

HIGHWAYS AND TRANSPORT ASSET MANAGEMENT STRATEGY

Surrey County Council

June 2016



SURREY

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Executive summary

Surrey County Council's corporate strategy '[Confident in Surrey's future: Corporate Strategy 2016-21](#)' sets out the Council's priorities and strategic goals. These are:

Wellbeing – Everyone in Surrey has a great start to life and can live and age well

Economic Prosperity – Surrey's economy remains strong and sustainable

Resident Experience – Residents in Surrey experience public services that are easy to use, responsive and value for money

These goals need to be delivered against the backdrop of increasing demand and reductions in funding.

Managing a highways network the size of Surrey is complex and challenging. As Highway Authority and Lead Local Flood Authority, we are responsible for assets with a gross replacement cost of £7.8 billion, including over 3,000 miles of roads, 1,800 bridges and structures and 3,262 miles of pavement. Most of the assets we look after are obvious to users (roads, pavements, bridges, tunnels, street lights and so on). However we also manage assets that are less visible, such as embankments and safety barriers. Few of our assets are in an 'as new' state and with a limited budget we have to prioritise our work to achieve best value.

The network is heavily trafficked reflecting Surreys' high economic output, used daily by the majority of the travelling public for commuting, business, social and leisure activities. At a local level it also helps to shape the character and quality of the environment. The successful management of our highway infrastructure therefore plays a vital role in delivering the broader outcomes set out in the Council's overarching goals.

Our response to this challenge can be found in our [5 year strategic Business Plan 2016-21](#), which aligns all our activities to the delivery of the Council's corporate goals, setting out how, over the next 5 years we will:

- Improve and grow Surrey's highway infrastructure;
- Maintain and operate the network;
- Develop our service.

One of the key drivers to the successful delivery of the business plan is the service wide embedding of our new 15 year Asset Management Strategy. Surrey was one of the first authorities to develop an Asset Management Plan in 2005 (STAMP) and it was refreshed again in 2014. This strategy is aligned with best practice set out in the [Highways and Infrastructure Asset Management Guidance](#) published by the UK Roads Liaison Group (UKRLG) and the Highways Maintenance Efficiency Programme (HMEP), including

- Consulting with members and users to determine their priorities.
- Continuing with the completion of a physical network inventory and assessment of current condition;
- Undertaking depreciation modelling of all our assets over a 15 year period;
- Assessing the impact of different states of condition of our assets on the Council's key priorities;

We already have a proven track record of the application of sound asset management principles delivering value for money. In 2012 17% of Surrey's road network was in need of structural repair. We developed the innovative [Horizon](#) programme to reduce the length of the network in need of structural repair to 12% over 5 years by resurfacing around 10% of the worst condition roads. At the time that Horizon was conceived, annual programmes of work were the norm in the highways industry; working in partnership with our Highways contractor we recognised the benefits that a long term programme of works would bring. For example, contractors would be able to give discounts due to long term continuity of works and specialist programmes of work could be developed.

Horizon is on track to achieve its critical success factors and we are now able to consider a different investment strategy applying the same successful procurement principles. What we can achieve is of course dependent on the level of funding we receive. Improvements to our highway assets are funded from our capital budget, which is largely made up of two grants from central government – the Maintenance Block Grant and the Integrated Transport Grant. A recent change in the way the former is paid has resulted in more certainty over the funding we can expect to receive over the course of the parliament. This means we can plan over time with more confidence, although the funding is not ring fenced to us and some aspects are competition based and so there is less certainty for some parts of the funding.

The government has introduced an [Incentive Fund](#) element to the grant which now directly links our funding to the ability to demonstrate sound asset management. Highway Authorities will be ranked as Band 1, Band 2 or Band 3, with Band 1 being those judged to be the worst performing. Band 1 authorities will receive a 15.5% reduction in highway maintenance funding by 2021. In terms of the funding Surrey receives this would mean a reduction in funding of nearly £8 million over this period if we are rated as Band 1 and £4.3 million as Band 2. Surrey is currently rated as Band 2, and we are aiming to be Band 3 by 2017. If we remain at Band 2 we would lose £24 million in funding over the 15 year life of the strategy if the DfT continues with this approach.

We have considered four scenarios when developing our investment strategy:

Scenario one – our current asset investment levels	Cost p/a: (£24.6m)
Scenario two – doing the minimum to meet statutory requirements,	Cost p/a: (£16.6m)
Scenario three – maintaining current condition levels,	Cost p/a: (£29.9m)
Scenario four – re-balancing investment levels across the different asset types.	Cost p/a: (£24.6m)

Taking into account current financial constraints we believe that Scenario four offers the best option. Investment can be rebalanced as the success of [Operation Horizon](#) enables us to reduce spending on roads and increase spend on pavements, structures, traffic signals and barriers. We believe that within the funding constraints of the County's Medium Term Financial Plan (MTFP), this will provide the best outcomes for Surrey over the 15-year period. The investment strategy proposed is will not be sufficient to prevent deterioration on all our assets. Investment has also been targeted to minimise revenue pressures caused by the need to keep the network safe as further deterioration occurs and we do not expect the revenue requirement to increase as a result of this strategy.

In the modelling we have also assumed that funding will continue to be available to us for more significant schemes through bidding for funding from the Local Growth Fund and the Challenge Fund. We have also assumed that we will achieve Band 3 status from 2017 and will therefore receive the full share of the DfT Incentive Fund and that we will receive similar levels of funding from the Pothole Action Fund as in 2016. No allowance has been made for significant single projects requiring large investment.

The modelling assumes normal deterioration patterns, and no allowance has been made for any significant damage caused by severe weather events so in the event of a severe weather event, if central government and/or the council do not provide additional funds the programmes of work described in this plan will be suspended to deal with any unforeseen damage to the network.

Whilst we have modelled the strategy over a 15-year period, we of course recognise that things can change over time; we could get a greater or lesser share than anticipated from the DfT competition based elements of the Maintenance Grant or council priorities could change. Therefore we will review our budgets annually in line with corporate budget setting arrangements and will refresh our modelling every 5 years in line with our strategic business plan review timetable.

There are also numerous ongoing improvement activities within the service to ensure effective delivery of the strategy. These include organisational design based on a commissioning approach and the development of a whole service performance framework, ensuring delivery of the business plan and end to end processes.



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1. User Needs and Delivering Outcomes

Surrey’s highways are used daily by the majority of the travelling public for commuting, business, social and leisure activities. How we prioritise our investment must take our users’ needs into account. We also need to ensure that what we do is aligned with the Council’s corporate strategy and delivering the broader outcomes contained within it. Our 5 year business plan sets out our high level aspirations and shows how what we do will ensure that Surrey’s highways assets support the strategic objectives for the entire county.

This strategy exists to set out our approach to delivering our strategic goals and the key improvement activities that need to take place to enable this.

1.1. Asset Management Policy

The highway asset is the most valuable one under our control and is crucial to facilitate safe movement, which enables Surrey to be the largest net contributor to the UK economy outside of London. We have a key role to play in meeting the strategic goals set out in our corporate strategy. We will therefore ensure that we are supporting the Council’s overarching aims, as detailed below. We will continually review our progress in this and take actions through our review mechanisms to identify improvement initiatives where necessary.

1.1.1. Supporting Wellbeing

Our network is relied on by thousands of people and businesses every day. Our service supports the people of Surrey by making streets safe and reliable, offering more travel choices, making them sustainable and providing residents with access to schools, health services and care. The quality of the highways can have a direct impact on people’s ability to live independently and on the choices people make in moving around the county.

1.1.2. Supporting Economic Prosperity

The highways and transport infrastructure we build and maintain provides the foundation of a strong economy in Surrey, creates routes in to businesses, jobs for residents and access to homes and communities where people want to live. Improving Surrey’s highway network is one of the Council’s key objectives in building the local economy. This includes capital investment in new schemes, as well as a more network oriented approach to asset management. We aim to deliver value today whilst planning and investing for the future.

1.1.3. Supporting Resident Experience

Residents are at the heart of how services are designed and delivered; with appropriate influence, control and choice on issues that are important to them. Our professional service provides high quality, innovative solutions that ensure Surrey residents get value from the network now and in the future. We aim to work closely with partners to deliver the best outcomes for our residents, delivering to their needs and priorities. We will utilise new technologies to improve the way services are delivered and communicated.



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1.2. Residents' and service users' priorities

Our approach and how we achieve these ambitions is guided by residents, service users and Members who help us to identify the priority activities for the service and how we best achieve Surrey's goals.

1.2.1. National Highways and Transport Public Satisfaction Survey (NHT)

NHT data is invaluable in identifying the preferences of customers, with analysis conducted to identify key drivers for overall levels of satisfaction with the Highways network. The survey is conducted across residents of a number of councils on an annual basis. We recognise the value of this feedback and the ability to understand how we are performing relative to others. The results provide indicative themes of where the council is making a positive impact and where further work is required. Surrey's overall satisfaction levels with regards to Highway maintenance and condition issues within the survey have improved by 10% since the survey started in 2009. Figure 1-1 shows a number of areas where we have made significant improvements:

Figure 1-1 – Areas where customer satisfaction measured by the NHT survey has improved



In the latest survey we ranked 18th out of 27 County Councils that took part for overall satisfaction across the survey so there are still improvements that we need to make.

Highways maintenance comes out as a clear priority, with drainage, pavements and road safety also high priorities for maintaining service levels.

This is important to understand in managing the asset network as a whole. Budget constraints limit what can be spent across the entire network. Invariably, when funding is required to increase in one area it must reduce elsewhere to make up for this. By having a clear view of what level of service is required of each asset we are able to make more informed views on how best to allocate funding across the network.

1.2.2. Consultation with Senior Members and Officers

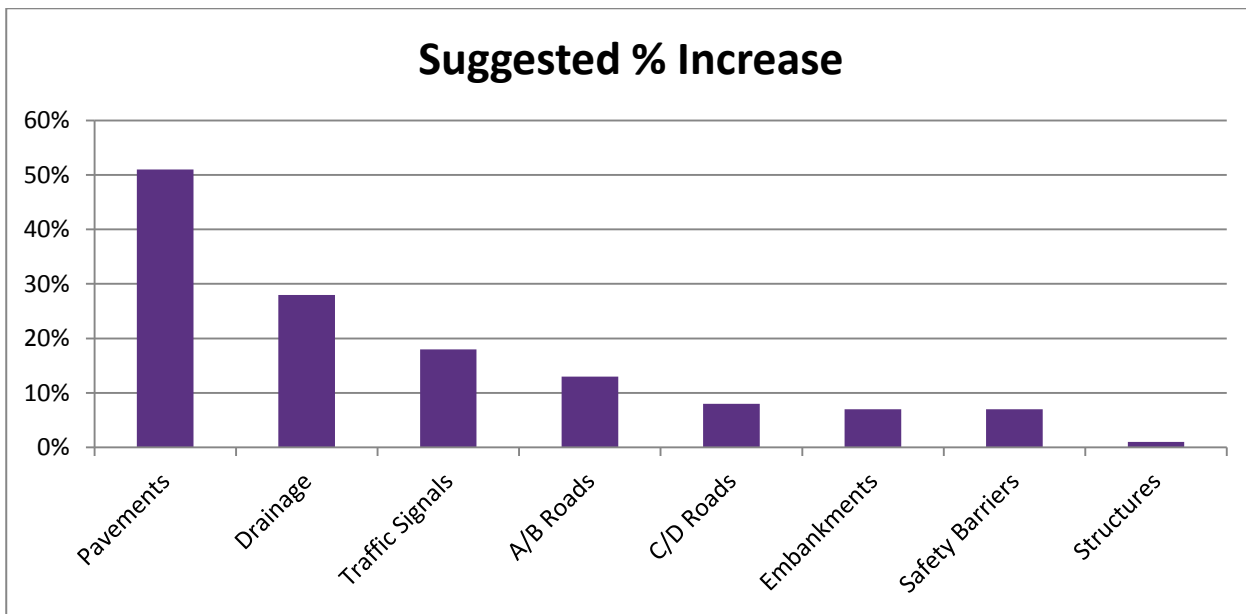
Whilst the NHT survey data can provide some insight into the needs and priorities of Surrey's residents, there are additional channels through which further feedback can be obtained. We have engaged with our senior Members and officers through a consultation event, allowing their views to act as another factor in shaping our strategy.

We used a consultation tool called *YouChoose*, developed specifically for local authority consultations, to gather senior Member's and officer's views on the prioritisation of funding allocation across highways assets. The tool sets out the current spending allocation across each asset and forecasts the impact this level of spending will have on the asset's condition in future. Users were then given the opportunity to reallocate funding elsewhere, based on the needs of their constituents and the local area. The impact of their changes was shown in the tool, helping Members to understand how different funding levels can impact on the overall condition of the highways network.

The results from this consultation are taken into account in presenting the public view of highways asset priorities, further helping us to understand how funding should be allocated across highways assets. The results are not representative of actual asset condition, but do give a clear indication of which assets are

most important to users. Figure 1-2 shows the average percentage increase desired based on the responses of senior members.

Figure 1-2 Member Consultation budget



The results show that our senior Members and officers place a high priority on more investment in pavements, with drainage also seen as key (perhaps as a result of flooding damage caused in recent years). These results differ slightly from the NHT survey results; the former places a lower priority on maintaining A and B roads, while the latter puts it firmly at the top of the priority list.

This disparity in results is not necessarily unusual, in that the NHT survey respondents are members of the general public and may place different levels of priority on asset types compared with Members. Members are more likely to have greater insight into the strategic view of the Highways and Transport plans, with an understanding of which assets have been earmarked for greater investment. Operation Horizon is a prime example, through which we have reduced the percentage of roads in need of structural repair from 17% in 2013 down to 13% by 2014/15; We will monitor future NHT surveys to ensure that this is leading to rising levels of satisfaction with the condition and accessibility of our roads. This may well explain why roads are not seen as a significant priority by Members as they understand the investment that has already been made, though users will only just be feeling the benefits.

It is important to balance both sources of information against each other as well as using empirical data such as condition data and knowledge of deterioration patterns in order to make the most appropriate decisions for the highway network.



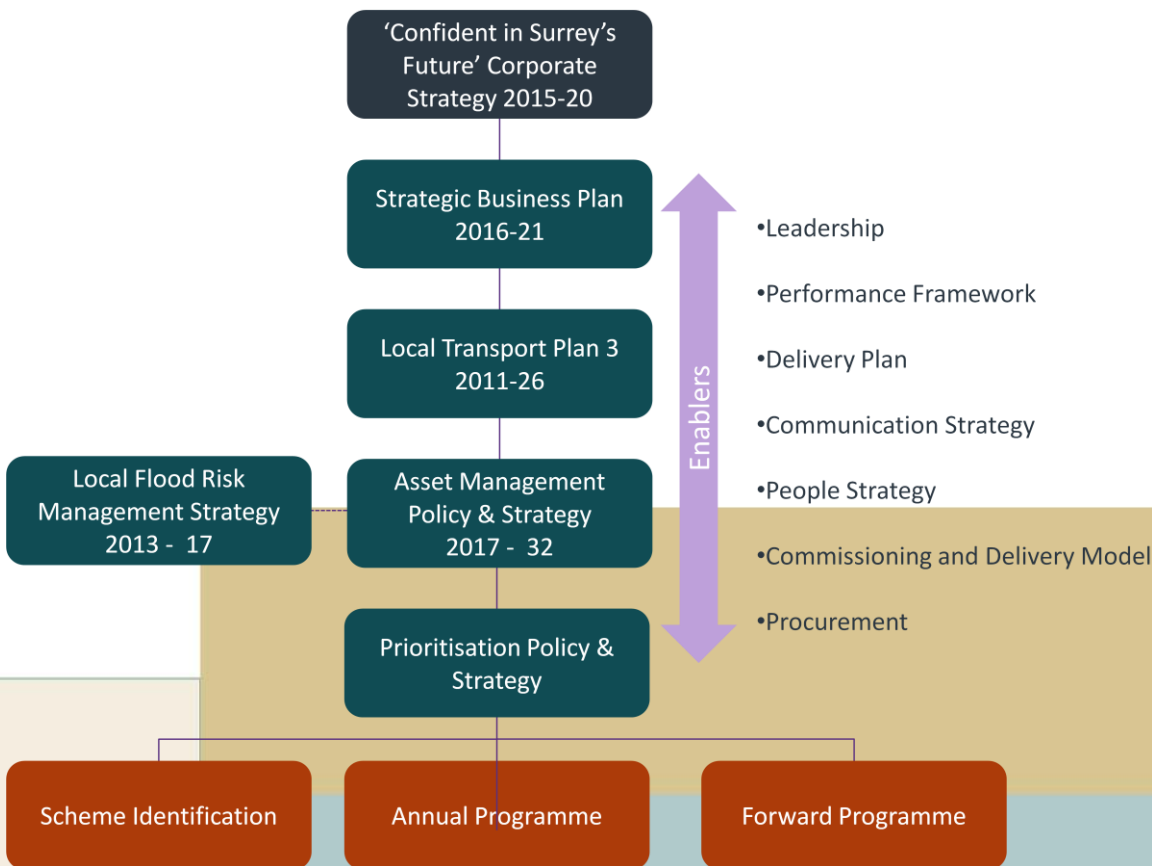
2. Approach to Managing Assets

In alignment with the [Highways and Infrastructure Asset Management Guidance](#) document published by the UK Roads Liaison Group (UKRLG) and the Highways Maintenance Efficiency Programme (HMEP) in 2013, our approach brings together a range of factors that influence asset management priorities.

2.1. Asset Management Framework

In accordance with the guidance stated above, we have aligned our strategy to key documentation within the organisation to ensure that not only are we aligned to the corporate vision and strategic goals, but that the planning and enablers required are in place and operating effectively. Figure 2-1 below identifies these key elements and how they are aligned with one another.

Figure 2-1 Asset Management Document Hierarchy



The corporate strategy sets the direction and context of the organisation and defines the Council's priorities. The strategic business plan sets out how our activities align to the delivery of the corporate priorities and ensures that this drives what we do. The asset management strategy and policy support the delivery of business plan and our Local Transport Plan. They set out our approach to asset management, performance, data and lifecycle planning. We also provide links to supporting documentation where relevant. The following sections begin with our overall approach.

2.2. Starting with user needs

Putting the needs of service users first is central to asset management. In practice, this means prioritising our efforts based on those activities that provide the greatest value to Surrey residents.

In developing Surrey's Highways Maintenance Asset Management Strategy, we have sought to engage with as wide an audience as possible and obtain information from a range of sources in order to better understand how highways assets contribute to achieving better outcomes for Surrey.

These sources include:

- Customer insight and resident satisfaction surveys undertaken by Surrey Council – including customer contact centre trends;
- Member's feedback on local priorities;
- Feedback from Local Highways Officers and area teams;
- National Policy and Priorities from partners such as the Department for Transport and Highways England;
- Regional Priorities set out by District and Borough Councils, Local Enterprise Partnerships and neighbouring County Councils;
- National and Regional highways surveys (e.g. NHT);
- Surrey County Council's Corporate Goals.

Section 1.2 of this document provides further explanation around how we have used surveys of local residents, in particular the NHT survey, as well as consulting with local Members to better understand the priorities of the areas they represent.

In addition to this we need to consider wider priorities set by national and local bodies. For example, Local Enterprise Partnerships (LEPs) present one of the most significant sources of capital funding. Their priorities reflect the national policies set by the Department of Transport and Highways England. It is important that, where appropriate, we align ourselves with these priorities, ensuring that we act at the forefront of best practice.

2.3. Understanding our assets

As the authority responsible for the condition of Surrey's Highways network, our primary duty is to protect users of our network, by keeping the network safe and ensuring appropriate protections are in place to reduce the risk of harm. This can mean conducting proactive work that may not be seen as a priority to residents in order to reduce risk and costs. Some assets are more visible than others. For example, people tend to notice defects in the highways more regularly than safety barriers or drainage. Drainage defects only become apparent when there is a situation requiring their efficient operation. However, this does not mean that they should be deprioritised. It is important that all assets meet, at the very minimum, statutory safety conditions.

To understand how much work we need to do to maintain Surrey's assets requires a good understanding of the current condition and how this is expected to change over the short, medium and longer term. We have used a wide range of asset condition modelling tools to analyse and understand what the demand will look like for each asset class. Section 3 provides further information on the current state of Surrey's assets and describes the forecast deterioration rates of each asset type based on specific funding scenarios.

2.4. Capital and Revenue Spend

By having a clear understanding of the forecast asset deterioration we are able to assess how different levels of funding can impact on this condition forecast. Some assets will require significantly greater investment to improve their condition than others. The balance between capital investment (work that provides long term maintenance/improvement e.g. resurfacing a road) and ongoing revenue investment (shorter term improvement e.g. filling potholes) must also be understood.

By providing initial capital investment the longer term revenue investment is likely to be reduced, potentially reducing the whole life cost of the asset. Conversely, if the asset is deteriorating but does not receive capital investment, it is more likely that ongoing revenue costs are greater, leading to a potentially greater whole life asset cost.

We must ensure that we balance the revenue and capital spend to ensure we are delivering the best value for the residents of Surrey. If capital investment is not supported by adequate ongoing revenue spend then the initial investment value may be reduced. Similarly, high levels of revenue spend needed to maintain assets that require capital investment may lead to disruption on the network, in the way that regular patching of roads does.

2.5. Levels of service

How we plan our maintenance work is a key element of our asset management strategy. To do this effectively we need to understand the varying needs and expectations of our residents and service users as these will reflect our service delivery standards.

To keep the whole network in its current condition will cost £30m capital investment per year over the next 15 years. However, standards for highways assets will vary according to their use and the risks involved.

If, for example, the condition of well used pavements needs to improve to ensure safe passage and encourage sustainable transport for commuters, school children, leisure walkers; the allocation of funding to this asset will also need to increase, which will mean having to reduce spending elsewhere. By setting standards appropriate to the use of specific parts of the network we are better equipped to understand and meet the demand and user priorities for each asset type in the most efficient way.

2.6. Prioritising our efforts

Our analysis has drawn together the priorities of highways service users with the current and forecast condition of our assets in order to determine what service levels Surrey Highways and Transport needs to provide.

To support our decision making, as previously described we have engaged with council Members, public and private sector partners and Surrey residents on their priorities. From this analysis we have been able to identify which parts of the network require the most attention from a service user's perspective, the priority areas for further investment and the level of service that residents want from the network. All of these things are essential in shaping the asset management strategy and funding plans.

The allocation of our asset maintenance budget is based on this analysis and also on opportunities to improve outcomes for Surrey i.e. improving wellbeing or resident experience by effectively allocating our funding across the asset network.

In prioritising the funding applied to each asset we must also understand the impact different levels of funding will have on each asset. Some assets will only require a relatively small amount of funding to significantly improve their condition. Whilst this may be a large percentage increase in funding the actual amount required may be small in comparison to other assets. In the same way, other assets may require significant amounts of investment to drive any tangible improvement in condition, but this may be seen as a relatively low percentage increase due to the already high budget.

We must also understand where we are able to reduce funding without having a significantly adverse effect in order to improve condition in other areas.



3. Overview of Assets and Analysis

Managing a highways network the size of Surrey is complex. It involves the maintenance of a number of different asset types. Some assets may be used by individuals more regularly than others. People's demands on assets will also vary based on their individual needs.

When we talk about highway assets we are most commonly referring to the roads, pavements, bridges, traffic signals and street lights¹ that you can see as you move around Surrey. We also manage a number of assets that are less visible to users, although they still play a very important role in the efficient operation of the highway network. These assets include embankments, safety barriers and drainage. If the condition of any of these assets deteriorates significantly there will be a significant impact to the network. There are a number of smaller assets that we also focus on, for instance traffic signs; we will analyse these using the same approach going forward.

The purpose of this strategy is to specify the solutions that will enable the council to manage its highway assets in the most efficient and effective way, allocating funding appropriately and ensuring that users' needs are met by taking a long term planning approach. To enable us to do this, we must take a holistic view of all of our assets and understand the general condition of each. Taking into account the needs of highway users, the condition of the highway assets and budgetary constraints, we have assessed a number of options to identify the most appropriate asset management budget. We will continue to measure the condition of our assets in line with national best practice to monitor performance against identified targets.

. This section focuses primarily on our capital budget which is allocated for significant maintenance and repair, however we have also taken account of the revenue impacts of all of the proposed scenarios and have attempted to identify capital strategies which will not negatively impact on the level of revenue required for smaller scale and ongoing costs such as filling potholes, cleaning bridges and cleaning gullies. This section gives an overview of each highway asset and describes the current condition of each asset category individually. Further information on each of the asset categories can be found at Annex A. . These summaries also include detailed information on the depreciated value of our assets.

3.1. Roads

The roads that run through Surrey have among the highest levels of use in the UK, providing access to jobs, schools, services and businesses for a wide range of users. The high levels of use make roads the primary asset that we manage, consuming the largest capital spend of all our highways assets.

An increased level of spending on roads in the past 3 years as part of our Operation Horizon programme has led to a significant improvement in road condition which has fallen from 17% in "red" condition to 13%.

For the purposes of this strategy roads have been split in to two broad groups: A/B Roads and C/D Roads. The current MTFP spending on roads provides an allocation to all roads of £19.5m per annum which is spent at an approximate ratio of 1/3 on AB roads and 2/3 on CD roads (CD roads make up over ¾ of our total network length). All of the data was modelled using UKPMS software and the HMEP lifecycle planning tool.

¹ street lights have not been modelled as part of this strategy as they are managed by SKANSKA by way of a private finance initiative (PFI)

3.1.1. A/B Roads

A/B Roads provide routes which generally allow traffic to move faster over longer distances or link larger villages to the main highways network, consisting of both single and dual carriageways.

The A/B Roads which run through our county are well constructed, designed to carry a wide range of vehicle types and generally in good condition. Around 5% of A/B Roads fall within the red condition class, meaning they require structural maintenance with a further 7% falling into the amber condition rating meaning they require lesser level repairs such as surface treatments to increase their longevity.

Current spending of around £6.5m per annum is leading to an improvement in overall condition across the next 15 years, indicating that some investment could be re-prioritised elsewhere to support other assets.

Figure 3-1 shows the asset condition based on the current level of spending while Figure 3-2 indicates condition levels where funding is allocated to maintain current condition levels in terms of the % of the network in 'red' condition. Current funding will increase the condition of the asset. [Operation Horizon](#), Surrey's £100m scheme to resurface roads across the county, has played a significant role in increasing the condition of the A and B roads. As a result, we believe that some of the budget for A/B Roads can be reallocated to other assets without significant negative impact on road condition.

Figure 3-1 A/B Roads – Current Funding Levels

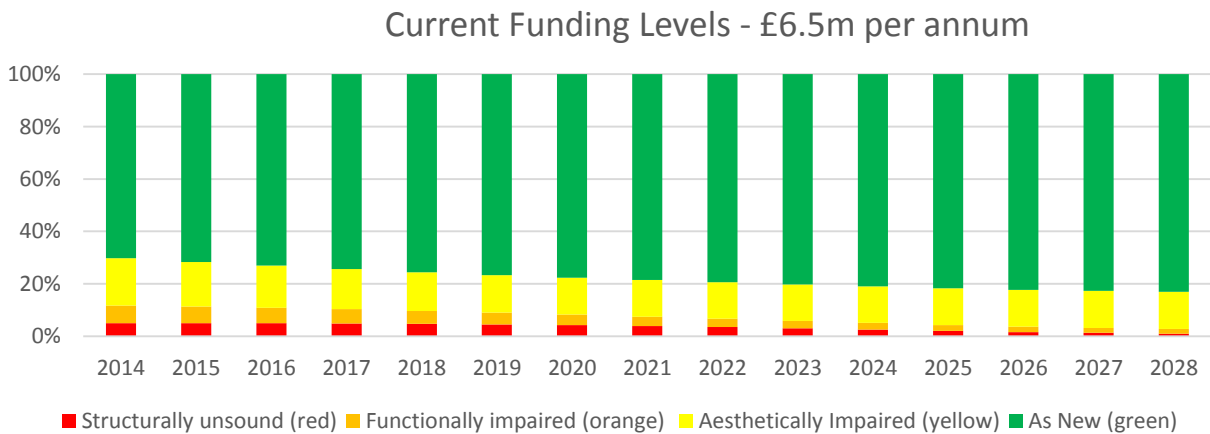
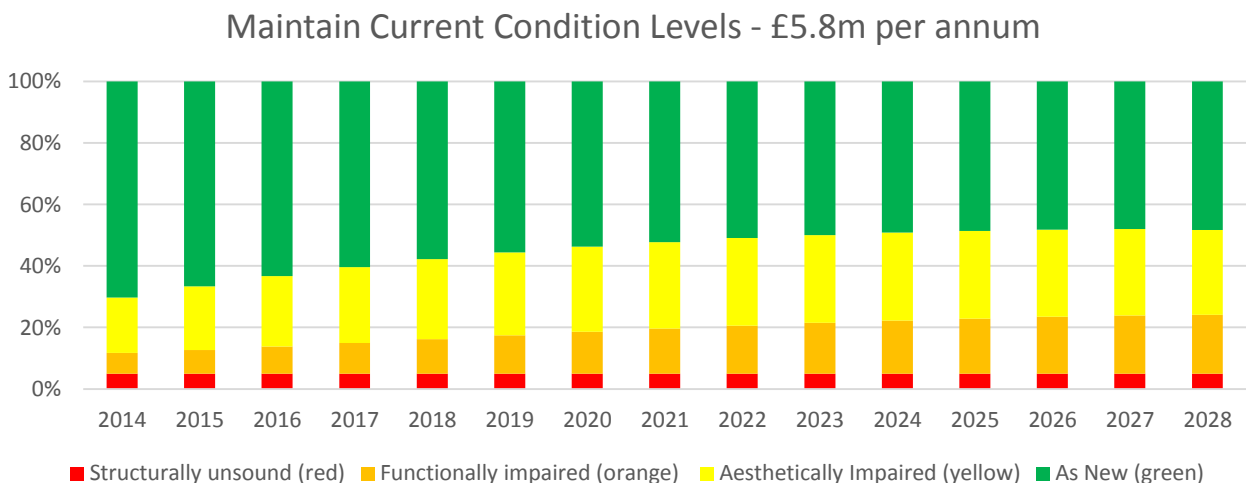


Figure 3-2 A/B Roads - Maintain Current Condition Levels



3.1.2. C/D Roads

C/D Roads are generally smaller roads which may link smaller villages or run through housing estates. The condition level of our C/D Roads is not as high as our A/B Roads, with around 16% of C/D Roads falling within the red condition class and a further 7% falling within the amber class. However, current spending of £13m per annum will lead to a clear improvement in condition, which will be especially pronounced compared to A/B Roads as the C/D Roads are starting from a lower condition level. The overall trends are similar to those identified for A/B Roads, allowing a similar approach to be taken. Figure 3-3 shows that by maintaining current spending the condition of the asset will increase significantly, indicating again that we may be able to reallocate some of this spending to other assets

Figure 3-3 C/D Roads – Current Funding Levels

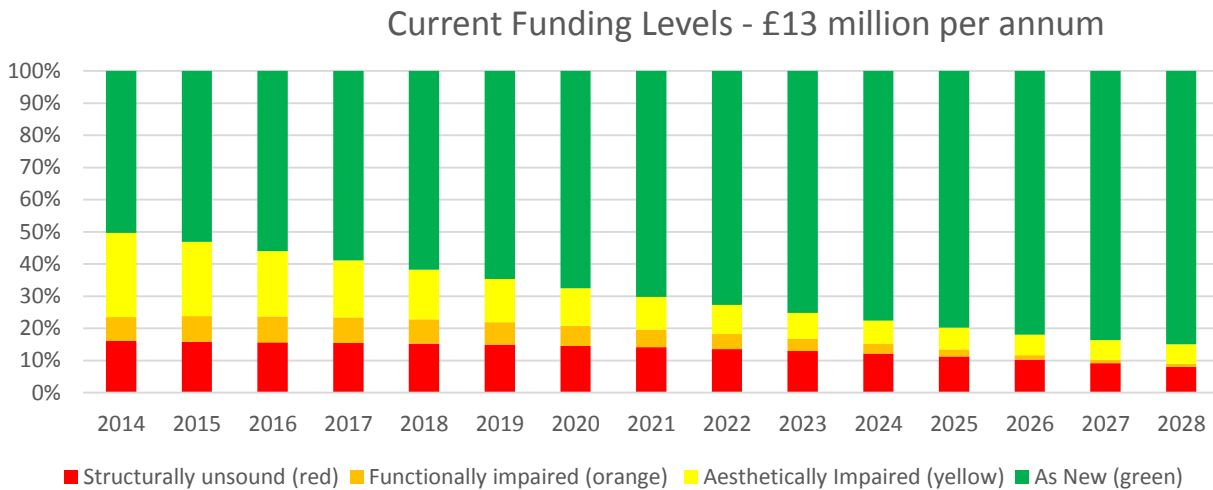
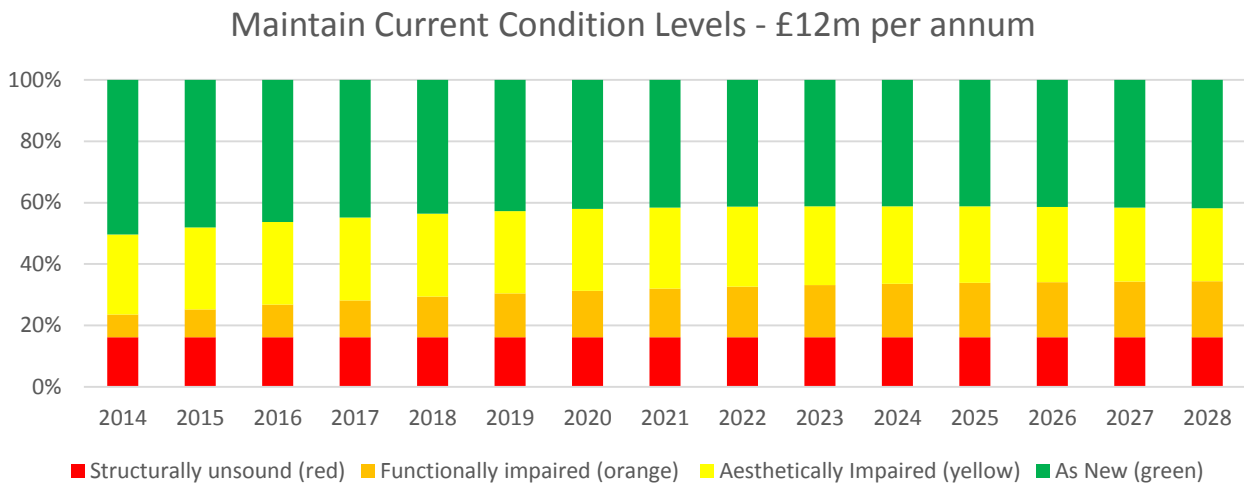


Figure 3-4 C/D Roads – Maintain Current Condition Levels

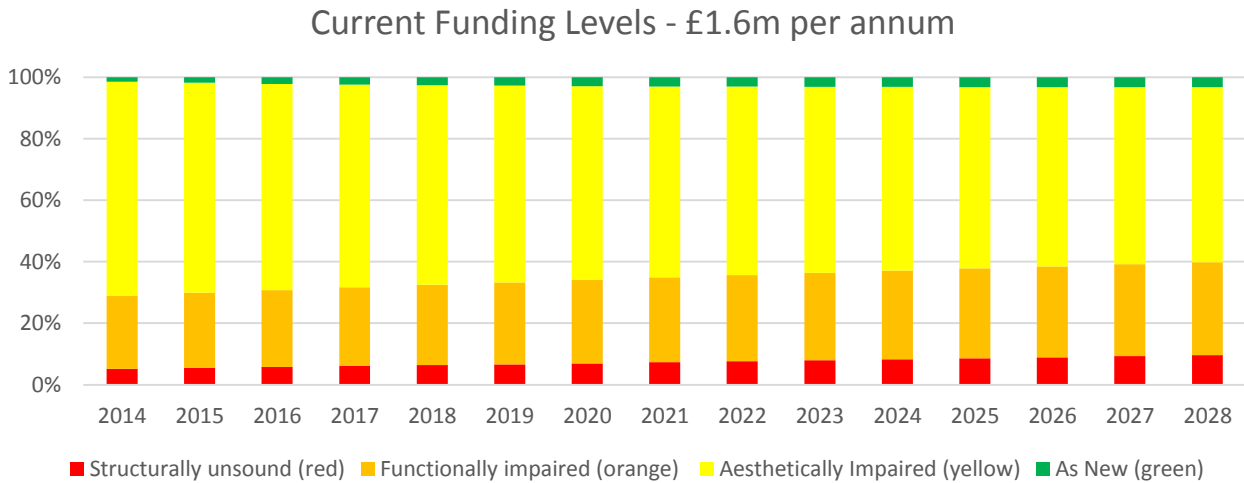


3.2. Pavements

Pavements provide restricted parts of the highway for pedestrians, which cannot be used by vehicles, other than designated cycle ways for cyclists. Pavements provide clear and safe passage for a wide range of users with different needs and requirements. As with roads, all of the data was modelled using UKPMS software and HMEP lifecycle planning tools.

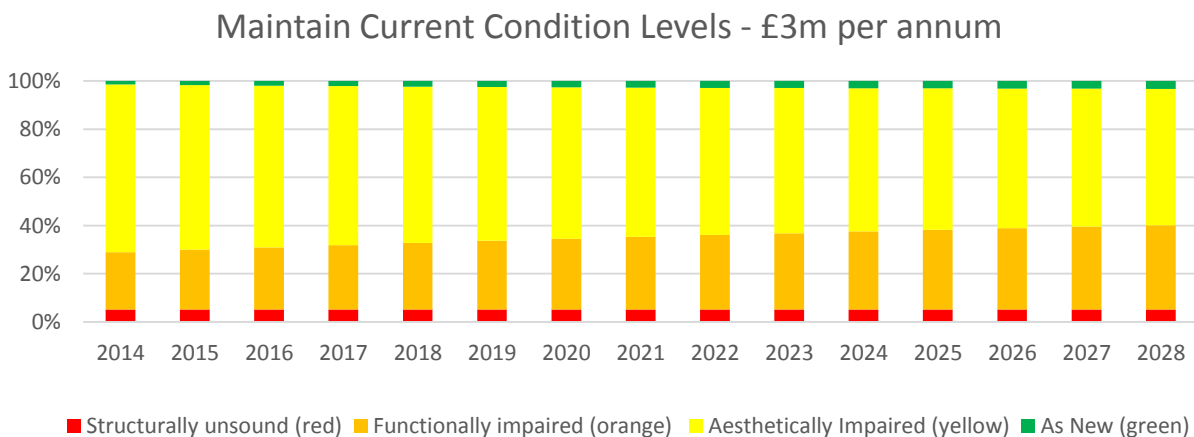
The analysis shows that significant investment in pavements is required as the current spending level of £1.6m per annum (Figure 3-5) is insufficient to fulfil a basic level of service. Pavements are subject to few statutory obligations so a level of judgement has been used around the criticality of the network and the potential impacts were certain stretches to become unsound.

Figure 3-5 Pavements – Current Funding Levels



Although there is forecast to be a slight increase in ‘as new’ pavements with current spending levels, the level of ‘structurally unsound’ pavements will increase. It should be noted, however, that the majority of Surrey’s pavements fall into the ‘aesthetically impaired’ category.

Figure 3-6 Pavements – Do Minimum to Meet Statutory Obligations



The annual spend required to maintain the current condition of pavements is higher than current funding, leading to an increasing gap between the two scenarios. Maintaining current funding indicates that the number of pavements that will become structurally unsound over the 15 year period will double from 5% to 10%. Funding will therefore need to almost double in order to maintain the condition at its current level.

These results are particularly important given the high impact that pavements footpaths have on users based on the NHT data, in terms of accessibility, condition and provision. The need for investment also reflects the responses provided in the Member Consultation, where pavements were considered to be the main priority area for investment.

3.3. Drainage

Drainage assets remove surface and flood water from the highways and away from buildings. The majority of the drainage network is underground, meaning it is not immediately obvious to the majority of highway users. Drainage plays an important role in the rate at which other assets deteriorate; for example, roads depend on the drainage network to remove surplus water from the road surface.

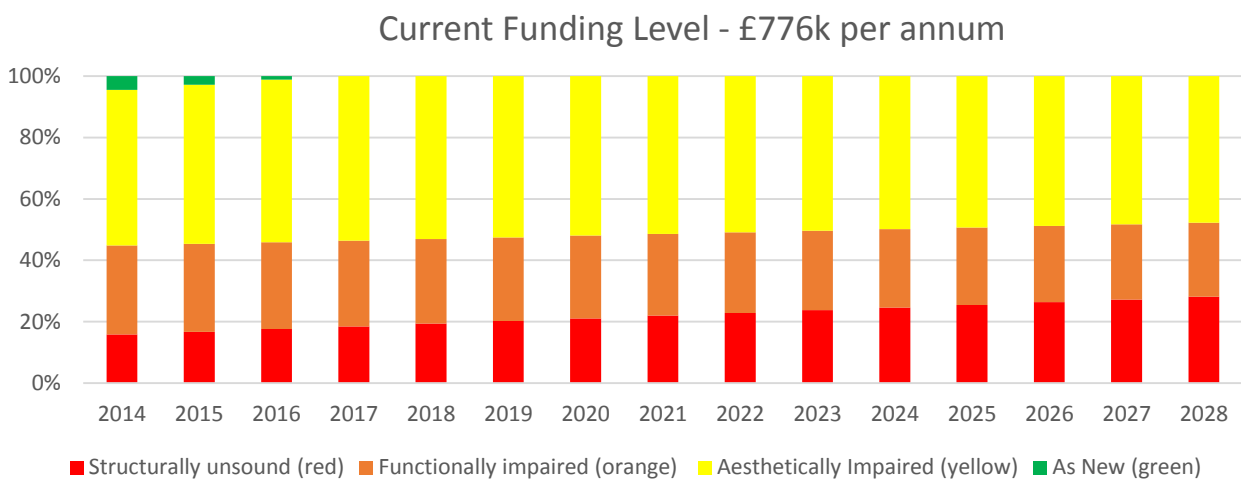
As with most of the UK, the drainage assets in Surrey require further mapping to develop a fully accurate picture of their location and condition, making it difficult to determine the scale of the asset and investment required. Therefore our analysis is based on the highest impact of flooding (wetspots) in Surrey, which is estimated to form up to 10% of the network. The data was modelled using a bespoke software database.

The NHT survey highlights the need to maintain service levels for drainage which is supported by the Member's Consultation that identifies drainage as a key priority. This may be in response to recent flooding in Surrey, highlighting the importance of effective drainage.

Around 40 new wetspots emerge each year, 25% of which require capital treatments. Other wetspots are either dealt with through revenue funds – gully cleaning etc. or are the responsibility of other parties, water companies, private landowners for instance.

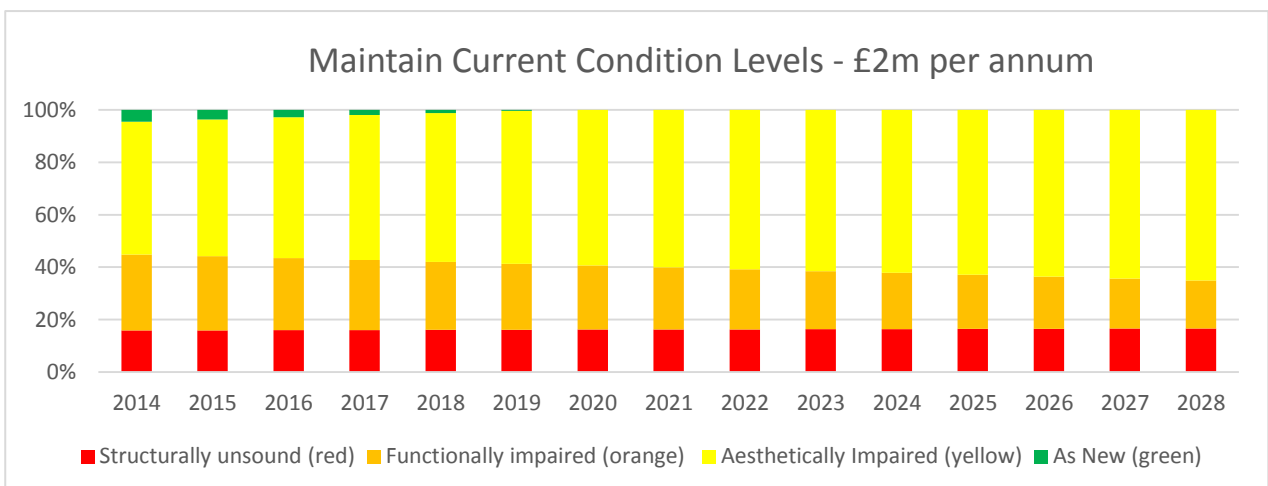
The MTFP allocation for drainage is £776k per annum. Spend at this level has been modelled and the results are shown at Figure 3.7. This indicates significant deterioration of the drainage asset over a 15 year period.

Figure 3-7 Drainage - Current Funding Levels



In order to maintain current condition levels (figure 3-8), the annual budget would need to increase by 160% from £776k to £2m.

Figure 3-8 Drainage – Maintain Current Condition Levels



3.4. Structures

Structures are the bridges, culverts, chambers, subways and retaining walls that support the roads and pavements. Many structures in Surrey are managed by third parties such as Network Rail and Highways England. This removes principal responsibility from the Council, although regular liaison with these third parties is essential to ensure that work across these assets is effectively coordinated. We use Bridgestation to model all of our Structures assets.

The current level of spending on structures is £1.9m per annum, as shown in Figure 3.9. There is a funding gap of over £10.5m over 5 years to maintain current condition levels. This indicates we will need to increase spending significantly, particularly given existing issues with accessibility and weight restrictions across the county.

There are few specific measures of satisfaction with structures but there are certainly impacts for wellbeing, prosperity and resident experience. Structures are often situated at a pinch point (a bridge or tunnel), meaning that their ongoing availability is essential in ensuring the smooth flow of the network. The focus should remain on maintaining the condition of these assets.

Figure 3-9 Structures Condition - Current Funding Level

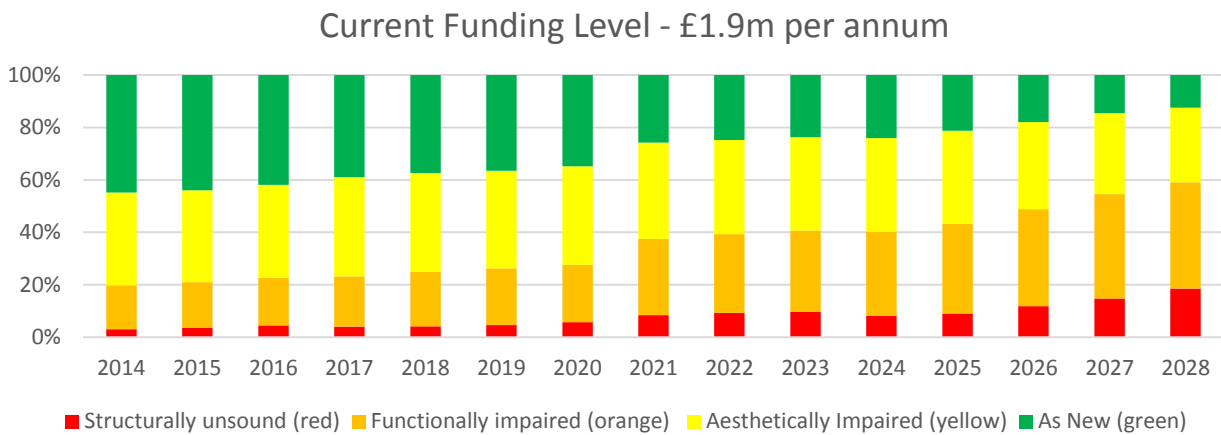
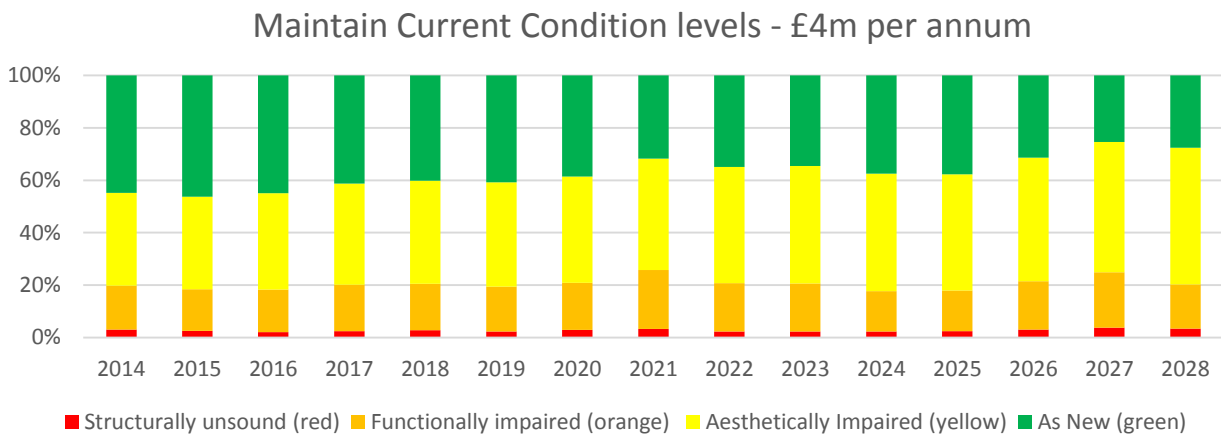


Figure 3-10 Structures – Maintain Current Condition Levels



There is a risk that once remedial work has been undertaken on a structure it is not actively managed until its condition deteriorates again. We will need to ensure an appropriate level of revenue funded maintenance in order to provide value to the residents of Surrey.

3.5. Embankments

Embankments refer to engineered and natural slopes and cuttings made in the landscape to support roads and pavements. Up until now the capital spend has been taken from the structures budget when required, placing additional pressure on the management of the Structures asset and only allowing for a reactive approach to maintenance of embankments. There is now a recognition that we need to treat embankments as a separate asset class.

The chart at figure 3-11 gives an indication of the deterioration of the embankment asset that we could see over a 15 year period and figure 3-12 provides an indication of the cost to maintain embankments in their current condition .

Figure 3-11 Embankments Condition - Current Funding

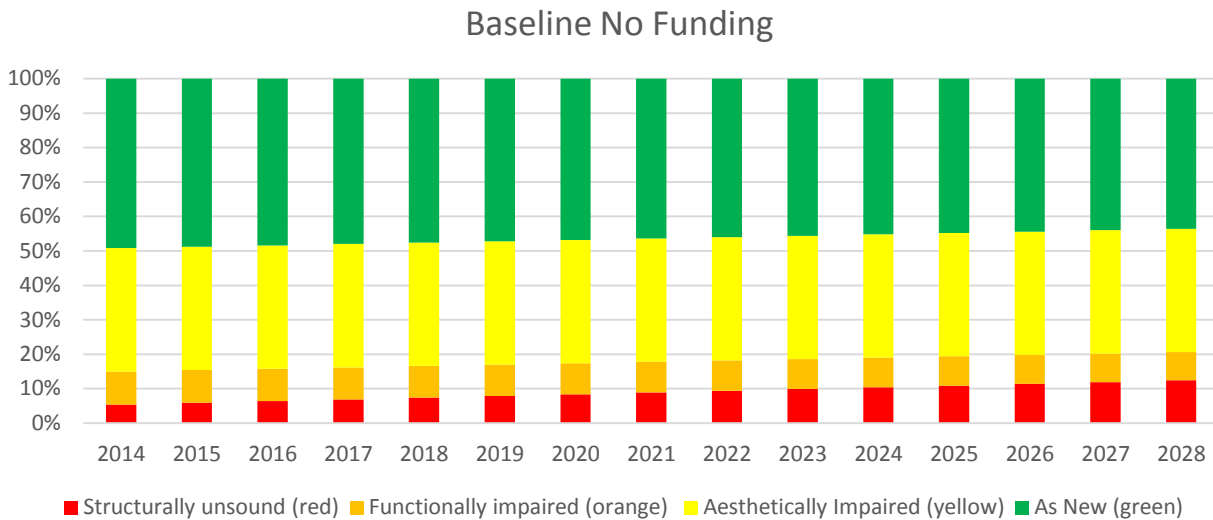
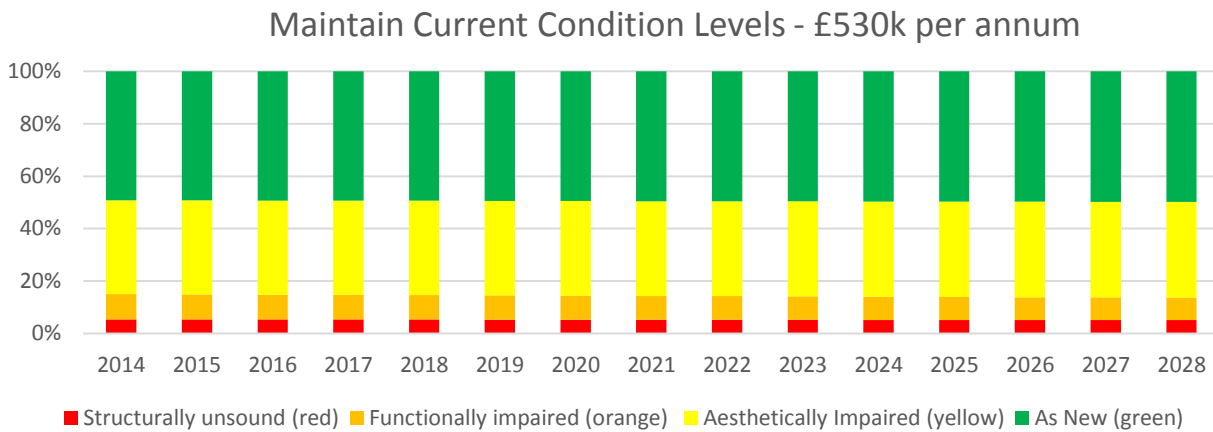


Figure 3-12 Embankments – Maintain Current Condition Levels

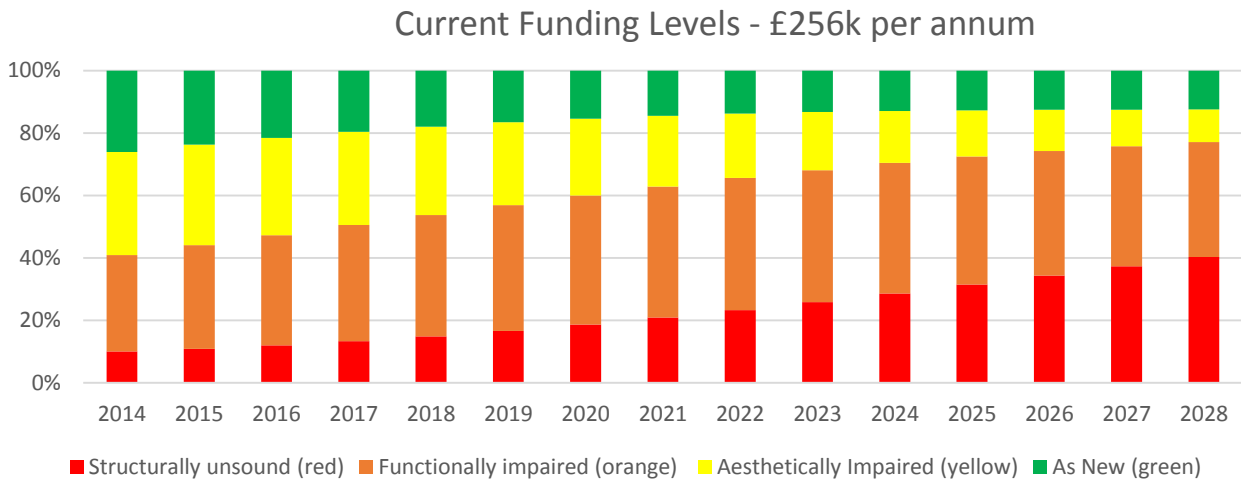


As embankments are a new asset class there is limited data available which specifically refers to embankments as a separate asset in terms of both available condition data and funding requirements. More work will be carried out in future to better understand the condition forecast and funding scenarios to enable use to develop a more planned strategy for managing this asset.

3.6. Safety Barriers

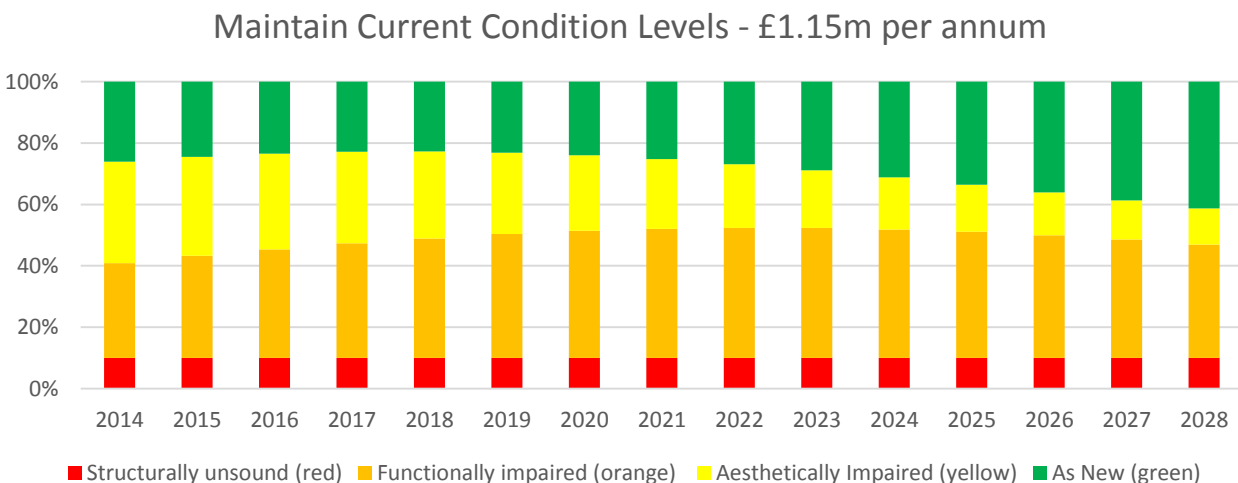
Safety barriers are a vehicle restraint system intended to reduce the number and severity of injuries in the event that a vehicle leaves a road and would otherwise encounter a hazardous feature, protecting both vehicle occupants and features located behind the barrier. As safety barriers are purely for protective purposes in most instances the asset may never need to be used for its intended purpose. We use a bespoke database to model the data. Safety barriers are not seen by road users as a high priority, given that they are only perceived as adding value in the rare instance of a vehicle leaving the road. However, they are important in mitigating the risk of serious injury or death to users of the highways network. Even small increases in funding can have a significant impact on the asset condition.

Figure 3-13 Barriers Condition - Current Funding



As shown in Figure 3-13, current funding levels will lead to a significant decline in the condition of the asset, so an increase in funding will be required. Figure 3-14 indicates the positive impact that an increase in funding can have, with a shortfall of £4.5m identified across 5 years to achieve this outcome.

Figure 3-8 Barriers – Maintain Current Service Levels



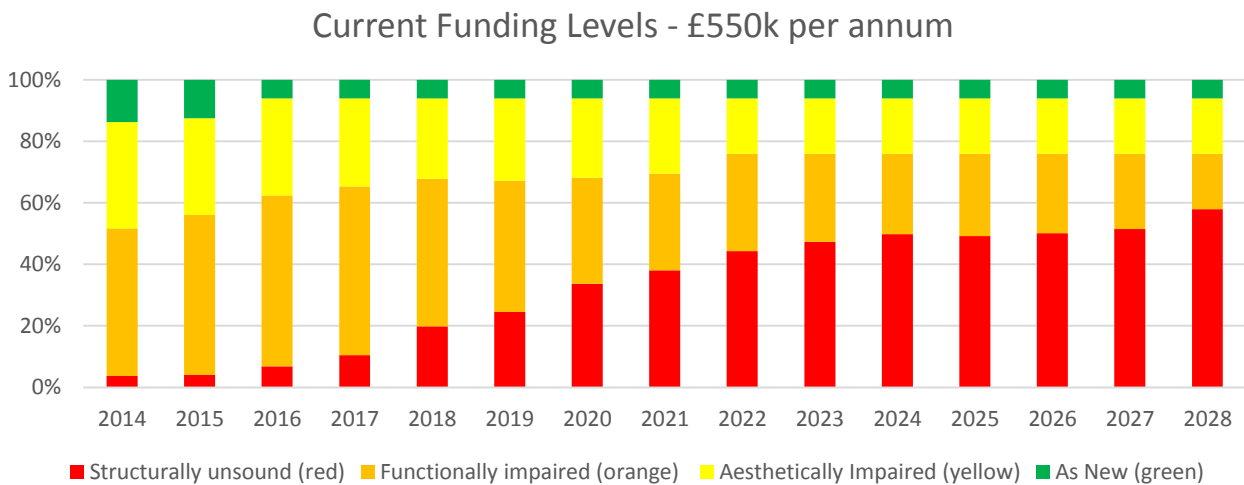
3.7. Traffic Systems

Traffic systems provide traffic control and intelligent information systems to keep traffic moving around the highway network. Traffic systems are essential to maintain the smooth flow of traffic safely around Surrey. We use a bespoke database to model our data. The budget for traffic systems covers a range of equipment, including pedestrian crossings, junctions, variable message signs, rising bollards, bridge height warning signs, fire station wig-wags and car park guidance systems. The condition of the assets is assessed against a number of criteria such as obsolescence, electrical safety, structural safety and the method of control.

Due to their technical complexity and technological focus, traffic systems have by far the shortest life span of all asset types and therefore any reduction in funding leads to rapid deterioration of the assets.

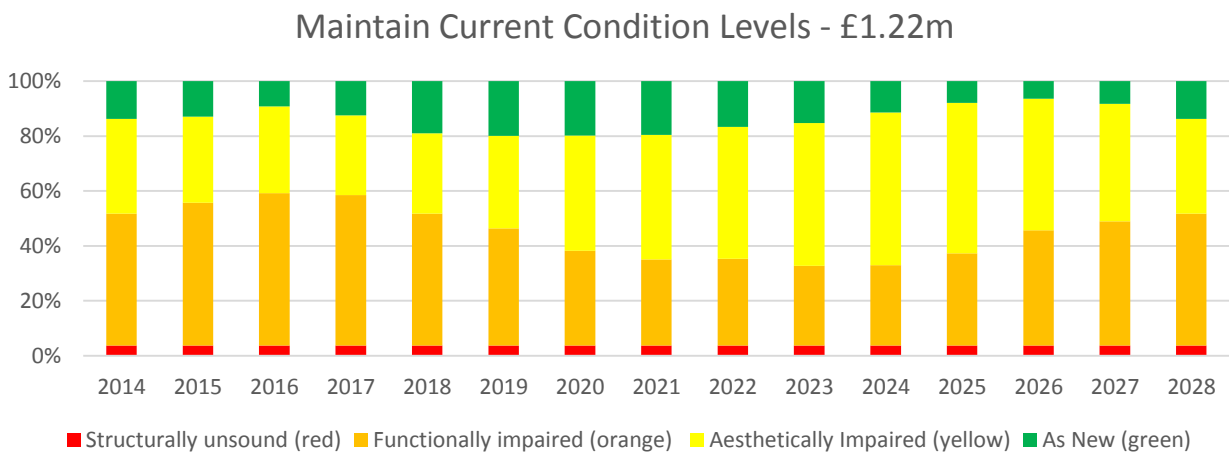
Figure 3-15 indicates that the current level of funding will lead to significant deterioration to the asset over 15 years, with the percentage of the asset in red condition increasing from 4% to 58% over this period.

Figure 3-15 Traffic Systems Condition - Current Funding



Given this shorter lifespan, funding may need to vary year to year to address issues as they arise so we will we will build this principle into our approach.

Figure 3-16 Traffic Systems – Maintain Current Condition Levels



Traffic systems are similar to barriers in the sense that relatively small increases in the annual budget will make a significant impact on the condition of the network over a 15 year period, meaning even a minimal increase in funding will have a significant impact. Traffic systems are vital in keeping traffic moving and reducing congestion, both of which are key factors in meeting our strategic outcomes.

4. Scenarios and Recommendations

In previous sections we have set out what we are aiming to achieve and our approach for doing so. In this section we identify in more detail how we will prioritise investment across the next 15 years.

4.1. Forward Look 15-Year Scenarios

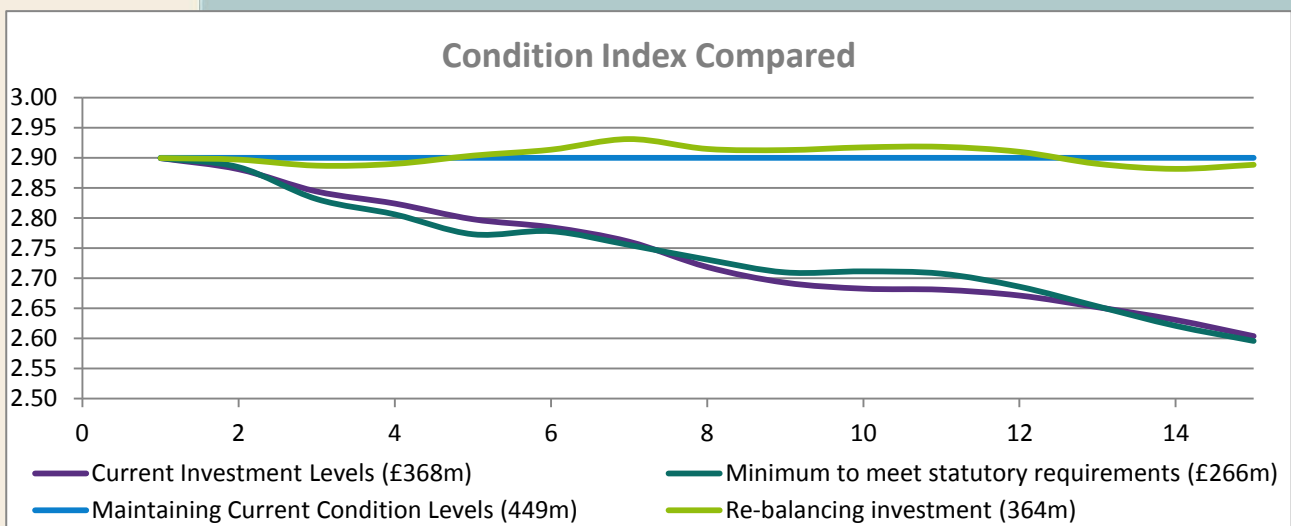
The findings from the analysis in [Section 3](#), as well as the views of users and Members shown in [Section 1.2](#), clearly justify a change in the spend profile across the identified asset types. The previous section has shown that different assets react differently to changes in funding and some require only modest investment to effect a significant improvement in asset condition. The challenge is to balance the needs of our users with the budgetary constraints we are working within and the impact that funding allocations will have on the assets. Figure 4-1 summarises five investment scenarios, where a condition index (CI) has been calculated to indicate the overall condition of each asset type. For example, if the condition for an asset was 100% red (structurally unsound), the CI would be 1, whereas if the asset condition was 100% green (as new), the CI would be 4 – indicating that the higher the CI, the better the condition.

Figure 4-1 Scenario Summary Table

Scenario	Current condition index (CI) exc. Embankments	Overall condition index (CI) - Year 15 exc. Embankments	Overall Spend
Scenario 1 – Current funding Levels	2.90	2.60	£368m
Scenario Two - Minimum to meet statutory requirements		2.59	£266m
Scenario Three – Maintain current condition levels		2.90	£449m
Scenario Four – Rebalanced Funding		2.89	£364m

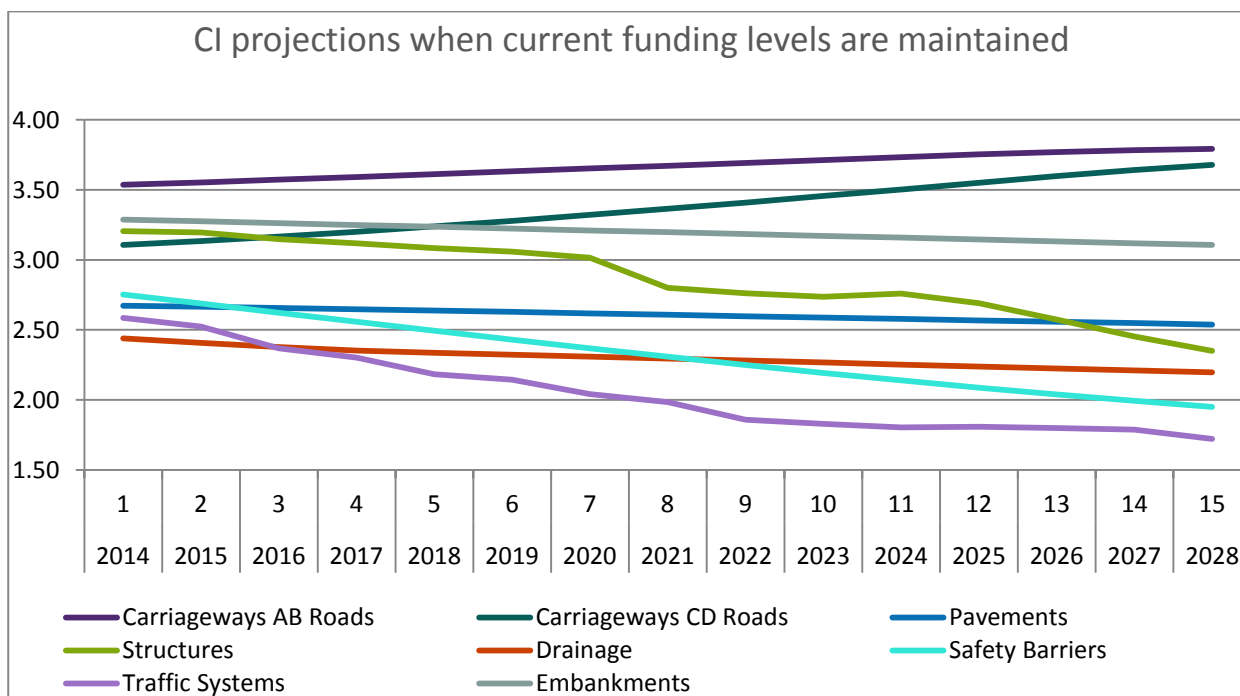
Figure 4-2 shows the different condition index projections over the next 15 years for each scenario, combining each network asset to give an overall view for the network. The cost of each scenario is also shown. A key principle of our approach is to consider the impacts of our decisions across the entire network rather than focusing on assets individually. This allows us to understand the interdependencies between different asset types and how these may be affected by changing funding levels. For example, a higher level of condition for our drainage assets will have a knock on effect in slowing deterioration rates of our roads.

Figure 4-2 Scenario 15 Year Condition and Funding Projections



If the current funding allocations per asset (scenario 1) were to continue unchanged for the next 15 years, we would see a dramatic reduction in the overall condition index of the network. The decrease in the CI from the current figure of 2.90 down to 2.60 is equivalent to over 30% of the network deteriorating down a category, for example from orange (functionally impaired) to red (structurally unsound). In terms of the effect on individual assets figure 4-3 shows that while condition levels on all types of roads would improve over 15 years, the condition of assets such as structures, traffic signals and safety barriers would significantly deteriorate over 15 years.

Figure 4-3 Scenario 1 Current Funding Levels – projected changes to asset CI’s over 15 years



In order to do the minimum to meet statutory requirements, approximately £266m of spending is required across 15 years, an average of around £18m per year. This scenario produces a similar reduction in network condition as maintaining the current asset funding allocations, however the spend in this scenario is not as uniform across the years as scenario 1. In this scenario the initial spend per year would be lower than in scenario 1 but towards the end of the 15 year period would rise higher than scenario 1.

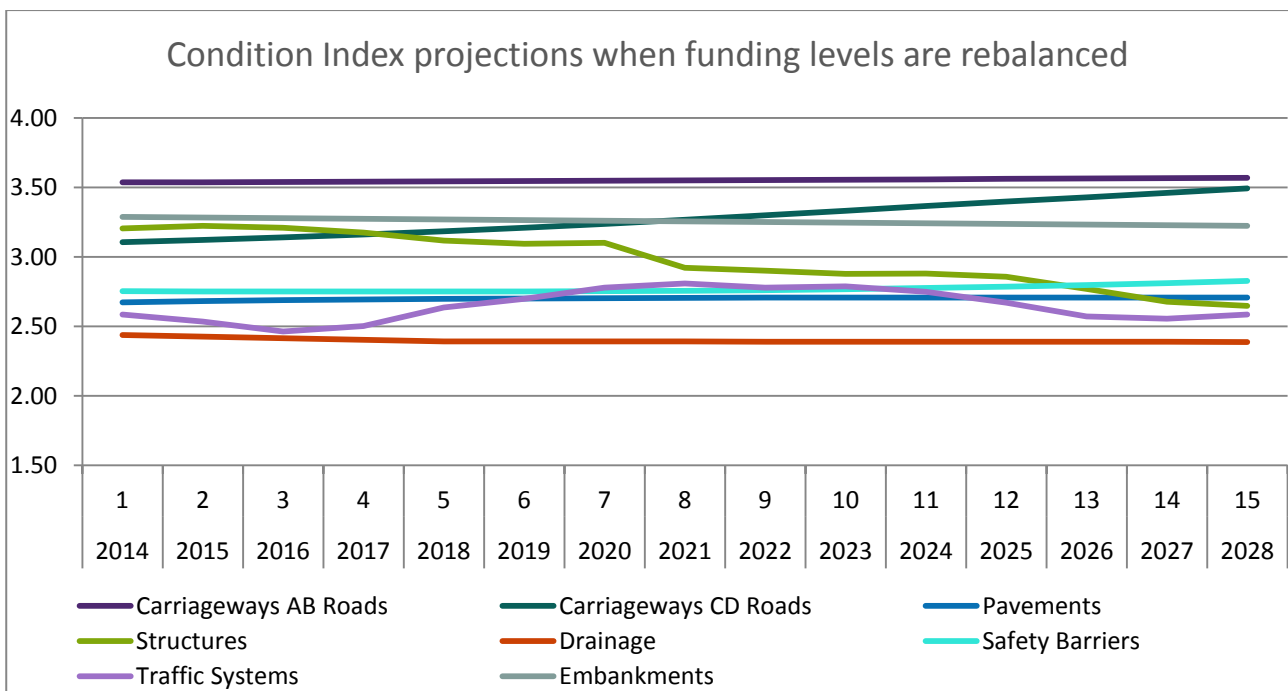
Maintaining current condition levels (preventing the percentage of the asset assessed as structurally unsound from increasing) is listed as Scenario 3, and is the most expensive of the three scenarios at a cost of £449m across 15 years. As with Scenario 2, while in the initial years a level of funding marginally lower than the current budgets will be sufficient to maintain condition, the failure to invest in the maintenance of assets in the short term would cause the budget to increase rapidly each year with an average budget of £30m per annum being required over the 15 year period. By changing the way we allocate funds across the different assets we can proactively manage the network and prevent this high-cost approach being realised.

4.2. Recommendations and Achieving Outcomes

As we have to manage our service within the constraints of the MTFP we have developed a spend profile that makes effective use of existing funding available. This scenario reflects the spending required to maintain the network in its current state rather than improve overall condition, while also avoiding the significant deterioration of the network identified in scenarios 1 and 2 and the increased costs identified in Scenario 3. We are focused on the key priorities of our users, acknowledging work already completed and the current relative condition of each asset.

Figure 4-4 demonstrates that this scenario projects that the condition of most assets will remain fairly stable over a 15 year period. There is clear improvement in the condition of C&D roads, while there is deterioration of condition within the structures asset. Any deterioration will have to be managed by taking a risk based approach to identification of schemes and also considering other sources of funding such as LEP bidding where appropriate.

Figure 4-4 – Condition Levels for proposed scenario – rebalanced funding



We will monitor the performance of our approach to ensure the desired levels of service are being achieved, taking action where necessary to deliver our strategic goals. There are a number of factors included in the investment decisions proposed including:

- Recognising the success of Operation Horizon and forecast improvements in roads, we are reducing our spending slightly. However, we understand the importance to our users, and so we will also be bidding for other sources of funding (e.g. LEP, DfT Challenge fund) in order to carry out larger scale improvements alongside our maintenance programme.
- Both users and Members have identified pavements as key, hence why we are significantly increasing investment in this area;
- Structures clearly need more investment to prevent long-term increases to costs and to minimise the risks of weight & width restrictions, lane closures and bridge closures.
- Traffic signals also emerged as priority for our Members and our users, so we will significantly increase our spending in this area;
- Drainage was identified as a priority by Members, and alongside increasing the spend on highway wetspots we will also be looking at other areas of funding for more significant works for instance LEP Resilience funding.
- Safety Barriers will also benefit from increased funding without it being a significant drain on the overall budget;
- We will develop a better understanding of the requirements for embankments, including a specific budget allocation while our knowledge of the asset increases;

- We will continue to manage our assets to ensure the budget is allocated as effectively as possible, not only to minimise the budget required, but also to minimise costs elsewhere; Focusing on assets that minimise the annual spend on insurance claims as a result of accidents;
- Minimising the risk of the budgets required to meet minimum obligations or maintain service
 - Ensuring that revenue spending is minimised
 - levels spiralling;
 - Impacts to the depreciated value of our assets

The proposed capital budget allocations for 2017/18 onwards are shown in the table below. On 22 March 2016 Cabinet agreed to increase highway maintenance spend in 2016/17 by £5m and to make an offsetting reduction to 2017/18, which results in the budget below. In addition, future spend is expected to be supplemented by an allocation from the DfT's "pothole action fund". For 2016/17 this allocation is £1m. In future years we understand from the DfT that funding will be awarded through a competition, rather than formula based, therefore we do not know how much funding we are likely to receive.

An indicative spend per year is shown, however in practice we aim to develop five year programmes of work for each asset within each assets total five year budget allocation. For some assets we may not spend a fifth of their total allocation each year as it may be more efficient and effective to have different sized programmes each year, however over a five year period spend on each asset will be equal to five times the "proposed spend per year" value shown in figure 4-5.



Figure 4-5 Scenario Four – Adjusted Budget

Asset Type	2017/18 Proposed (rebalanced) budget allocations (£m)**	* 2018/19 onwards proposed (rebalanced) budget allocations*** (£m)	Total 15 year budget (£m)***	Impact to asset
A/B Roads	3.21	4.67	69	Overall condition will generally improve – reinforced by recent Operation Horizon investment.
C/D Roads	6.65	9.69	142	Overall condition will generally improve – reinforced by recent Operation Horizon investment.
Pavements	3.00	3.00	45	This level of investment will provide relatively stable Pavements have been identified as a key priority.
Drainage	1.60	1.60	24	Asset condition will remain fairly stable based on what is known.
Structures	3.00	3.00	45	This level of investment will slow down asset deterioration and will begin to move the condition of structures towards a more stable base which is easier to manage at a strategic level.
Safety Barriers	1.10	1.10	17	Good overall improvement to the asset, allowing increased focus on safety critical barriers.
Traffic Signals	1.20	1.20	18	This level of investment will stabilise condition over the next 15 years.
Embankments	0.30	0.30	5	Evidence indicates that proposed spending is broadly appropriate but we will continue to improve our data
TOTAL	20.06	24.56	364	

* £5 million was moved from the 2017/18 highways maintenance budget into 2016/17 therefore the 2017/18 budget is reduced by £5 million

**excludes inflation beyond MTFP

5. Organisational Change and Building the Team to Deliver

In support of our core asset management activities, we will be undertaking a number of internal activities to enable our asset management team to deliver effectively. In using the [Highways and Infrastructure Asset Management Guidance](#) document published by the UK Roads Liaison Group (UKRLG) and the Highways Maintenance Efficiency Programme (HMEP) we have identified a number of opportunities for improvement and will also utilise standards set out in [ISO 55000](#), which identifies key principles to consider in implementing an effective approach to asset management. Our projects and initiatives to deliver this are focused on the following outcomes:

- Creating clear lines of decision making and delegated responsibilities;
- Having a clear and agreed plan in place, with changes justified through a controlled process;
- Measuring performance against a set of benefits and monitoring using detailed and regular KPIs;
- Ensuring the asset management team is linked up effectively to internal and external stakeholders;
- Maximising utility gained from the systems across the organisation.

The service is also undergoing a change programme to ensure it has the capability and skills that supports the delivery of its 5 year Strategic Business Plan. This includes:

- Functional organisational design based on a commissioning approach to create a more outcome based service;
- The development of a Delivery Plan which will set out the detail of what we intend to do to deliver our business plan
- Service wide [performance framework](#) and benefits mapping to evidence the delivery of our business plan and the Council's corporate goals and to drive continuous improvement. Section 6 describes the development of our performance framework in more detail;
- Development of a more efficient and effective works ordering function with clear client and deliverer roles and responsibilities and change control process design;
- External stakeholder mapping and engagement plan;
- Internal communications plan;
- Customer Service Excellence accreditation;
- Development and implementation of our [People Strategy](#);
- Development and implementation of a service wide Quality Management System.

These initiatives support a range of improvement activities identified by the asset team, including (ranked in order in terms of the magnitude of change required):

- Performance – benefits mapping aligned to performance measures and realisation, audit programmes and link to others;
- Investment & Budgeting – Create SLAs, integrate budgets together, base decisions on whole life capital costs, exert more change control, justify decision making, bidding for future funding, asset teams to control budgets;
- Capability – collaboration, flexible and dedicated resource, more control;
- Process – senior engagement, agreement, consistency, link teams together, action list, change control, processes
- Communications – web page, Q&As, workshops, meetings, communicate remits of each team, wider stakeholder engagement, champions of the network,
- AM Systems/Technology – integrate asset systems to link together, records, simple system,
- Policy & Strategy – Allow for changes, define responsibilities, ensure senior support;
- Data – conduct more surveys and actually use the data in decision making.

We conducted a Maturity Assessment with the team to support the identification of these initiatives and identify the key areas of priority for improvement in the short to medium term

6. Performance Management and Governance

The business plan for the service is underpinned by a Performance Management Framework. This sets out a series of performance measures across all our activities which will be used to demonstrate that we are achieving the objectives of the business plan and delivering the Council's corporate goals. It will allow us to identify risks to service delivery and highlight opportunities. Progress against the framework will be scrutinised on a regular basis with quarterly reporting to the Service Leadership Team. Implementing this framework is an ongoing process and we will continue to adapt our approach as we mature.

Included within the framework is a series of measures against the delivery of the asset management strategy. These will be used to monitor our progress against the delivery of the objectives set out in the strategy on a number of levels.

6.1. Performance of our strategy

We will continue to understand the user needs for highways to ensure the strategy is correctly focused, as well as remaining aligned to wider Council and corporate priorities. We will work to prioritise those activities understood to increase public satisfaction, maintain our customer focus and ensuring that everything we do is aligned to the needs of highways users.

We will take an engaging approach to delivering our plans and updating the strategy, ensuring we hear your views before making significant changes. The strategy will be reviewed annually and aligned to the 5 year business plans developed for the service. We will continue to integrate into our thinking information from the NHT survey, customer satisfaction surveys, the customer contact centre and other sources of engagement. By doing so the asset management strategy will remain relevant and aligned to the changing needs of Surrey. Progress will be published on our website and all users will be able to actively engage in the formation of the ongoing strategy.

6.2. Performance of our assets

Using the baseline developed in our asset data, we will develop forecasts for future condition based on the level of investment provided. This will then be reviewed on an annual basis to assess any under- or over-performance for each asset against the needs of the users. Where this is the case, lessons learned will be gathered to understand why this has occurred and suggested activities to either improve the situation or maximise an opportunity with a view to reducing whole life costs of the asset.

This will enable future forecasting to be completed more effectively with a view to improving accuracy in the longer term. Where assets are shown to be consistently underperforming, more detailed diagnostics will be completed to understand why and to develop remedial activities specific to that asset. We will continue to work with partners to identify innovative solutions to these challenges, constantly seeking to increase the value to the residents of Surrey.

There will be monthly works scheduling progress meetings to review the delivery to plan and the updated condition forecasts will be reviewed at board level annually, where changes will be agreed. Any changes to the strategy will also be reflected in adjustments in investment priority.

6.3. Performance of our team

We will seek to continually improve the tools, systems and processes available to each asset team and identify lessons learned as more information becomes available. We will repeat a maturity assessment on an annual basis to assess our level of maturity against our original plan, helping us to set out new or revised improvement activities for the future.

We will work with the asset management teams to help them manage their priorities and to build resilience in their approach when these priorities may conflict with each other. This will also allow for flexibility within the team going forward. The maturity assessment completed will be shared the senior leadership team on an annual basis and there will also be quarterly reviews of progress in delivering organisational change and operational improvement.

6.4. Knowledge sharing and support

Surrey is committed to the development and implementation of good practice and benefits from lessons learnt at National, Regional and Local levels. Officers from Surrey County Council regularly contribute to and attend:

- National and regional conferences;
- The Chartered Institute of Public Finance and Accountancy (CIPFA) Highways Asset Management Planning Network
- SEASIG (South East Area Service Improvement Group) Customer Service Group
- The South East 7 Alliance
- National Traffic Managers Forum
- Annual Local Authority Road Maintenance Survey
- Local Authority Bridges Groups

Furthermore, Surrey is committed to the sharing of knowledge and experiences in implementing asset management with other Highway Authorities across the Country. To this end, officers from Surrey present examples of good practice nationally at workshops and conferences and are active members of many knowledge sharing and improvement forums;

- UK Roads Board
- Road Condition Management Group (SCC Chair)
- HMEP Advocate – our Assistant Director has lead work on improving Client/Contractor/Supplier relationships, and on business change, including the development of a strategic peer review for highway authorities.
- Case study on Asset Data included in UKRLG Highway Infrastructure Asset Management Guidance
- MSc in Highway Engineering – Surrey played a key role in the development of this Brighton University course and provide ongoing input with colleagues leading modules and presenting lectures
- South East Traffic Managers Group (SCC Chair)
- South East Permit Scheme Governance Board (SCC Chair)

7. Programme Planning and Supporting Documentation

In delivering our strategy, we have developed a series of documents that set out how we will allocate funding to target the areas that require the most focus. The documents discussed below support the achievement of this objective and are updated annually to ensure we are adapting to ongoing changes in the condition of our network and the priorities of users.

7.1. Scheme Identification

To ensure capital funds are spent in the most effective way, robust systems for scheme identification and assessment are required. The Capital Prioritisation Policy can be found [here](#). We will make specific decisions on how to utilise the allocated budget using this approach to prioritisation, ensuring that we remain focused on delivering the goals and objectives set out in this strategy.

7.2. Annual Programmes

Surrey's major maintenance is planned in advanced and several programmes have been devised to support our strategic aims to maintain our highways assets. Our annual programme sets out all planned work for the year ahead and provides a baseline against which we can periodically assess performance to ensure we are delivering as required. We have made available our annual programmes on a borough-by-borough basis. Further details on each of these annual programmes can be found [here](#).

7.3. Forward Programmes

Forward programmes look to build greater resilience in to the network, providing a preventative approach to highways asset maintenance. We have taken an innovate approach to plan further in advance than just for the year ahead, setting out a provisional programme across the next five years. This ensures that we are proactive in our approach and can make informed decisions for the future. Of course the programme will be subject to change dependent on how far we are achieving our goals, and being flexible is a key element in delivering our strategy. Further information can be found [here](#).



8. Asset Summaries



8.1. Roads

Inventory

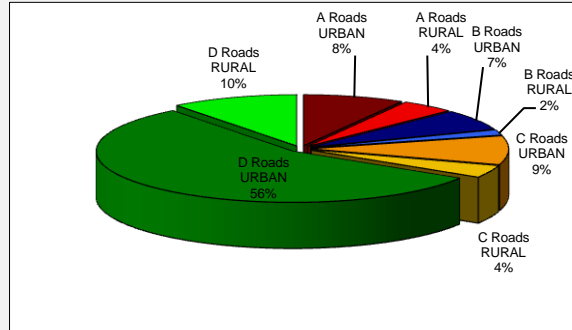
When we talk about roads we are referring to the surface and structure of the part of the road constructed for use by vehicular traffic. Surrey County Council has responsibility under section IV of the Highways Act 1980 to maintain highways in Surrey that are “maintainable at the public expense”. In 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 road 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.

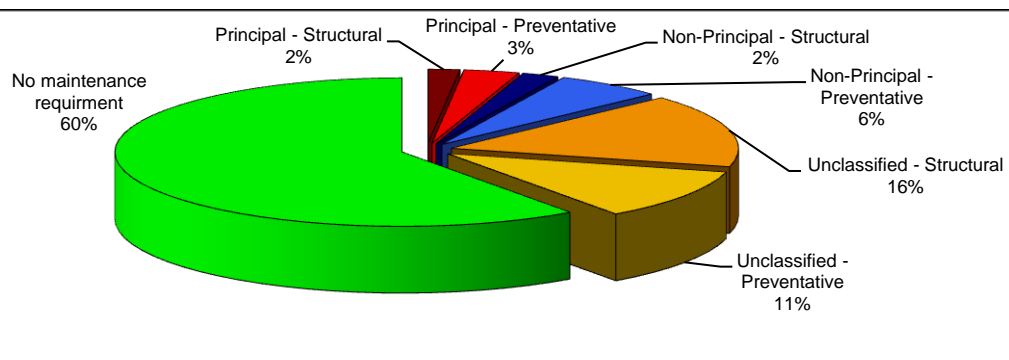
Based on the latest condition survey figures 2015/16

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 road maintenance programme comprises of two main budget headings, Major Maintenance and Surface Treatment.

Major Maintenance is carried out to roads 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 road 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 road 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 road 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 Road Network has been calculated at;

£294,698,000

Key Issues

- Currently we do not have all sections of road 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.

8.2. 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
<p>The capital Pavement maintenance programme comprises of two main budget headings, Reconstruction and Preventative Maintenance.</p> <p>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.</p> <p>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.</p>
Valuation
<p>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;</p> <p style="text-align: center;">£963,355,000</p>
Backlog
<p>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;</p> <p style="text-align: center;">£77,958,000</p>
Key Issues
<ul style="list-style-type: none"> • 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.

8.3. 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.

8.4. 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.

Work Types
<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>
Valuation
<p>Not available</p>
Backlog
<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>
Key Issues
<ul style="list-style-type: none"> • The urgent replacement of five pumps will place a considerable strain on the highways maintenance budgets. • 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. • 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.

8.5. 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_{lav}) and for also just the critical structure elements (BCI_{crit}), ie main beams.

The CSS Bridge Condition Indicators have been in use for a number of years. The 2006 BCI_{lav} score was 90.45 and BCI_{crit} 81.52. The current (April 2016) BCI_{lav} score is 88.11 and BCI_{crit} 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.

8.6. Earthworks and Embankments

Inventory

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.

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".



To date 103 sites have been surveyed which incorporate 222 individual slopes. A further 50 sites are in the process of being assessed.

Condition

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.

Work Types

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.

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.

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.

Valuation

Not yet available

Backlog
Unknown
Key Issues
<ul style="list-style-type: none">• 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.• Asset data collection needs to continue and inspection and monitoring programmes put in place.

8.7. 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

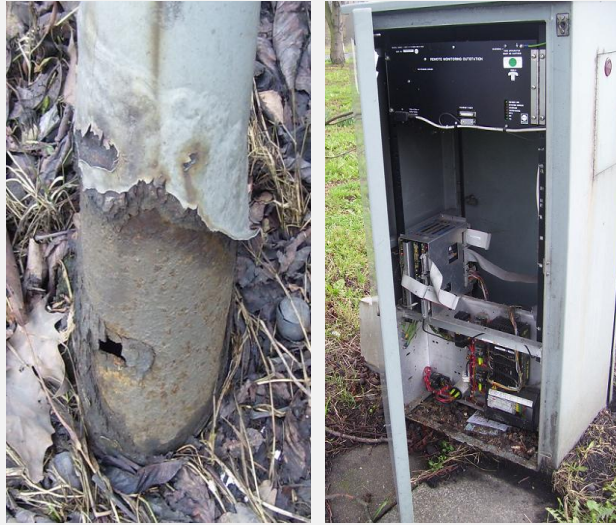
Where the condition of a barrier has deteriorated too far or repairs cannot be made, the barrier must be considered for replacement or removal.

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
<p>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:</p> <p style="text-align: center;">£37,000,000</p>
Backlog
<p>Based on condition data currently available the current backlog estimate is:</p> <p style="text-align: center;">£23,929,000</p>
Key Issues
<ul style="list-style-type: none"> • 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.

8.8. Traffic Control Systems

Inventory



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

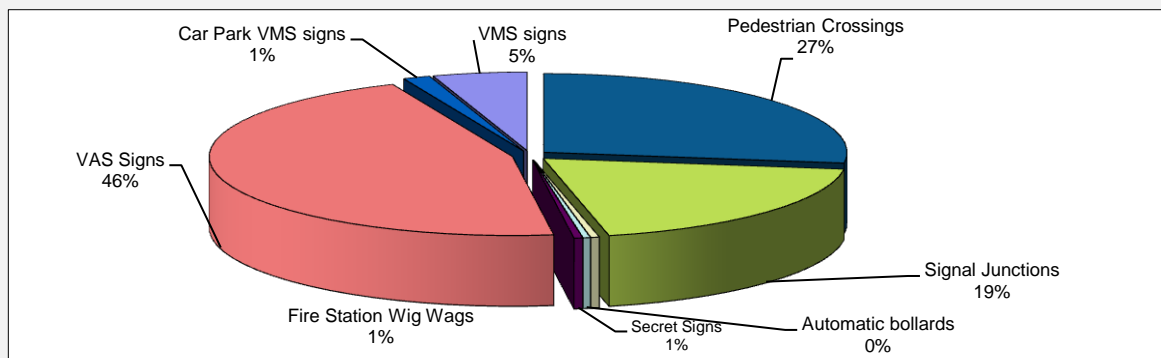
These comprise the following equipment (as at July 2015)

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

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	Occupancy
VMS Signs	66	Variable Message Signs – Highway / travel advice
VAS signs	600	Vehicle Activated Signs – Speed reminders etc
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.

Condition
<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>
Work Types
<ul style="list-style-type: none"> • Day to day fault resolution – lamp, detector, other equipment repair or replacement • Chargeable fault repairs – replacing equipment after RTC, damage by “others”, beyond serviceable life. • Complete or partial Refurbishment of installations, and modifications if applicable • Periodic routine inspections Electrical (five year) inspections • School crossing patrol (Wig Wags) inspections, reprogrammed annually, faults repaired in accord with priority and available budget. • VAS inspections
Valuation
<p>From 2013 Surrey County Council carried out a Valuation of their traffic signals 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 traffic signals asset for 2015 has been calculated at;</p> <p style="text-align: center;">£18,200,000</p>
Backlog
<p>Based on condition data currently available the current backlog estimate is:</p> <p style="text-align: center;">£11,956,000</p>
Key Issues
<ul style="list-style-type: none"> • 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. • 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. • Sites with obsolete controller equipment cannot be adjusted for optimum traffic flow. • All highway users are affected when traffic signals are not operating to their best. • Obsolete remote monitoring equipment no longer able to communicate faults, so we do not always know about a problem straight away. • Obsolete Bridge Height Warning signs no longer maintainable, leading to bridge strike incidents • Older controllers unable to exploit “green” technology (such as extra low voltage) • 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 • Historical under funding has resulted in increased pressure on asset.

8.9. Street Lighting

Inventory

Number of Units:

Total Lighting Units: 89000

(Exceeds column no. due to multiple lamp installations & other mounting types)

Illuminated street furniture (inc Bollards, Belisha beacons): 17,500

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.

Inventory reports from the "Geoworks" system can be extracted in 'real-time'.



Condition

Street Lighting:

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.

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

(*frequencies relate to street lighting columns)

Illuminated Street Furniture:

This was excluded from the PFI replacement programme and is managed on a dedicated revenue budget to cover monitoring, scheduled maintenance and reactive repairs.

The 2014 survey identified that a significant proportion (approx 25%) of assets were in poor condition with a similar number in excellent condition.

There is no planned/capital replacement programme and assets are only replaced once they are life expired (either through deterioration or damage).

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.

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.

8.10. Traffic Signs

Inventory
<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>
Condition
<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>
Work Types
<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>
Valuation
<p>In 2016 Surrey County Council carried out a Valuation of their Signs 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 Signs asset has been calculated at;</p> <p style="text-align: center;">£62,700,000*</p> <p style="text-align: center;">(includes illuminated signs managed as part of the street lighting contract)</p>
Backlog
<p>Based on condition data currently available the current backlog estimate is:</p> <p style="text-align: center;">£24,800,000</p>
Key Issues
<ul style="list-style-type: none"> 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.

8.11. 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 highway 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.

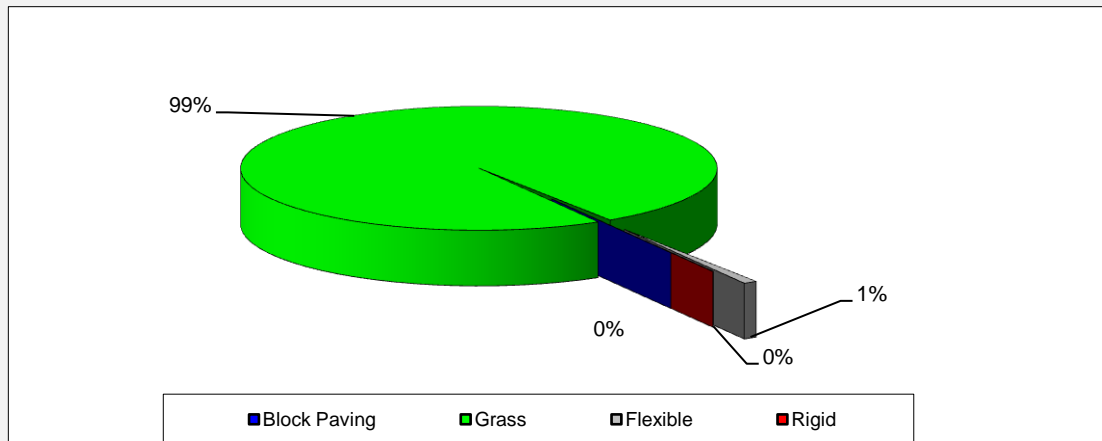
Key Issues

- 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.

8.12. 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

In 2015 Surrey County Council carried out a Valuation of their Verge 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 Land

Value of Our Grass verges has been valued at;
£470,000,000
Backlog
Not known
Key Issues
<ul style="list-style-type: none">• Vehicular damage to verges produces ‘rutting’ that may lead to claims for vehicle damage, personal injury and customer complaints.• 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.• The location of many verges makes the Health & 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.• 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.

