



# HIGHWAYS AND TRANSPORT ASSET MANAGEMENT STRATEGY

Annex B  
Asset Summaries

Surrey County Council

June 2016

# 1. Carriageways

## Inventory

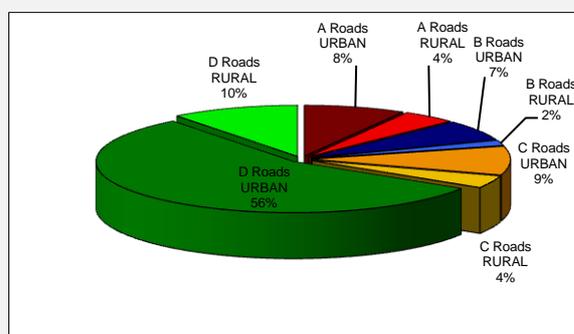
When we talk about carriageways we are referring to the surface and structure of the part of the road constructed for use by vehicular traffic. Surrey County Council has responsibility under section IV of the Highways Act 1980 to maintain highways in Surrey that are “maintainable at the public expense”. In Surrey this covers a network of 4857km (3018 miles) which is classified as;

618km of A roads (384 miles)

399 km of B roads (248 miles)

627km of C roads (390 miles)

3213 km of D roads (1996 miles)



We have good basic inventory data however we need to fully integrate the different systems we use so that maintenance history and inventory data are held together.

## Condition

We have good knowledge of the condition of our carriageway network.

All 'A', 'B', and 'C' roads are surveyed by mechanical scanning (SCANNER) on a rolling programme:

- 100% of 'A' roads over 2 years in both directions
- 100% of 'B' roads every year in one direction
- 50% of 'C' roads in one direction each year

'D' roads are surveyed by visual inspections (CVI), and we survey 25% of the network each year.

This means that:

- All 'A' and 'B' roads have been scanned within 2 years
- All 'C' and 'D' roads have been scanned within 4 years

This data is held in UKPMS, and the data for A, B and C roads provide the data for SDL 130-01 and 130-02 (formally NI 168 & 169), there is no national requirement to collect condition data on the D road network, however we believe it is essential in order to prioritise carriageway maintenance and to understand the maintenance issues and financial aspects of our carriageway network.

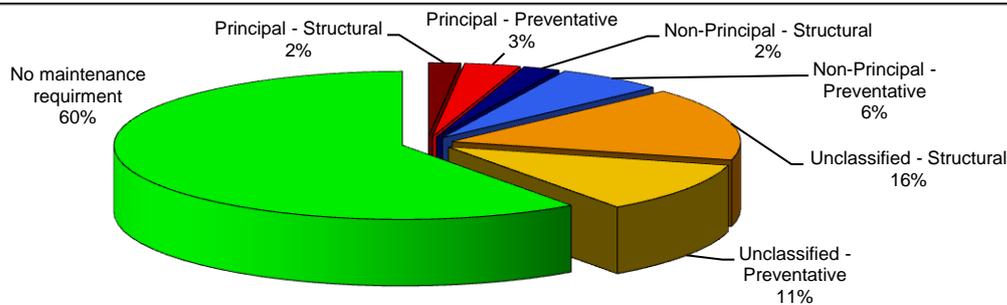
Based on the latest condition survey figures 2015/16

3.5% of our principal network (A roads) requires structural maintenance – 34 lane km (21 miles)

5% of our non-principal network (B & C roads) requires structural maintenance – 60 lane km (37 miles)

16% of our unclassified network (D roads) requires structural maintenance – 461 lane km (286 miles)

When we add in roads which require preventative maintenance in order to prevent them from deteriorating to the level where they require structural maintenance and also include scheme efficiencies, the overall maintenance requirement on Surrey's roads is;



### Work Types

The capital Carriageway maintenance programme comprises of two main budget headings, Major Maintenance and Surface Treatment.

Major Maintenance is carried out to carriageways that have underlying structural problems and in general one or more layers of the carriageway surface are removed and replaced. Due to the complex nature of these schemes they can often involve road closures or temporary traffic lights being put in place to control traffic during the works. To save money and minimise disruption, we try, where possible, to coordinate this work with other schemes such as pavement, drainage or road improvement works.

Surface Treatments are preventative maintenance schemes that are carried out when the carriageway is starting to deteriorate in order to prevent the carriageway failing to the level where more expensive Major Maintenance treatments are required. Surface Treatment encompasses treatments that improve the skid resistance and increase the lifespan of the road generally by adding either a surface dressing or a micro asphalt to the surface. Where there are areas of failure in the road (potholes etc) we carry out local structural repairs or patching works prior to the surface dressing. Surface treatments are a relatively cheap, quick and efficient option for helping to provide a well maintained and safe road network and increase the lifespan of the road in much the same way that preservatives increase the life of woodwork.

### Valuation

From 2013 Surrey County Council carried out a Valuation of their carriageway asset based on the Chartered Institute of Public Finance & Accountancy (CIPFA) Code of Practice using the calculations developed by the Highways Asset Management Financial Information Group (HAMFIG). Using this methodology the Gross Replacement Cost for Surreys Carriageway asset in 2015 has been calculated at;

**£7,129,747,000**

### Backlog

Based on the known maintenance requirement detailed in the Condition section above, the cost to carry out the back log of works required on Surreys Carriageway Network has been calculated at;

**£294,698,000**

### Key Issues

- Currently we do not have all sections of carriageway that require maintenance on our forward works plan; this is an area we are working to address within the term of this strategy.
- Currently updating our inventory data with maintenance history is not an integral part of our process, this is an area we need to address within the term of this strategy.

## 2. Pavements and Cycleways

### Inventory

Pavements are the part of the highway reserved for use by pedestrians, adjacent to and sometimes contiguous with the pavement. A 'Cycleway' is regarded as a dedicated section of Pavement that is for use by non motorised cycles. It is estimated that there are over 5000 km of Pavements in the County of which over 177km has a shared 'Cycleway'. Accurate, complete and comprehensive inventory data on Pavements and Cycleways is essential so that asset management processes for managing the network can be established. It is only when the full inventory data, including condition assessments, is available that an overall view and consistent management approach can be achieved and critical decisions made. It is at this stage that some of the more advanced asset management processes such as deterioration modelling; asset valuation and risk management can be implemented.

We now have a well-structured inventory database of Pavements and Cycleways that has the capability to be fully integrated with a range of systems our contractors or we use so that maintenance history and inventory data are held together.

### Condition

Historically our condition data for pavements was limited to category 1\* and category 2\*\* pavements, however, a complete network survey of pavements was started in 2010 and completed in November 2015. This was done by visual inspection using nationally agreed parameters. This survey also recorded the condition of the shared Pavements and Cycleways.



North St, Guildford before and after photos

\*Busy urban shopping and business areas, and main pedestrian routes linking interchanges between different modes of transport, railways, bus termini, main bus routes etc

\*\* Medium usage routes through local areas feeding into primary routes, local shopping centres, large schools and industrial and commercial centres etc.

This completed condition survey found

6% of Pavements were classed as Structurally Unsound (Red) – 290km (180 miles)

26% of Pavements were classed as Functionally Impaired (Amber) – 1283km (797 miles)

67% of Pavements were classed as Aesthetically Impaired (Yellow) – 3313km (2059 miles)

1.5% of Pavements were classed As New (Green) – 74km (46 miles)

### Work Types

The capital Pavement maintenance programme comprises of two main budget headings, Reconstruction and Preventative Maintenance.

Reconstruction is carried out to Pavements and Cycleways that have underlying structural problems and in general one or more layers of the Pavement or Cycleway surface are removed and replaced. Due to the complex nature of these schemes they can often involve temporary traffic lights being put in place to control traffic during the works. To save money and minimise disruption, we try, where possible, to coordinate this work with other schemes for instance carriageway, drainage street or street lighting replacement.

Preventative maintenance schemes which utilise materials such as slurry seals, are carried out when the Pavement or Cycleway is starting to deteriorate in order to prevent the pavement failing to the level where more expensive Reconstruction treatments are required. Preventative maintenance encompasses treatments that improve the skid resistance and increase the lifespan of the Pavement and / or Cycleway. Preventative maintenance treatments are a relatively cheap, quick and efficient option for helping to provide a well maintained and safe Pavement and Cycleway network and increase the lifespan of the Pavement and Cycleway in much the same way that preservatives increase the life of woodwork.

#### Valuation

From 2013 Surrey County Council carried out a Valuation of their pavement asset based on the Chartered Institute of Public Finance & Accountancy (CIPFA) Code of Practice using the calculations developed by the Highways Asset Management Financial Information Group (HAMFIG). Using this methodology the Gross Replacement Cost for Surreys Pavement asset for 2015 has been calculated at;

**£963,355,000**

#### Backlog

Based on the known maintenance requirement detailed in the Condition section above, the cost to carry out the back log of works required on Surreys for our Pavement Network has been calculated at;

**£77,958,000**

#### Key Issues

- Currently we do not have all sections of Pavement that require maintenance on our forward works plan; this is an area we are working to address within the term of this strategy.
- Currently updating our inventory data with maintenance history is not an integral part of our process, this is an area we need to address within the term of this strategy.

### 3. Drainage

#### Inventory

Drainage assets are an integral part of Surrey County Council's highways. Drainage asset data consists of gullies, soakaways, ditches, Inspection pits, grips, channels, drains, grills and outlets.

There are approximately 159, 400 gully grates in the county. Each location is recorded on our GIS system.

There are approximately 8421 soakaways in Surrey. Soakaways are present across the county, however the bulk lies on the chalk strata to the north east of the county. These soakaways vary from conventional ringed units to deep borehole soakaways. There are also numerous Victorian/Edwardian deep shaft soakaways, which can be around 10m deep.

Ditch ownership has always been a controversial subject. A recent survey has concluded that while the county has a history of stepping in and maintaining any ditch in order to keep the highway safe, it actually owns only 31km of ditches countywide. The locations of the county owned ditches are recorded on our GIS system.

The county has a database of sections of highway that flood, which have been termed 'wetspots'. At some of these locations, surveys have been carried out and GIS records of all drainage attributes are held for these locations. The coverage of the drainage data for these wetspots is very small compared to the whole network with around 60 wetspots mapped to date.



Unless included as part of the wetspot data inventory, pipes, inspection pits, grips, interceptors, channels and french drains are not recorded on any asset registers.

#### Condition

In general, the highway drainage is functional over most of the road network. There is no routine programme for condition assessment. Once a wetspot has been identified an investigation will be carried out and the condition ascertained to check eligibility for the capital drainage programme.

All sections of highway that flood are recorded on a Wetspot database. Even when a capital or locally funded scheme has taken place, the wetspot remains on the system but with a 'reduced risk score'. If in years to come the flooding problem reappears, engineers can look back over the data and assess if remedial works are again necessary or if some other action such as an increased maintenance regime is more appropriate.

There are currently 1054 wetspots recorded in on the wetspot database. 353 of the wetspot locations are reported as suffering from current flooding, 317 are listed as dormant (no reports of flooding in the past 3 years) and 97 are recorded as works in progress or pending review following recent works. The remaining 287 are currently at a reduced risk status. Of the 353 locations, 200 have been attributed to highway problems and form our capital forward works programme.

### Work Types

The damaged systems associated with the top scoring wetspots are addressed under a capital drainage investment program. Current funding levels enable us to deal with 7 to10 wetspots per year.

Small, low scoring wetspots schemes are sometimes addressed with funding from local office or members allocations.

Routine maintenance is carried out on gullies, soakaways, ditches and grips. Other drainage assets are dealt with on a reactive basis.

### Valuation

Without an accurate inventory it is impossible to provide a valuation of the drainage asset, however from 2013 Surrey County Council carried out a Valuation of their carriageway asset based on the Chartered Institute of Public Finance & Accountancy (CIPFA) Code of Practice using the calculations developed by the Highways Asset Management Financial Information Group (HAMFIG). Using this methodology the Gross Replacement Cost for Surrey's Linear items which includes for drainage as well as kerbs, road studs and line marking associated with road hierarchy, was calculated, it has been assumed that the drainage element comprises of 75% of the total figure which for 2015 gives a value of;

**£1,877,400,000**

### Backlog

Details of the highway drainage assets held by highway authorities are generally very limited. There are inherent difficulties with the inspecting and recording sub-surface assets, which can be complicated by connections and interactions with non-highway drainage systems. These issues have been further compounded due to the responsibility for highway drainage assets being transferred between multiple organizations since the 1980s.

As such, accurate knowledge regarding the location and condition of the whole highway drainage asset is not realistic so alternative methods are generally used to provide indicative information on the state of highway drainage across the county.

With this in mind, we have estimated the cost to carry out the current back log of works required on our Drainage Asset as;

**£36,750,000**

### Key Issues

- All known flooding wetspots are recorded, however it should be noted that new wetspots appear annually, and the rating/importance of individual wetspot locations can change from year to year.
- As knowledge of the drainage system increases, it has been identified that other sections of highway suffering from construction saturation should be identified, recorded and analysed.

## 4. Pumped Drainage Systems

### Inventory

There are pumped drainage systems provided in seven pedestrian subways and five highway underpasses.

The seven pedestrian subways each have two pumps.

Four of the five highway underpasses have three pumps and one has two. In addition each pumping station has a significant amount of associated infrastructure, including buildings, land and electrical apparatus, all of which also requires regular maintenance.



### Condition

The pumps in the five pumping stations on the A331 Blackwater Valley route and at Tongham Interchange are coming to the end of their life and this is identified in the OHC risk register as flooding on this length of high-speed dual carriageway is a significant safety issue.



The associated infrastructure, i.e. buildings, land and electrical equipment etc., together with the reed beds and other sustainable drainage features constructed as part of these works, are significant and there is a need to provide ongoing maintenance and replacement over time.

The sharing of asset condition data and inventory information, together with the identification of maintenance responsibilities, are duties included in the Flood and Water Management Act 2010. As the 'lead local authority' for flood and water management in Surrey, we are continuing to work closely with partners and stakeholders to ensure the risk of highway flooding, and other forms of flooding, are mitigated.

<b>Work Types</b>
<p>The majority of underpass pumps at Sunbury Cross have been replaced and, with comparatively new infrastructure, should not be of concern in the near future.</p> <p>The pumps on A331 Blackwater Valley route and at Tongham Interchange are generally in a poor condition. Capital replacement and reactive maintenance works have been identified, prioritised and are ongoing.</p> <p>Maintenance on the Rive Ditch and siphons has been identified and works are now being programmed, with successful partnership joint funding secured.</p>
<b>Valuation</b>
<p>Not available</p>
<b>Backlog</b>
<p>The current level of funding is insufficient to address the immediate issues highlighted above.</p> <p>Replacement of each defective pump is currently being reviewed and a business case is being prepared for 20 year asset plan.</p> <p>The works required to the reed beds at the Canal Trough have not yet been calculated.</p>
<b>Key Issues</b>
<ul style="list-style-type: none"> <li>• The urgent replacement of five pumps will place a considerable strain on the highways maintenance budgets.</li> <li>• There is a telemetry system at the five pump stations located in the BVR, and at the Sunbury Cross subways complex. This notifies the specialist pump contractor of faults at these pump stations. This is currently being reviewed as part of the Kier contract extension.</li> <li>• An ongoing maintenance regime should to be put in place so that all the stations can be serviced to the required operational levels. Routine servicing / maintenance will ensure that any problems with the equipment are identified at an early stage and actions taken to rectify them long before they cause issues with either the general public or traffic.</li> </ul>

# 5. Structures

## Inventory

There are over 2,500 bridges and structures carrying or crossing County roads, footpaths, bridleways or byways in Surrey.

There are approximately 1300 structures on the County Road network, of which Surrey County Council are responsible for about 1100.



A highway structure is defined as:

- a) A bridge, culvert, chamber or subway under or over the highway with a composite span of 1.5metres or more.
- b) Retaining walls, where the height of retained fill measured between lower ground level and upper ground level is 1.37metres or more.

## Condition



We have good knowledge of the condition of our structures stock.

### Inspections

Structures are inspected every two years and subject to a Principal Inspection, very detailed, every six years.

The condition of the bridge stock is measured using the CSS Bridge Condition Index (BCI) which is generated by inspection results. A BCI is generated both for all of a structures elements (BCI<sub>av</sub>) and for also just the critical structure elements (BCI<sub>crit</sub>), ie main beams.

The CSS Bridge Condition Indicators have been in use for a number of years. The 2006 BCI<sub>av</sub> score was 90.45 and BCI<sub>crit</sub> 81.52. The current (April 2016) BCI<sub>av</sub> score is 88.11 and BCI<sub>crit</sub> score is 78.05. This trend is likely to continue as long as current levels of funding are maintained.

### Assessments

Bridges are assessed for their load carrying capacity, with the Code of Practice for the Management of Highway Structures stating structural reviews should take place at 12 year intervals.

A structural assessment has been carried out for 99% of the structures on the County road network which are the responsibility of the County Council. A majority of these assessments took place in the 1990's in preparation for the introduction in 1999 of 40tonne vehicles in the UK.



56 structures are currently assessed as substandard in accordance with the Highways England Standard BD21, ie they are not considered capable of carrying vehicle up to 40tonnes in weight. These substandard structures are managed by Surrey and/or Network Rail, either by the imposition of weight restrictions or more regular and targeted inspections, where appropriate.

Pressures on the capital bridge strengthening budget has lead to the majority of bridges not having had either assessment reviews or re-assessments for over 18 years.

### Work Types

#### Revenue activities

Inspections of structures and minor maintenance.

#### Capital activities

Structures requiring strengthening, refurbishment or replacement. The strength assessments of bridges

### Valuation

From 2013 Surrey County Council has carried out a valuation of their Structures asset based on the Chartered Institute of Public Finance & Accountancy (CIPFA) *Code of Practice on Transport Infrastructure Assets* using the calculations developed by the Highways Asset Management Financial Information Group (HAMFIG).

For the County road structures, the Gross Replacement Cost was calculated in 2015 as;

**£445,400,000**

### Backlog

The Depreciated Replacement Cost, taking into account condition, was calculated in 2015 as;

**£379,359,600**

### Key Issues

- The condition of our bridge stock is deteriorating and more under-strength bridges are coming to light when old strength assessments are updated with current condition factors. The backlog of strength assessment reviews mean Surrey may have more sub-standard bridges than currently recorded.
- Surrey has currently managed to keep a number of sub-standard bridges in service without imposing weight restrictions by using an increased level of inspection and monitoring in accordance with National Guidance. This can only be used in the short term, however, and so a failure to invest in bridge replacements or strengthening will eventually result in the imposition of further weight restrictions and reduce network availability.
- Weight and/or width restrictions have an impact on local communities and highway users. Local committees are reluctant to impose permanent weight restrictions and yet temporary restrictions are only valid for eighteen months. There is a growing problem of being able to finance and programme these additional works, particularly given ecological, planning and railway possession issues.
- A number of substandard bridges are owned by Network Rail. Network Rail are only required to provide bridges to carry loading of 24t, as highway authority Surrey are responsible for any additional funding to strengthen a railway bridge to 40t.

## 6. Earthworks and Embankments

Inventory
<p>The council is responsible for the management and maintenance of earthworks across the County. These include engineered embankments and cuttings as well as natural slopes.</p> <p>An inventory has not yet been created for this asset type although there is a database of slopes with known problems. Work has been carried out to produce a risk classification for these slopes in accordance with the Highways Agency publication HD41/03 "Maintenance of Highway Geotechnical Assets".</p> <div style="text-align: center;">  </div> <p>To date 103 sites have been surveyed which incorporate 222 individual slopes. A further 50 sites are in the process of being assessed.</p>
Condition
<p>Of the 222 slopes surveyed last year, 135 were classified as 'low' risk according to HD41, 81 as 'medium' risk, 2 as 'high' risk and 4 as 'severe' risk. In addition, there are 6 sites that have already been identified for remedial works.</p>
Work Types
<p>Historically, there has been no asset management plan for highway slopes. Maintenance has been carried out on a reactive basis only. This means that work is only carried out when a failure has occurred. Remedial measure may take years to put in to place because funding has to be allocated. The travelling public suffer delays and inconvenience which impacts on quality of life and the economy.</p> <p>Recently, funding was made available to begin to address this issue. A risk analysis of slopes is being carried out to prioritise remedial works. This work needs to be extended to include all highway earthworks.</p> <p>Remedial work for slopes will depend on an analysis of specific sites. Geotechnical solutions could include re-grading, soil nailing and reinforced earth. Structural solutions would include retaining structures of various types.</p>
Valuation
<p>Not yet available</p>

<b>Backlog</b>
Unknown
<b>Key Issues</b>
<ul style="list-style-type: none"><li>• An asset management plan needs to be developed and put in place to address the backlog of highway earthworks issues. Identification of problems at an early stage is essential to prevent disruption to the highway network.</li><li>• Asset data collection needs to continue and inspection and monitoring programmes put in place.</li></ul>

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## 7. Safety Barriers

### Inventory

The Surrey Highway Network has approximately 94km of vehicle safety barrier, with 85km on A roads and 9km on B, C & D roads.



Surrey's safety barrier asset primarily consists of Tensioned Corrugated Beam (TCB), Open Box Beam (OBB) and Un-tensioned Corrugated Beam (UCB) types of barrier system. The barrier systems have a mixture of full height and ramped ends.

### Condition

The entire Safety Barrier asset has now been observed by either a superficial, medium level or detailed survey carried out by either by Surrey County Council or their Engineering Consultants. Identifying the condition of every barrier has enabled each to be assigned a priority rating depending on risk ratings for both road factors and hazard factors. The four priority levels are Red for the highest priority and Green for the lowest with High Amber and Low Amber for the medium priority barriers.

At present it has been calculated that 18km of safety barriers are considered in Red condition and require immediate attention 53.5km of safety barriers are in medium priority condition (Amber rating) and 21.4km are in good (Green condition).

### Work Types

Two types of works are carried out on safety barrier assets.

1. Revenue Maintenance

Defective elements of barrier systems are identified that can be repaired or replaced to ensure continued operational integrity of the system.

Tensioned Corrugated Beam (TCB) barrier systems require re-tensioning every two years to ensure it is maintained correctly and increase the likelihood that it will perform correctly. There is a two yearly re-tensioning programme in place to

2. Capital Replacement

Where the condition of a barrier has deteriorated too far or repairs cannot be made, the barrier must be considered for replacement or removal.

Priority of replacement is assigned by considering the condition of the safety barrier and the risk attributed to it, for example: a safety barrier identified to be in the worst condition (red) in a high risk location is prioritised over a barrier of similar condition in a lower risk location

### Valuation

Based on an average cost from previous capital replacement works of £393 per Meter, the 94kms of vehicle safety barrier in Surrey is valued at:

**£37,000,000**

### Backlog

Based on condition data currently available the current backlog estimate is:

**£23,929,000**

### Key Issues

- Much of the barrier in Red condition is at the approaches to Highways England bridges. The responsibility for safety barriers at all sites where Highways England roads border Local Highway Authority roads is currently being discussed nationally between Highways England and Local Highway Authorities. Should Surrey be required to be responsible for safety barriers at these border locations, then considerable strain would be put on the capital budget.
- Tensioned Corrugated Beam (TCB) is no longer installed on Surrey's network due to the additional maintenance costs these barrier systems require. There is currently approximately 26km of existing TCB on Surreys Roads. The estimated cost for the replacement of all tensioned systems in Surrey is £8,800,000, therefore while the overall condition of a TCB system remains good it is cost effective to continue with the maintenance regime.
- Condition data will be integrated into the asset management system to ensure that a maintenance and condition history is well managed and maintained.

# 8. Traffic Control Systems

## Inventory



Surrey County Council has responsibility for all Traffic Control Systems on the public highway.

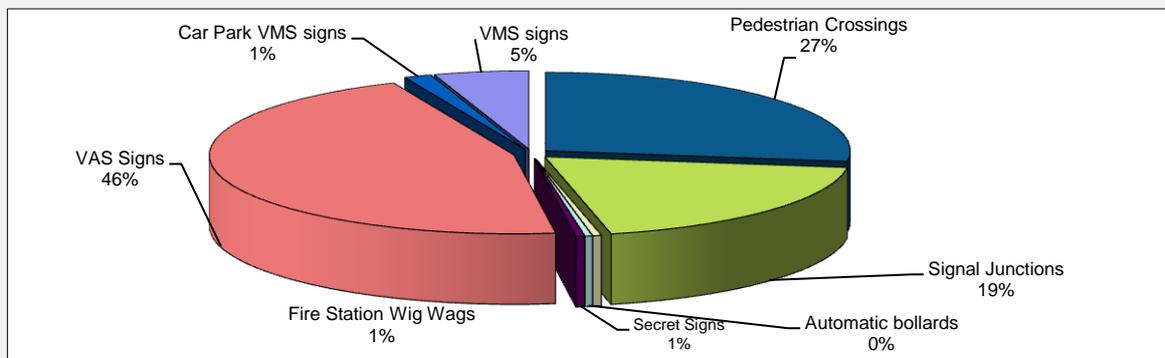
These comprise the following equipment (as at July 2015)

Pedestrian Crossings	357	<i>(Pelicans, Puffins, Toucans etc)</i>
Signal Junctions	254	<i>(Junctions &amp; Equestrian Crossings)</i>
Fire Station Wig Wags	6	<i>(Alternating reds at Fire Stations)</i>
Automatic bollards	5	<i>Bus access control</i>
Secret Signs	6	<i>Overheight vehicle etc.</i>

Many signal installations on high(er) speed roads incorporate high level (gantry) overhead signals. In addition, there are the following which are included in "Intelligent Information Systems"

Some of these are the responsibility of the Safety Engineering, Road Safety team

Car Park Counting Systems	23	
Car Park VMS signs	36	<i>Occupancy</i>
VMS Signs	66	<i>Variable Message Signs – Highway / travel advice</i>
VAS signs	600	<i>Vehicle Activated Signs – Speed reminders etc</i>
School crossing patrol (Wig Wags)	232	serving 113 Schools



An equipment inventory is kept for each installation and most have a Site Layout Drawing available with equipment locations.

<b>Condition</b>
<p>The equipment is of varying age and condition and maintained and inspected at regular intervals by our specialist contractors.</p> <p>There are strict guidelines and (legal) standards appertaining to the signal operation. Maintenance is based on meeting these standards to ensure safety for all road users, especially those with sight or other physical impairment.</p> <p>Much of the equipment is at its maximum serviceable life and requires replacement. We are therefore working through a programme of complete refurbishments of junctions and other equipment.</p>
<b>Work Types</b>
<ul style="list-style-type: none"> <li>• Day to day fault resolution – lamp, detector, other equipment repair or replacement</li> <li>• Chargeable fault repairs – replacing equipment after RTC, damage by “others”, beyond serviceable life.</li> <li>• Complete or partial Refurbishment of installations, and modifications if applicable</li> <li>• Periodic routine inspections Electrical (five year) inspections</li> <li>• School crossing patrol (Wig Wags) inspections, reprogrammed annually, faults repaired in accord with priority and available budget.</li> <li>• VAS inspections</li> </ul>
<b>Valuation</b>
<p>From 2013 Surrey County Council carried out a Valuation of their traffic signals asset based on the Chartered Institute of Public Finance &amp; Accountancy (CIPFA) Code of Practice using the calculations developed by the Highways Asset Management Financial Information Group (HAMFIG). Using this methodology the Gross Replacement Cost for traffic signals asset for 2015 has been calculated at;</p> <p style="text-align: center;"><b>£18,200,000</b></p>
<b>Backlog</b>
<p>Based on condition data currently available the current backlog estimate is:</p> <p style="text-align: center;"><b>£11,956,000</b></p>
<b>Key Issues</b>
<ul style="list-style-type: none"> <li>• An increasing amount of aging stock (many in excess of 20 years old), combined with serious financial limitations is rapidly increasing the risk status of much of the equipment. The standard life expectancy of traffic signals is 10 to 15 years.</li> <li>• In the next couple of years we are projecting a large increase in “red sites”, ie sites that will be becoming critical due to safety or obsolescence issues.</li> <li>• Sites with obsolete controller equipment cannot be adjusted for optimum traffic flow.</li> <li>• All highway users are affected when traffic signals are not operating to their best.</li> <li>• Obsolete remote monitoring equipment no longer able to communicate faults, so we do not always know about a problem straight away.</li> <li>• Obsolete Bridge Height Warning signs no longer maintainable, leading to bridge strike incidents</li> <li>• Older controllers unable to exploit “green” technology (such as extra low voltage)</li> <li>• Recent changes in legislation mean that Pelican crossings are now obsolete. Refurbishments of crossings therefore cost more as they need to be converted to Puffins or Toucans</li> <li>• Historical under funding has resulted in increased pressure on asset.</li> </ul>

# 9. Street Lighting

Inventory	
<p><b>Number of Units:</b></p> <p>Total Lighting Units: 89000 (Exceeds column no. due to multiple lamp installations &amp; other mounting types) Illuminated street furniture (inc Bollards, Belisha beacons): 17,500</p> <p>Generally inventory is very good. Confidence in no. of units etc high. The street lighting inventory was validated through the replacement programme and a full survey was commissioned to cover the Illuminated Street Furniture in 2014.</p> <p>Inventory reports from the “Geoworks” system can be extracted in ‘real-time’.</p>	
Condition	
<p><u>Street Lighting:</u> The councils Column Replacement Program has now been completed with columns either replaced or renovated to meet the relevant standards Detailed condition data is populated in the “Geoworks” database. Information from visual inspections is used to populate the database. This activity is ongoing. Any identified defect from these inspections will either initiate a repair or further (structural) inspection.</p> <p>Routine maintenance continues to be undertaken and the programme continues for structural inspection, electrical testing and bulk lamp change and clean. Routine activities operate at the following frequencies* 12 yearly Structural Inspections 6 yearly Electrical Tests undertaken 4 yearly Bulk lamp</p> <p>(*frequencies relate to street lighting columns)</p> <p><u>Illuminated Street Furniture:</u></p> <p>This was excluded from the PFI replacement programme and is managed on a dedicated revenue budget to cover monitoring, scheduled maintenance and reactive repairs.</p> <p>The 2014 survey identified that a significant proportion (approx 25%) of assets were in poor condition with a similar number in excellent condition.</p> <p>There is no planned/capital replacement programme and assets are only replaced once they are life expired (either through deterioration or damage).</p> <p>Many signs and bollards no longer require illumination following changes in regulations however the significant cost of disconnecting the power supply makes a de-illumination programme prohibitive.</p>	

## Work Types

On the 1st March 2010 Surrey County Council entered into a groundbreaking contract to transform the County's street lighting system with the biggest rollout of new energy saving technology in the country. The contract will see private sector consortium Skanska Laing install white lights to replace the current inefficient orange glow street lamps.

In the first five years of the contract all of the county's 89,000 lights have been upgraded – 70,000 being replaced and 19,000 refurbished. This will lead to savings of around 60,000 tonnes of carbon and 150 million kilowatt hours over the 25-year contract.

Individual lighting columns will be remotely controlled from a new control centre near Guildford. The amount of power used on the network will be monitored and operators will be able to vary the lighting as required, saving energy and money.

The new remote control technology will also mean that lights can be repaired more quickly and efficiently, enabling broken and faulty lights to be automatically reported via the system.

Work on the project started in Reigate & Banstead, Guildford and Spelthorne in March 2010.

The initial cost for replacing the street lights and setting up the central system is being met by a £78.2 million Government grant.

Energy cost for the period April 2015 to February 2016 is £3.1m against planned costs of £3.0m for the period.

## Valuation

In 2013 Surrey County Council carried out a Valuation of their Lighting asset based on the Chartered Institute of Public Finance & Accountancy (CIPFA) Code of Practice using the calculations developed by the Highways Asset Management Financial Information Group (HAMFIG). Using this methodology the Gross Replacement Cost for Surreys Lighting asset has been calculated at;

**£129,045,000**

## Backlog

PFI Lighting Columns : None  
Illuminated Street Furniture: tbc

## Key Issues

- Street Lighting is a high-energy user. We need to continue assessing how our energy use can be reduced and thus SCC's carbon footprint minimised.

# 10. Traffic Signs

<b>Inventory</b>
<p>Surrey has responsibility for maintaining a wide range of signs throughout the county that includes everything from small signs to direct pedestrians through to large advance direction signs on the principal road network.</p> <p>Following a Survey conducted in 2015 We now hold inventory data for over 111,000 signs across the county with comprehensive coverage on all classifications of road the county The survey data has not been validated but we have an ongoing programme address this during the term of the LTP.</p>
<b>Condition</b>
<p>A basic condition assessment was conducted as part of the 2015 Survey, this shows that</p> <p>2 % are in need of repair</p> <p>10% are in a serviceable condition</p> <p>88% are in a Good/ OK condition</p>
<b>Work Types</b>
<p>We do not have a regular programme of sign replacement or cleaning. Currently signs are replaced on a purely ad-hoc basis when identified by inspections, following reports from the public or as the result of a Road Traffic Collision (RTC).</p>
<b>Valuation</b>
<p>In 2016 Surrey County Council carried out a Valuation of their Signs asset based on the Chartered Institute of Public Finance &amp; Accountancy (CIPFA) Code of Practice using the calculations developed by the Highways Asset Management Financial Information Group (HAMFIG). Using this methodology the Gross Replacement Cost for Surreys Signs asset has been calculated at;</p> <p style="text-align: center;"><b>£62,700,000*</b></p> <p style="text-align: center;">(includes illuminated signs managed as part of the street lighting contract)</p>
<b>Backlog</b>
<p>Based on condition data currently available the current backlog estimate is:</p> <p style="text-align: center;"><b>£24,800,000</b></p>
<b>Key Issues</b>
<ul style="list-style-type: none"><li>• To be able to maintain our sign asset to a higher standard we need comprehensive inventory and condition information. Now we have this data it can be used to develop cleaning and maintenance programmes, valuation of the inventory and calculating future maintenance costs.</li></ul>

# 11. Arboriculture

## Inventory

Compared to neighbouring counties, Surrey has a high population of trees. It is very difficult to quantify how many highway trees the Authority has an interest in and there could well be several million.



The tree population inventory is captured by means of aerial photography and more recently a popular internet search engine, provides spatial data, by means of an interactive street view application. Capturing the tree cover by refreshing the aerial photography once every five years, is the only truly efficient way of monitoring the ever changing tree population, by allowing overlay comparisons to be made.

To put things into perspective we estimate if all the highways trees in Surrey were placed end to end laying down, they would likely stretch from London to New York. Standing side by side they would stretch from London to Aberdeen, such is the quantity of trees involved

## Condition

With such a vast quantity of trees one could easily become immersed in detail. There is a risk one would never gain a true picture of strategic priorities in order to manage risk from trees; which is the sole purpose of monitoring tree condition for a Highway Authority.

For this reason the Council does not attempt to operate a catalogue inventory of individual tree records requiring frequent interactions to maintain accuracy, primarily due lack of available resources.

Instead methodical inspections are carried out in line with [Government Circular 52/75](#), by two inspectors, at sufficient frequency to capture information relating to condition deterioration. These inspectors' prioritise potential threats to be resolved at a frequency of inspection as per the standards set out in the Code of Practice "Well Maintained Highways" (2005 edition). In addition, our Local Highway Officers are involved in pursuing customer enquires relating to highway trees. The Legal team support inspectors by serving Notice under S154 of the Highways Act 1980, on adjacent owners of trees that threaten safety of highway users.

The frequency of inspections depending on the Surrey Priority Network (SPN) Classification of the Carriageway, with SPN1,2&3 roads inspected over a 3 year cycle and SPN 4a & 4b roads are done over 5 years.

Tree condition is rated as high, medium or low priority, with extremely high priorities and emergency situations being fast-tracked through to maintenance teams, either direct from site or at weekly contract meetings. The remainder of defects identified from surveys form the basis of annual work programmes, delivered on completion of each annual inspection having identified strategic priorities to

direct the maintenance operations.

The maintenance teams use portable digital technology to electronically update records on site as defects are resolved to regularly update the central tree management database.

In addition the Council have programs of annual, biennial and cyclical maintenance to carry out regular tasks to maintain pedestrian access and manage ongoing risk of third party property claims.

### Work Types

The work involved requires specialist teams and equipment sourced through external suppliers. The type of work needs light plant such as power saws through to plant machinery ranging from 3.5 tonne tippers through to elevated platforms and wood chippers, grab loaders and occasionally cranes. The scope of work covers anything that resolves risk to highway users from trees or reduces the risk of damage from trees on Highway land falling onto properties. The work content includes felling, remedial pruning, grinding of stumps, in order to maintain sufficient clearance for normal highway use and avoid unplanned disruption of the network from tree failures, so far as possible.

### Valuation

Valuation of trees depends on the purpose for which the valuation is being made. However there are two main themes to valuation being the wood itself as a commodity and the contribution trees make to amenity and quality of life.

There is also the question of in the eye of the beholder, a tree obstructing daylight, blocking gutters dropping deadwood onto one's car is and roost to many birds fouling ones drive, is worth little if anything to the person affected. However to the person on the other side of the street who is not affected, it is worth a great deal as a visual amenity. This value of visual amenity benefit diminishes rapidly with distance from the tree, requiring a tree to be regularly viewed by someone or many for its presence to be valued at all.

In addition regardless of whether a tree is seen or not it has an intrinsic value to wildlife and impacts on the ecology of the habitat in which it exists. This also impacts on the environment that makes Surrey what it is.

Trees can be regard by Highway Authorities primarily as a liability to third party risk and obstruction to highway use, to be maintained at minimum cost, if at all and without need for asset renewal, or investment.

The value of amenity is indicated by the method prescribed by the London Tree Officers Association, referred to as the Capital Asset Valuation of Amenity Trees (CAVAT). Sampling using this method has produced some interesting results:

- a small ornament street tree, usually a cherry tree, has a mature value of approximately £3,000
- a medium size tree, maple, has a mature value of approximately £8,000
- a large tree, say a mature oak of average proportions, has a mature value of approximately £100,000

The Council is currently unable to calculate the CAVAT value of its entire tree asset but it is considered to be many millions of pounds.

### Backlog

The Service has significant Backlog and demand on resources such that our current order book is filled for the next year already with more surveys left to complete.

However, the planned approach of inspection is essential in order to manage risk. It ensures that situations seldom go unnoticed and are responded to in a timely manner, in proportion to the risk involved.

## Key Issues

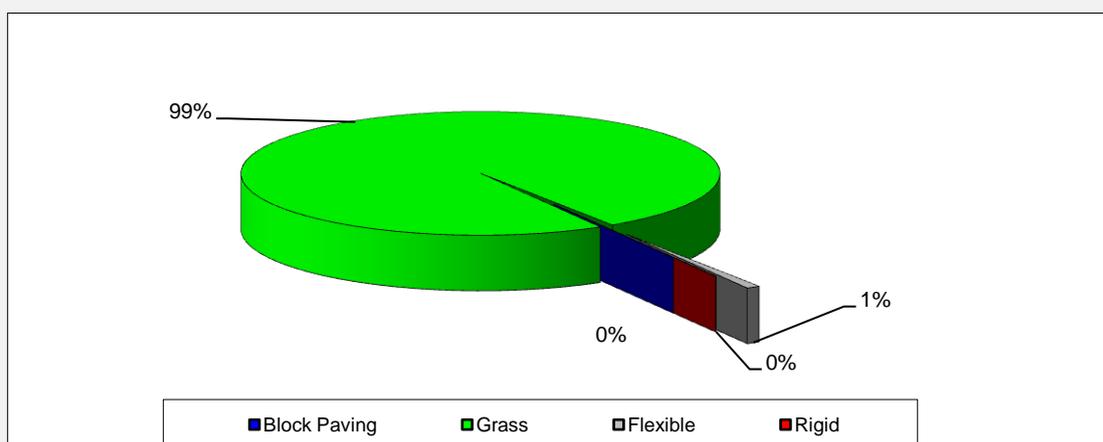
- The interaction time between Inspection and response delivery is currently in excess of 6 months.
- The Council is exposed to significant third party claims if it fails to maintain its record of inspection and resolve risk from trees in a timely manner.
- The Council is exposed to significant third party claims if it fails to upkeep regular maintenance of trees influencing subsidence risk in urban areas.
- The population of trees in rural Surrey is self-perpetuating, by virtue of restricting grass cutting to selected locations. The most valued trees are those sited in urban areas where they are most likely to be of amenity value and benefit. However there is no managed planting in Urban areas to replenish losses sustained by ongoing maintenance leading to an overall decline in Urban populations.
- Pest and Disease outbreak has the potential to strike at any time and render significant quantities of trees unsafe, or to place public health at risk due to caterpillar infestations. Also, the threat of Ash dieback disease could significantly change the composition of our tree stock.
- The Corporate Arboricultural Policy, 2013, is risk based and the inspection regime identifies works on a priority basis. Although it now requires refreshing to reflect new working practices, the policy continues to define the over-arching principles of how we manage risk in a reasonable and practical way.

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# 12. Grass Verges

## Inventory

The majority of verge adjacent to the adopted road network forms part of the public highway and is, therefore, the responsibility of Surrey County Council, as Highways Authority. A number of verge surfaces are identified including block paving, flexible and rigid construction and grass verge. However, grass verge constitutes about 99% of the entire 17 square kilometres of verge area on the highway network.



All grass verges are currently being surveyed and mapped on GIS as this is a significant and costly asset to manage and maintain. Areas of block paved, flexible and rigid construction have also been identified by aerial survey and similarly mapped.

## Condition

Grass verges are designated as either urban or rural and the maintenance regime (number of cuts per year) is dependent on this. Some areas of grass verge and planting are designated as Sites of Special Scientific Interest or otherwise protected by the Surrey Verge Habitat plan. In addition some verges are extensively planted under license, which though popular with residents, but can become a source of complaints as the verge grows and the planted areas die off so a timely response is planned and essential.

There is increasing damage to verges in urban areas due to vehicular parking and over run, mainly in heavily populated and commercial areas. Grass verges in rural areas, particularly on narrow lanes and roads, are continually affected by vehicles over running, causing 'rutting' and damage to the road edges. This is largely due to the volume of traffic experienced on the roads in Surrey and also the use of larger vehicles for home, commercial and agricultural purposes.

## Work Types

The council is responsible for ensuring that grass verges are maintained at a minimum frequency appropriate to ensure adequate safety and environmental standards for that location. The council does not maintain grass verges or other areas that are privately owned or administered by other authorities or organisations e.g. parks and public open spaces.

Between 2016 and 2020 the council is working in partnership with 10 of the 11 Boroughs and Districts within Surrey to provide the most efficient and effective grass cutting service within their own areas. The 11th District has remained under direct control of the council. Quality asset condition data and inventory information is being gathered and collected during the next two year in order to achieve this.

Valuation
<p>In 2015 Surrey County Council carried out a Valuation of their Verge asset based on the Chartered Institute of Public Finance &amp; Accountancy (CIPFA) Code of Practice using the calculations developed by the Highways Asset Management Financial Information Group (HAMFIG). Using this methodology the Land Value of Our Grass verges has been valued at;</p> <p style="text-align: center;"><b>£470,000,000</b></p>
Backlog
Not known
Key Issues
<ul style="list-style-type: none"> <li>• Vehicular damage to verges produces 'rutting' that may lead to claims for vehicle damage, personal injury and customer complaints.</li> <li>• Grass cutting is a seasonal activity and weather dependent i.e. a long, wet summer leads to more growth and pressure for more cuts and vice versa.</li> <li>• The location of many verges makes the Health &amp; Safety requirements and subsequent costs for traffic management disproportionate for the benefits well maintained verges brings to the street scene. Therefore much effort is made to co-ordinate maintenance activities between the Council, district and boroughs to ensure best value for money.</li> <li>• Many Boroughs, District, Town and Parish councils increase their number of urban cuts to maintain a higher standard of finish which raises expectations which cannot always be met due to financial constraints and priorities.</li> </ul>



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