Lifecycle Plans for the relevant asset group.

## **5.6 Operations and Maintenance**

Pressure on operational revenue costs has increased in recent years and the need to demonstrate good value is a key objective for the County Council. Working closely, with our service delivery partners and their supply chain, we aim to optimise the end-to-end process to deliver schemes and infrastructure maintenance in a timely and cost effect way. Operational and maintenance decisions are informed by a systematic evaluation, specification, commercial assessment and recording regime within a gateway process.

## 6. Individual Asset Group Strategies

### 6.1 Carriageways

West Sussex County Council aims to ensure that the road network is maintained to a standard consistent with its use, and also deliver network safety and condition through reliable maintenance and operation processes. These goals are in line with the recent national guidance including the Code of Practice – ‘Well-managed Highway Infrastructure’ and previous government funding initiatives such as the Incentive Fund Element by the Department for Transport (DfT), that aimed to stimulate and improve the efficiency and effectiveness of highway investment across the country.

Carriageway networks are classified according to functional categories (or hierarchy). The categories reflect the type and use of different carriageways

Category	Hierarchy description	Type of roads	Description
2	Strategic Route	Trunk and some principal ‘A’ roads between primary destinations.	Routes for fast-moving long-distance traffic with little frontage access or pedestrian traffic. Speed limits are usually in excess of 40mph and there are few junctions.
3a	Main Distributor	Major urban network and Inter-Primary links. Short-medium distance traffic.	Routes between strategic routes and linking urban centres to the strategic network with limited frontage access. In urban areas speed limits are usually 40mph or less.
3b	Secondary Distributor	Classified road (B and C class) and unclassified urban bus routes carrying local traffic with frontage access and frequent junctions.	In rural areas link larger villages to strategic/ main distributor network. In urban areas usually have a 30mph speed limit and high levels of pedestrian usage.
4a	Link Road	Routes linking between the main and secondary distributor network with frontage access and frequent junctions.	In rural areas provide inter-village links and connect to distributor network. In urban areas residential or industrial interconnecting roads.
4b	Local Access Road	Roads serving limited numbers of properties carrying only access traffic.	In rural areas serve smaller villages and provide access to limited number of properties and land. In urban areas they are often residential loop roads or cul-de-sacs.

*Road Functional Categories (Table 2)*

The UK system of road classification aims to direct motorists towards the most suitable routes for reaching their destination. It does this by identifying roads that are best suited for the demanding traffic. All the national roads (excluding motorway and truck roads) fall into the following four categories.

Hierarchy description	Category	Description
Principal	A	Major roads intended to provide large-scale transport links within or between areas.
Secondary	B	Roads intended to connect different areas, and to feed traffic between A roads and smaller roads of the network.
	C	Smaller roads intended to connect together unclassified roads with A and B roads, and often linking a housing estate or a village to the rest of the network. Similar to 'minor roads' on an Ordnance Survey Map and sometimes known unofficially as C roads.
Link	Promoted Unclassified (U)	Bus routes and important commuter routes.
Local	Unclassified (U)	Local roads intended for local traffic.

*Road Classifications (Table 3)*

### Road Condition

The measure of road condition used by government to monitor roads is the percentage of the network that "needs" maintenance. Analysis of the condition data regularly collected in the county aligns to the percentage of the network that is calculated to be in a "red" "amber" or "green" condition based on its Road Condition Indicator (RCI) score. In general:

- **Green** defines carriageway in a good state of repair
- **Amber** is where some deterioration is apparent, which should be investigated to determine the optimum time for planned maintenance
- **Red** for carriageway in poor overall condition

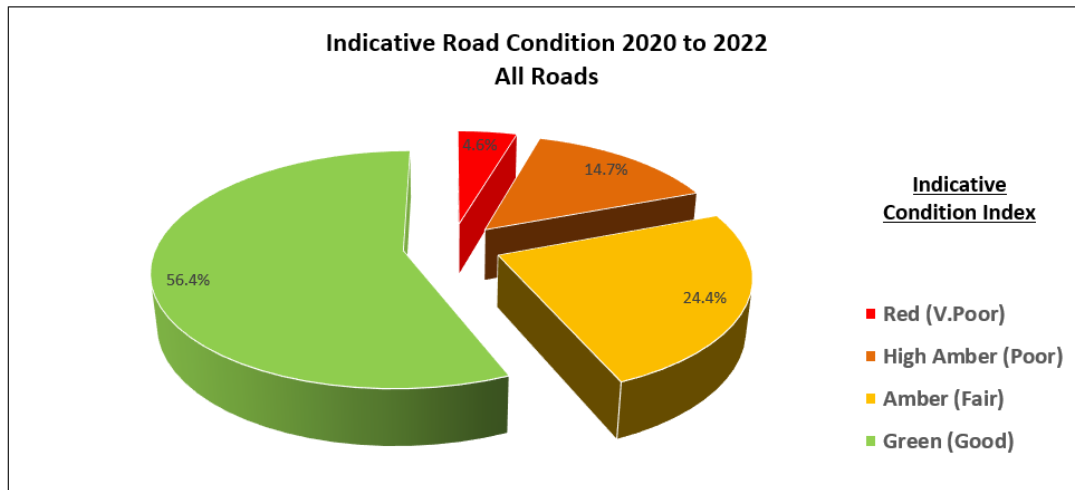
In West Sussex we also have a "high amber" definition (sometimes referred to as "pink") to enable the identification of those parts of the network that are approaching a poor (Red) condition (i.e. have generally deteriorated beyond the point where preventative maintenance treatments will be effective).

The condition descriptors are set out in the following table

Colour Code	Letter Code	Road Condition Indicator score
Green	VG – Very Good	< 20
	G – Good	21 < 40
Amber	F – Fair	41 < 70*
High Amber	F – Fair	71 < 100*
Red	P – Poor	101 < 214*
	VP – Very Poor	215 < 315

*Road Condition Descriptors (Table 4)*

The percentage of the road network in each condition band is assessed using national criteria and standards set out within the UK Pavement Management System (UKPMS). The percentage enables an indication of the length of network in Good, Fair or Poor condition, and assists in identifying where engineers should be focusing maintenance programmes and repairs.



**In need of maintenance**  
Very Poor (Red) Condition = 116 miles  
Poor (High Amber) Condition = 369 miles

**Requiring maintenance soon**  
Fair (Amber) Condition = 613 miles

**Maintenance not currently needed**  
Good (Green) Condition = 1416 miles

*Indicative Road Network Condition in West Sussex (Fig.4)*

### **Delivery Strategy**

The timely inspection of the road network to identify all defects likely to create danger or serious inconvenience to road users within a risk-based inspection regime.

The continuous strategic review of current carriageway condition status and investment forecasting sets out to understand the levels of capital investment needed to mitigate the demand on revenue maintenance spend and determine levels required to:

- a) continuously improve the overall network integrity and resilience to meet established and future performance targets, and
- b) maintain a steady state of condition at current levels

### **Key contractual arrangements**

Routine and reactive repairs are managed and prioritised by the Local Highways Operations teams that include skilled and competent Highway Inspectors, who undertake regular Safety Inspections. Identified reactive and routine maintenance works are undertaken as part of the Lot 1: Highways Core Service contract arrangement.

Identified planned maintenance or improvement programmes are prioritised within the capital maintenance programme and delivered as part of the Framework Contract arrangements.

## Approach and Service Outcomes

The current Our Council Plan and West Sussex Transport Plan confer the council's aims and objectives that are described within the Highways Infrastructure Asset Management Policy and Strategy documents. Our road network is frequently the focus of stakeholder expectations, corporate vision, transport objectives and priorities, as well as the regular performance assessment and monitoring of maintenance decisions. These elements are the foundation of the levels of service (LoS) delivered by our approach to maintaining the road network in West Sussex.

Levels of Service	Service Outcomes
<b>Safety</b>	<ul style="list-style-type: none"> <li>• Enhance safe use of the road network for the benefit of road users</li> <li>• Minimise the incident of claims liability associated with use of the road network</li> </ul>
<b>Affordability</b>	<ul style="list-style-type: none"> <li>• Enhance economic attractiveness of the road network</li> <li>• Enhance economic viability (financial feasibility) of the road network</li> </ul>
<b>Economic Growth</b>	<ul style="list-style-type: none"> <li>• Promote economic development, i.e. improve transportation services to enhance economic competitiveness of a region, thus attracting new business or retaining existing business</li> <li>• Promote socio-economic efficiency, i.e. promote land-use patterns that foster progressive community development</li> </ul>
<b>Accessibility/ Availability</b>	<ul style="list-style-type: none"> <li>• Improve traffic flows</li> <li>• Reduce travel time</li> <li>• Improve reliability of travel time</li> <li>• Improve accessibility</li> <li>• Improve travel information and customer satisfaction</li> </ul>
<b>Serviceability</b>	<ul style="list-style-type: none"> <li>• Maintain condition of physical road network to agreed target levels</li> <li>• Improve technical feasibility, so that the road network provides desired service that maximises mobility, accessibility and transport modal connectivity</li> <li>• Improve ride comfort</li> </ul>
<b>Sustainability</b>	<ul style="list-style-type: none"> <li>• Preserve environment and minimise the adverse environmental impacts (including ecology, water, air, noise and privacy)</li> <li>• Preserve natural resources</li> <li>• Minimise contribution to climate change</li> <li>• Taking care of public health</li> <li>• Promote sustainable mobility</li> <li>• Adapt construction and maintenance specifications to withstand future weather predictions.</li> </ul>

*Levels of Service and Service Outcomes (Table 5)*

## 6.2 Footways and Cycleways

The footway and cycleway network support walking and cycling modes of travel. The promotion of active travel and modal shift from motor transport have an increasing focus particularly in reducing traffic congestion, improve journey reliability, and reduce carbon emissions linked to climate change. This strategy aligns with the aims and objectives set out in the [West Sussex Walking and Cycling Strategy 2016 – 2026](#).

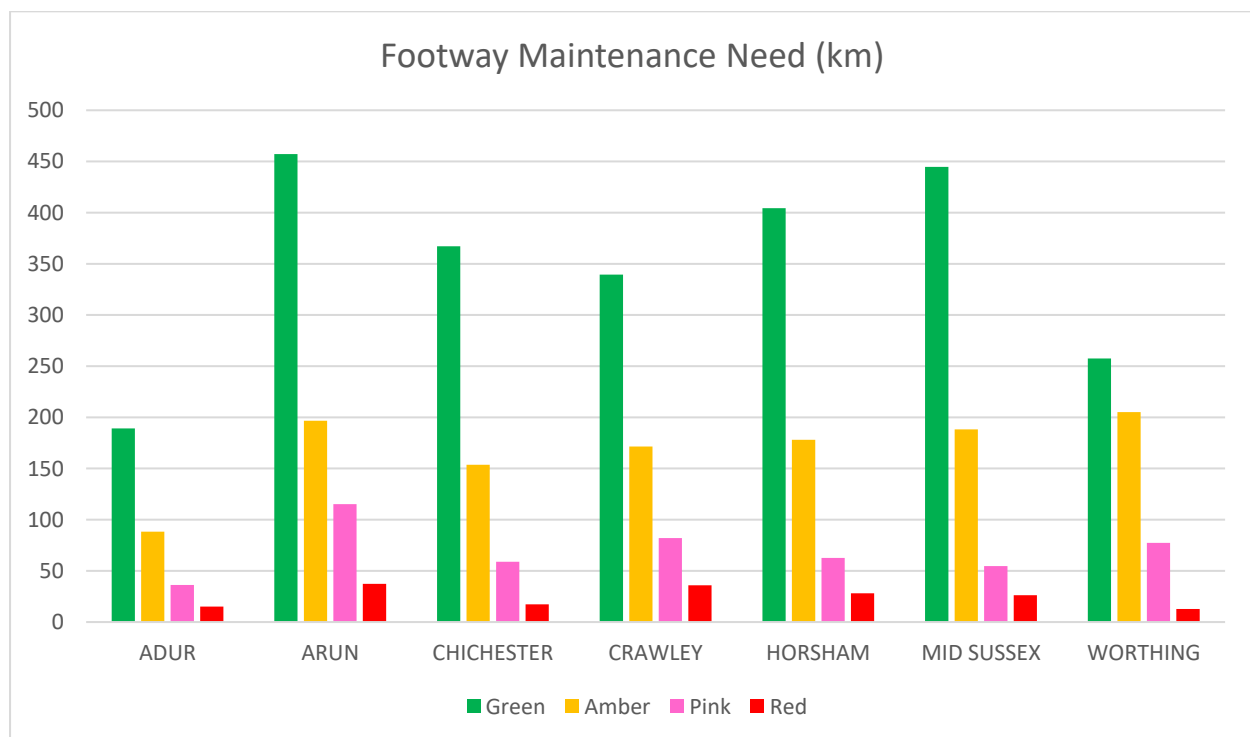
Our footways are typically those adjacent to and remote from the carriageway. Remote footways that are not adjacent to the road, are recorded as independent assets from the carriageway. Cycleways do not include on-carriageway cycle lanes; however, the holistic integrated management and maintenance of the cycle network provides consistency and appropriate levels of service for users.

Maintenance standards are important as poorly maintained footways can lead to safety problems. West Sussex operates an inspection and repair regime known as Safety Plus that ensures dangerous defects are repaired.

Historically, funding has been based upon need, risk and priority allocations. This continues to be the case; however, it now follows a more formal approach based on the asset management principles. Funding available is derived from maintenance needs identified within the works prioritisation ranking.

### Footway condition

Like road condition, the footways in West Sussex are regularly surveyed to monitor their overall condition and collect inventory data about surface materials and changes to the network. This provides a rich source of information, that informs treatment options, maintenance needs and supports future investment predictions.



Footway Maintenance Need (Fig.5)

### Delivery Strategy

The timely inspection of the footway and cycleway network to identify all defects likely to create danger or serious inconvenience to road users within a risk-based inspection regime.

The continuous strategic review of current footway condition status and investment forecasting requires further development to understand the footway maintenance backlog, the levels of capital investment needed to mitigate the demand on revenue maintenance spend and determine levels required to:



- a) continuously improve the overall network integrity and resilience to meet established and future performance targets, and
- b) maintain an agreed and affordable condition level.

**Key contractual arrangements**

Routine and reactive repairs are managed and prioritised by the Local Highways Operations teams that include skilled and competent Highway Inspectors, who undertake regular Safety Inspections. Identified reactive and routine maintenance works are undertaken as part of the Lot 1: Highways Core Service contract arrangement.

Identified planned maintenance or improvement programmes are prioritised within the capital maintenance programme and delivered as part of the Framework Contract arrangements.

**Approach**

The management and maintenance of footways and cycleways aims at achieving the following elements to promote the service levels.

<b>Level of Service</b>	<b>Application within the footway and cycle way network</b>
<b>Safety</b>	Provide a level of safety that minimises the risk of accidents by delivering adequate pavement properties.
<b>Serviceability</b>	Deliver a network that keep users satisfied with the condition of the pavement – including safety and comfort. Deliver a footway network where maintenance does not affect its availability.
<b>Affordability</b>	A balanced strategy of regular maintenance and data-driven priority repairs will maximise service performance within budget commitment.
<b>Availability and Accessibility</b>	Deliver maintenance schemes that promote operation efficiency by guaranteeing sufficient footways capacity, and informed and reliable journey time. Minimising disruption through planning and execution of works.
<b>Protect the Environment</b>	Adopt maintenance solutions that support the reduction of emissions and their implementation does not promote long journey times. Minimise environmental impact, by considering whole-life cost, utilising recycled materials where possible.

*Levels of Service and their application (Table 6)*

**Service Outcomes**

The objectives of the footways and cycleways networks are:

- to provide safe surfaces for the desired usage of footways, pedestrian areas or cycleways;
- to support the wider objectives for modal shift, community health and economic development.

### 6.3 Bridges and Structures

The County Council is responsible for more than 850 bridges and other structures across the county consisting of around 745 highway bridges, 32 subways, 30 large culverts, and 68 retaining walls. These are vital to maintaining accessibility, helping to connect communities and support the local and regional economy.

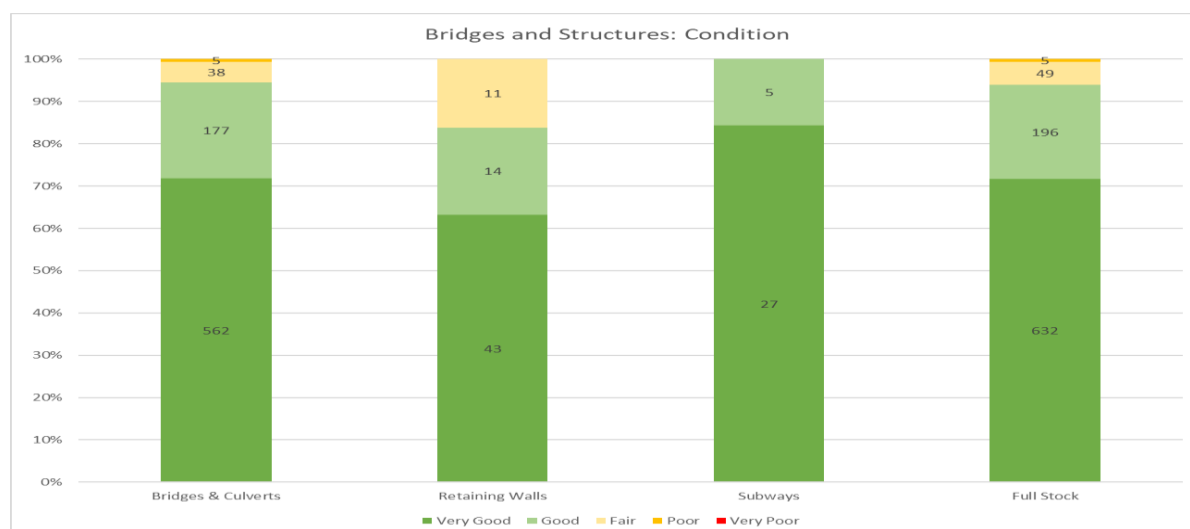
Maintaining these structures is a significant challenge especially with the threat of increasing river levels as a result of climate change, and the effect of increased traffic volumes and vehicle loadings. However, through a comprehensive programme of general and principal bridge inspections, including underwater surveys, a prioritised maintenance regime aims to mitigate the risk associated with weather events, and traffic. By carrying out maintenance works in a timely manner before defects become significant, budgets can be used more effectively to provide greater longevity. Detailed asset information and analysis of condition performance and planned and projected maintenance activity exist for all structures - the exception being retaining walls.

The bridges and structures estate include 882 structures with a span in excess greater than 1.5m. A summary of units in each condition category rated Very Good to Very Poor is set out in table 7.

Condition Band	No. of assets
Very Good	632
Good	196
Fair	49
Poor	5
Very Poor	0
<b>Total</b>	<b>882</b>

*Bridges and Structures Condition Summary (Table 7)*

A further breakdown by asset sub-groups is shown in figure 6.



*Bridges and Structures: Current Condition by asset sub-group (Fig. 6)*

### **Structures Asset Valuation and Investment tool**

The [Structures Asset Valuation and Investment Tool](#) (SAVI) was launched at the Bridges 2020 Conference and is designed to support asset owners, operators and managers with the management of their structure stock. SAVI is a multi-functional, condition-based decision support tool. It can be used to:

- carry out valuation of structures stock,
- develop prioritized short-term programmes of work, and
- develop long-term asset management plans

SAVI was developed for the UK Bridges Board through the Department for Transport and UK Road Liaison Group research funding to assist local authorities and asset operators across the United Kingdom manage their structure stock, ensuring there is an accessible and consistent national approach. SAVI has been developed as a decision support tool, building on the methodology from the previous Structures Asset Management Planning Toolkit. It has been redesigned to include the recommendations from industry consultations in relation to improving its overall usability.

### **Delivery Strategy**

Regular inspection and maintenance is critically important and identifies shorter term remedial repairs, (such as vegetation clearance, parapet repairs, or drainage cleansing) and longer term planned maintenance needs.

Using good quality data and information, the County Council is:

- developing long term asset management plans (up to 120 years),
- determining long-term intervention strategies,
- modelling variable budget scenarios against performance and whole life cost,
- developing tactical short term (5-year) programmes of work
- carry out both gross and depreciated valuation of their structures stock

### **Key contractual arrangements**

Routine and reactive repairs are managed and prioritised by the Asset Manager for Structures and Drainage within budget constraints. Works are undertaken as part of the Lot 1: Highways Core Service contract arrangement.

Identified drainage maintenance or improvement programmes are prioritised within the capital maintenance programme and delivered as part of the Framework Contract arrangements.

### **Approach**

- Using effective inspection and information management to target resources.
- The collection and analysis of good-quality, timely information on the condition, function and past record of all Bridge and Structure assets.
- Timely intervention to correct defects before they cause more fundamental problems
- Being clear on service levels across the network and at each locality, matching asset condition to need.
- Maintaining and where necessary strengthening bridges and structures to ensure that they meet their functional requirements.

## **Service Outcomes**

We are moving to a system of planned interventions designed to preserve, maintain and enhance our bridge and structures assets, utilising a whole-life cost/benefit approach to support effective delivery to:

- Maintain a safe and efficient highway network
- Maintain each asset class in the light of their function, characteristics, opportunities and risks

## **6.4 Highway Drainage**

West Sussex County Council is the Lead Flood Authority with responsibilities for managing flooding from local sources, such as Ordinary Watercourses, surface water (overland runoff) and groundwater in the area. Through a Strategic Flood Partnership, we are working together with District and Borough Councils and other relevant organisations to steer local flood risk management activities in the County. Partnership working between the County Council, the Environment Agency, other relevant organisations and local communities is key to managing flood risk in the future, funding future flood schemes and helping communities to become more resilient to flooding.

As the Highway Authority the County Council has a duty to maintain the highway drainage infrastructure that includes, highway drainage gullies, highway owned ditches, highway culverts, drainage structures such as headwalls and culverts, and highway soakaways. Whilst asset data exists about most highway gullies, information on the associated outfall systems of various types is not fully understood, and the condition of associated drains and pipework is predominantly unknown. This creates significant risk in understanding where drainage discharges from the highway, or where and when investment may be needed to maintain or replace failed highway drainage systems. The collection of this data is very expensive and West Sussex has therefore adopted a risk-based approach, focusing on known flooding “hotspots” to prioritise the gathering of information while carrying out maintenance activities.

### **Delivery strategy**

This strategic and risk-based approach enables us to determine where intervention is needed most, developing the long-term programmes that invest in drainage works, which will prevent major maintenance on other assets and provide a more resilient network for users. This long-term focus enables best value with maintenance expenditure and promotes an effective and efficient asset management approach.

The current gully cleansing operating model is regularly reviewed with our supply chain partners, with the aim of using technology to improve flexibility, quality and responsiveness to local need ensuring maintenance work is appropriate and risk based.

### **Key contractual arrangements**

Working with highway infrastructure delivery partners to support the best use of resources and making decisions in the best interests of our communities and businesses the Lot 2: Drainage Cleansing Single Provider contract supports a strategic approach to maintaining our highway drainage infrastructure. Identified drainage maintenance or improvement programmes are prioritised within the capital maintenance programme and delivered as part of the Framework Contract arrangements.

## **Approach**

- Use the Carriageway Skidding Resistance Strategy to manage the risk of wet road skidding
- Use effective inspection and information management to target resources
- Manage drainage to keep surface water from the carriageway
- Inspectors identify accumulations of water on the carriageway as part of the Safety Plus inspection regime
- Maintain and improve the drainage network so water is removed from the surface of highways as quickly as possible to maintain safe roads and minimise flooding
- Clean out grips and ditches which are responsibility of the County Council where intervention is necessary
- Liaise with landowners to prompt them to maintain their roadside ditches
- Cleanse gullies on a risk-based interval, with targeting of more frequent cleansing at known trouble spots
- Where Parish Lengthsman's Schemes are in place, they will clear leaves and debris from gully grid tops, drainage grips, entrance and exits of highway culverts, and rod blocked drains

## **Service Outcomes**

The management and maintenance of highway drainage is a critical aspect in terms of safety, serviceability and sustainability. Including the drainage of the highway itself and the drainage of land or premises onto or adjacent to the highway we will aim to:

- Deliver effective maintenance
- Maintain a safe, efficient highway by prioritisation of maintenance works on carriageways and associated assets based on the road function set out in the network hierarchy

## **6.5 Traffic Signals and Intelligent Control Systems**

Traffic signal-controlled junctions and pedestrian crossings are an important highway asset, helping to ensure the safe and efficient use of the road network by drivers, pedestrians and cyclists, and promoting safe and well managed roads and pavements. Their efficient operation and maintenance allow those using the road network to move around the county with the minimum of delay and disruption.

Efficient maintenance regimes ensure that the traffic signal installations are maintained in a safe structural and electrical condition. There are currently 122 signal-controlled junctions, 369 pedestrian signal crossings and 185 vehicle activated signs (VAS) installed across the county.

Our approach to the management and maintenance of traffic signals and intelligent control systems, includes the regular monitoring of the component elements of our traffic signal installations, alongside the additional highway assets including white lining, high friction surfacing, pedestrian barriers, and direction signing associated with them. An annual inspection is undertaken which checks the physical condition of the infrastructure and the operation of the equipment, with each component on site being inspected and the condition of the element reviewed. This includes a visual assessment of the structural and electrical condition as well as periodic electrical tests. On the annual inspection each component is scored between one and five. One indicates No Defect and five indicates Critical.



Overall Traffic Signal, Pedestrian Crossing Asset Condition (April 2020) Fig. 7 & 8

Using the asset data for traffic signals enables the County Council to determine the maintenance requirements and life expectancy of the signals. The data is stored on the traffic signals management system and includes the inventory, a scoring system, number of faults, and age of equipment, location, and control system, all of which are updated via the yearly periodic inspection. This data is used to generate an urgent rectification list and a site-specific score which is used to determine the site condition, life expectancy and ultimately the sites requiring a refurbishment.

This data, together with knowledge of the age and degradation of our traffic signal assets, has enabled the approval of an additional four-year capital investment refurbishment programme to maintain the Traffic Signals assets in a safe working order. This is in addition to the Traffic Signal Revenue and Capital Maintenance Budgets.

### Delivery strategy

The Traffic Signals Term Maintenance contract commenced October 2016 and has been extended from the initial minimum period of 5 years to 2026. Within the contract there is the requirement to complete the periodic inspections that enable us to maintain an accurate inventory and status of equipment. This will continue to enable the Traffic Signals Asset Manager to determine where the funds are best allocated and ensure the sites requiring urgent rectification are identified and funding prioritised.

The contract also gives WSCC a mechanism to procure the works via a schedule of rates which was assessed as best value when the contract was awarded.

### Key contractual arrangements

The signals contract has built in mechanisms to allow the changes to equipment to be captured and the associated reactive costs adjusted. This ensures that the new reliable LED technology reduces the monthly revenue cost.

Using this data, we will continue to monitor the status of the traffic signal installations and determine the effect of implementing a partial refurbishment plan. It will also enable us to identify if further investment is required.

### Approach - Lifecycle Planning for Traffic Control Technology

The asset management approach to lifecycle planning enables the Traffic Signals Asset Manager to monitor condition trends and status and to plan improvements within the constraints of available budgets. The objectives include to:

- Realise a reduction in the extent of maintenance, which will reduce the amount of site visits and traffic management required. Hence, reducing disruption to the highway network.

- Reduce the traffic signal fault rate and customer complaints across WSCC
- Introduce new control strategies to improve traffic flows and reduce congestion
- Upgrade refurbishment sites to use latest technologies, such as LEDs, which use less energy
- Achieve a reduction in fault rate using the latest technology
- Introduce new above ground detection technologies to reduce the requirement to replace vehicle loop detection when the road is resurfaced. Hence, reducing ongoing highway maintenance costs.

### **Service Outcomes**

Promoting and accelerating investment and refurbishment programmes, introducing new technology and adapting traffic strategies to support:

- Improvements to safety on the highway
- Reduce energy consumption and related power costs
- Reduce maintenance and fault response activity, and associated costs
- Reduce congestion and associated CO2 emission and journey time impacts
- Reduce fault rates and the associated customer complaints.

## **6.6 Soft Estate / Green Highway Infrastructure**

West Sussex is classified as being 'significantly rural' according to the Department for Environment, Food and Rural Affairs (Defra). 42% of the county's resident population and more than half its businesses are in rural areas. The County Council's Our Council Plan commits to making the county 'the best place to live, work and visit' and therefore the soft estate and green infrastructure plays an important role in the health and well-being of our communities.

The County Council introduced its [Pollinator Action Plan](#) in 2017 with a commitment to help to conserve the UK's pollinators by ensuring the council considers the needs of pollinators in the delivery of its services and works. We seek to protect and enhance the amount and quality of pollinator habitat and manage our greenspace to provide greater benefits for pollinators, and ensure local communities and residents are provided with opportunities to make West Sussex more pollinator friendly.

The County Council is legally responsible for a significant number of trees that face unprecedented challenges, including Ash Die Back, with potentially significant impacts on the delivery of our services. The [West Sussex Tree Plan](#) addresses how the County Council will undertake its statutory duties and responsibilities regarding trees and how it will operate as a highway authority and landowner.

Areas managed currently extend to in the region of 1 million highway trees and approximately 12 million square metres of urban and rural grass across the county.

Public Satisfaction Surveys have shown green infrastructure is extremely important to the residents of West Sussex in terms of impact on the environment and what the area looks like both to people that live here, and potentially those that may like to move or invest here.

Currently maintenance works to the value of £3.56million are undertaken on green infrastructure across West Sussex in 2022/23. This is split as follows:

- £1,200,000 on tree maintenance, tree planting and young tree maintenance

- £600,000 on urban grass cutting
- £360,000 on rural grass cutting
- £1,400,000 on Ash Die Back

Generally, maintenance of our green infrastructure is funded in the most part by revenue funding, although tree planting is supported by contributions by members of the public, Parish Councils and community groups who donate the cost of a new tree.

Whilst some data exists about highway trees, hedges and verges, information to inform maintenance decisions and manage risks is not fully available. The duty, as local highway authority, to ensure that trees in private ownership do not pose a danger to users of the highway, highlights the need to survey and record defective trees and ensure that their owners take appropriate action.

### **Level of service**

*Section 41 (1) Highways Act 1980 places a duty on the highway authority to maintain the highway.*

The current service level around grass cutting is generally recognised as striking a reasonable balance between maintaining the street scene and ensuring the highway is safe for use.

Service levels currently in place are as follows:

- Urban Grass - 5 cuts per year between March and November
- Rural Grass - 3 cuts per year (visibility cuts, 1m swathe and overall cut of highway verges)

*Section 154 Highways Act 1980 places a duty on the highway authority to ensure that hedges, trees or shrubs that overhang a highway or footpath, do not pose a danger to users of the highway.*

The Local Highways Operations service, working with our County Arboriculturist, carry out regular inspections of the highways and trees to monitor condition and risks to the users of our roads. We undertake prioritised maintenance works on highway trees for:

- cyclical works - as necessary on a programmed basis, aligned with the West Sussex Tree Plan
- reactive works - to deal with highway safety issues as a priority, in accordance with our Safety Plus inspection regime
- planned works - including new tree planting and young tree maintenance

### **Approach**

The council's approach will be to continue to provide services required to meet its statutory obligation under S41 (1) and S154 of the Highway Act 1980. Service levels will need to be regularly reviewed, taking account of, and balanced with, the county councils' strategic values, specifically the Pollinator Action Strategy and West Sussex Tree Plan. To achieve and support this, we will continue to share best practice and experiences with our supply partners and neighbouring Local Authorities. This work is already underway, and we are starting to see the benefits filter through. Service reviews will also take a steer from the Well-Managed Highway Infrastructure Code of Practice in terms of maintenance frequencies and risks to users of the highway network and include appropriate consultation with key stakeholders, such as District, Borough and Parish Councils. Officers will seek out every opportunity to achieve efficiencies including working closely with our current service contractors, who has geared up within the



terms of the Lot 3 Single Provider Contract arrangements, to be flexible in terms of service provision and partnership working.

### **Service Outcomes**

Delivery of the agreed Service levels for the maintenance of highway verges is frequently challenged by the expectations of our communities and residents, meaning the identified revenue funded maintenance budgets are regularly under pressure. This is likely to remain a pressure in the future that may have an impact over the medium to long term.

- **Within the 2-5 years period:**

Potential for funding pressures to reduce service levels to only provide cuts necessary to ensure the highway is safe by the end of this term. This could be 2 overall cuts supported by additional cuts required to maintain site lines and sideways clearance, supported and potentially supplemented by Parish Councils and / or community groups. Some potential to change scope of service to cut and collect, which would reduce the need to cut grass as often due to a reduction of soil fertility.

- **Within the 5-10 years period:**

As above with significant local support from parishes or local communities who will be empowered to procure or undertake cuts. In some instances, this may involve a rise in precepts (as has already happened for other activities), community volunteers or self-delivery.

The West Sussex Tree Plan seeks to ensure that the trees within our ownership are maintained, protected, and improved for current and future generations. It also seeks to influence how the wider tree resource within the county is managed and improved. To deliver the longer term strategic aims the following objectives have been identified:

- Better data management and evidence-based decision-making
  - Establishing and embedding policies and processes
  - Managing the impacts of Ash Dieback and other tree pests and diseases
  - Identifying opportunities for investment and income generation
- Working with partners and supporting communities and individuals

## 7. Data Management and Information Systems

### 7.1 Asset Information Strategy

West Sussex County Council, recognises that to deliver an effective highways and transport service we will be required to act flexibly, have a strong and accountable customer focus and demonstrate our performance. This requires access to and confidence in the data and information, appropriate tools and systems to support our service approach.

Information, technology and knowledge are the critical business enablers that improve collaborative working and unlock more efficient and effective methods of operating, maintaining and improving the highway infrastructure in West Sussex.

However, technologies are evolving at a fast pace that requires an agile service to respond to the innovative and often exciting opportunities from the marketplace. To deliver successfully we must:

- Maintain IT skills and competencies within the service
- Keep engaged with technical developments and the industry direction of travel
- Be agile to recognise opportunities for improved efficiencies and knowledge

An Information Management and Technology Strategy is being developed to outline the key principles that will underpin the future management, operation and maintenance of our information, data and systems.

#### Asset Data Quality Plans

Where relevant to individual asset groups, Asset Data Quality Plans set out the proactive approach asset leads take to the collection, recording and management of data and information. These define the activities undertaken to ensure that the data and information meets West Sussex County Council's service management and delivery requirements and informs effective decision making.

The Asset Data Quality Plan framework provides clear definitions for:

- **Asset Information Standards - used to define:**
  - the data and information required
  - where it is stored and managed
  - why it is required
  - how it is collected and measured
  - the format it is required in
  - who it is provided by
  - when it shall be provided
  - the retention requirements
- **Asset Information Systems:** the processes, applications and IT systems utilised to automate the Asset Management processes and enable consistent support for decision making.

- **Data and Information Management:** provides confidence in data quality.  
The data and information management regime measures:
  - Accuracy
  - Completeness
  - Consistency
  - Validity
  - Timeliness
  - Uniqueness

## **7.2 Asset Data Storage and Management**

Consistent and reliable asset information and data is essential for the County Council to continue to make informed decisions and fulfil the service delivery requirements. There are several different asset management related systems in use across the Highways, Transport and Planning services including:

- Asset Register – for Roads, Footways & Cycleways, Structures, Street Lighting, Traffic Signals, highway verges, hedges and trees
- Pavement Management Systems, Structures and Bridge Management, Street Lighting databases
- Scheme / Maintenance programme, Lifecycle Planning and Visualised Asset Management Systems

### Critical Assets

Critical Assets are those roads, bridges and infrastructure that are essential for supporting the social and business needs of local regional and / or national economy. Knowledge of critical assets informs the decision processes. Understanding the consequence of an asset failure requires consideration of safety, economic and environmental impact as well as an understanding of the function the asset performs.

Where critical assets and infrastructure are identified, adequate management of the assets, including appropriate future investment planning, are considered to ensure they are sufficiently resilient to cope with potential threats.

Regular analysis and development of the relative criticality of the County Council's highway infrastructure assets is undertaken to support economic focus and future development areas.

## **8. Climate Change and Sustainability**

### **8.1 Climate Change Strategy**

West Sussex County Council has acknowledged the threat posed to the county and its residents by climate change, and the need to act with urgency on this issue. The council is committed to reinforce and build on our efforts to reduce our impact on the environment. We want to take the opportunity to change decision making for our organisation and communities, to put climate change at the heart of decisions. This is supported by the [Climate Change Strategy 2020-2030](#).

The operation and management of the county's highway infrastructure and built assets is already being impacted by changing patterns in precipitation and storms, with some parts of the road network now more vulnerable to an increased risk of flooding.

### **8.2 Risks to the Highway Network**

Projections for future changes to both average climatic conditions and the frequency of extreme weather events, allow an understanding of where risk levels may change, and the identification of new risks which may emerge as the climate changes. Alongside our own records of past incidents, and other information sources (such as flood maps), we strive to identify when and what action should be taken to adapt to the risks of climate change on the highway infrastructure.

Variations such as intense or prolonged rainfall, hotter temperatures and higher wind speed will impact on our highway assets in different ways subject to location, exposure and vulnerability. The generic impacts that we consider include:

- Flooding (pluvial, fluvial, groundwater and coastal)
- Landslips
- Bridge scour
- Widespread tree falls and canopy damage
- Carriageway surface heat stress
- Damage to power and communications infrastructure
- Collapse of temporary structures on the highway (scaffolding, hoardings etc.)
- Disruption with other transport networks (rail and air etc.)

### **8.3 Delivering a sustainable service**

Integral to adapting to climate change is the need to think sustainably. The actions and decisions we take today need to be balanced with how they will affect generations to come. Taking a sustainable approach means balancing different, and often competing, needs against an awareness of the economic, social, and environmental limitations that we face as a society. And the costs incurred not only financially but to the environment.

The management and maintenance of highway infrastructure will have a significant impact on the council's sustainable approach and contributes towards enabling us to:

- Deliver the ambitions of the Our Council Plan
- Achieve efficiency savings by reducing our operating costs, and reducing the amount of natural resources we consume and purchase

- Increase the resilience of highway infrastructure assets, ensuring they are fit to deliver the expected level of service into the future
- Improve the sustainability of the supply chain, thereby reducing risk and cost
- Make the County Council's Highway services as good as they can be

## 8.4 Future Service Pressures and Demands

### Asset Growth

The asset grows each year due to the adoption of new roads and construction of new road links. Over the last 2 years the following level of additional assets have been adopted by the council:

- Carriageways 12.7 km
- Footways 25.2 km
- Street Lighting 1.4 per cent per year

New assets create the need for maintenance, management and associated funding in future years as these additional assets age. This is particularly relevant to street lighting as energy costs increase immediately exacerbating the effect of rising energy prices.

### Traffic Growth and Composition

Traffic growth places increasing pressure on the road network due to the significant increase in the general volume of traffic and in particular, large commercial vehicles. Many of the council's roads were not designed to accommodate this level of traffic. This accelerates deterioration and creates a growing need for investment in maintenance.

### Environmental Conditions

Pressure is also being placed upon the asset as a result of changing weather patterns including:

- Unpredictable weather:
- Unseasonably harsh winters and changing patterns in precipitation and storms can cause significant damage to road surfaces as they approach the end of their life with poor resilience, in the form of defects resulting from freeze/thaw action.
- Flooding:  
In areas that are prone to river and coastal flooding, and surface water or flash flooding.
- Higher wind speeds:  
Combinations of higher and more frequent high wind events can increase the loadings on poles and posts associated with street lighting, traffic signals and traffic signs
- Higher temperature ranges:  
Increased surface temperature creates additional stresses in infrastructure components, such as road surfaces.  
Higher temperature extremes can also increase stresses on electronics within street lighting and traffic signal equipment.

These can all increase the risk of earlier life failures in assets.

These pressures can create a need for immediate funding (to respond to weather events for instance), and additional capital funding to improve network resilience and minimise the longer-term impact of these demands on the highway infrastructure.