Highways Asset Management Framework

2022/23 - 2027

www.southglos.gov.uk

South Gloucestershire Council

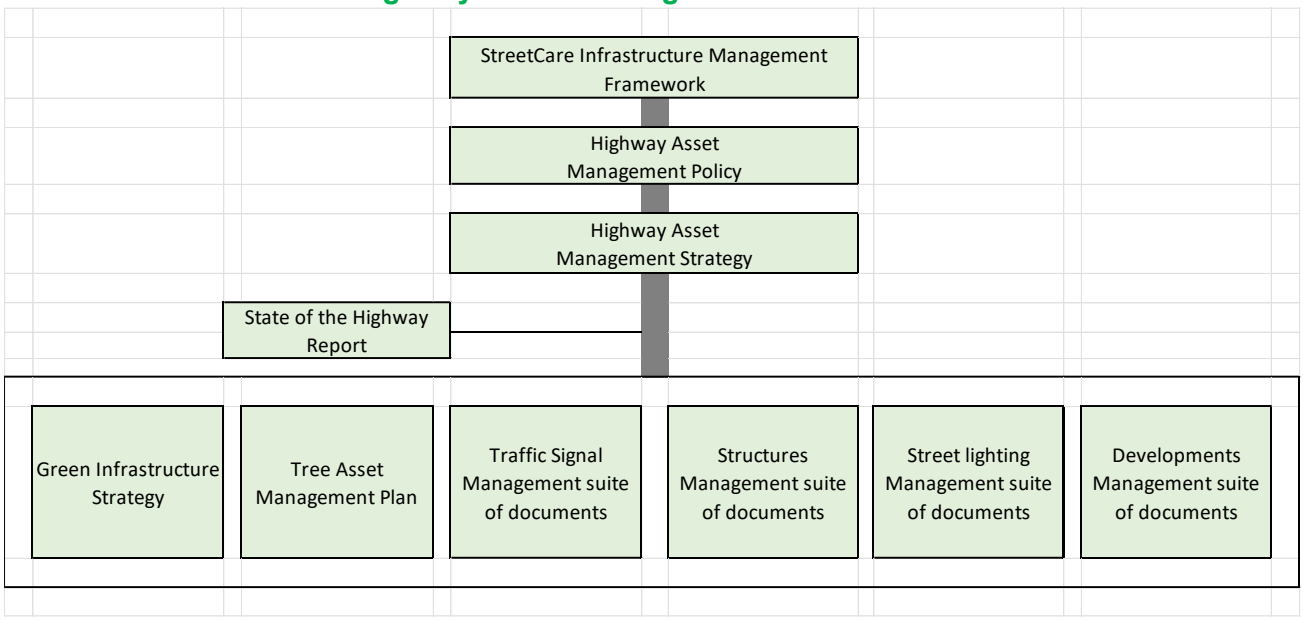
Review and update to previous plan

In line with changes in our environment both physically, socially and environmentally this latest plan incorporates and reflects the changing priorities of the Authority and how they are aligned to the wider changing needs.

About this Framework

This document is the framework for our highways asset management approach. It provides the structure within which our approach will develop and grow. The Framework diagram shows the hierarchy of documents within it. The Policy and Strategy contain the asset long term vision and objectives (Influenced by corporate/ regional strategy). The detailed asset management plans and state of the assets reports are focused on the operational decision making and resulting performance our assets achieve.

Highways Asset Management Framework



Our framework will develop along with our asset management maturity so will be reviewed and updated regularly. The documents within the framework, at this point in time, are the strategic documents that define and guide our approach. The more operational and asset focused documents sit within the relevant sections.

As our approach to asset management matures documents will updated/integrated as necessary.

The framework introduces how we are adopting asset management principles and practices to drive effective and efficient highway services which benefits the whole community. Asset Management will assist the council in making decisions on which

assets need investment through maintenance or renewal and thus achieve the best longer term value for money.

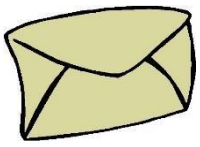
It enables us to contribute to our Core Strategy and the West of England transport objectives by providing a link between our transport aims, asset maintenance needs and our engineering decisions.

It is important to note that at this time of review the world had been dramatically changed by the spread of the corona virus and this has influenced the short to medium term priorities and restrictions of our asset management plans with the development of the public realm and the focus of walking and cycling coming to the fore. This also aligns to the authorities climate emergency and carbon neutrality targets.

Through this second version of the framework we aim to also provide readers with an overview of our assets, how we are performing and our key aims. This will be further supported by the development of our Strategy and Asset Specific Management Plans (ASMP). These ASMP plans are being developed on a prioritised basis focusing on the most strategically important.

The framework deliberately avoids the detailed aspects of engineering and finance that lie behind the concepts and figures shown. These will be presented in the asset specific management plans that deal with the more technical aspects for the management of highway assets.

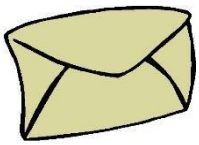
We will update this framework on a regular basis so it provides an ongoing up to date report on our asset management approach, the state of our highways assets and how they are performing to provide the service the public needs.



Key Messages

- Throughout the documents you will see Key Message boxes.
- These summarise key points from each section.

Contents



Key Message

- Where reference is made to savings these are not necessarily cashable or immediate.
- Asset Management is about better use of money to 'save' or reduce future financial liabilities in the future.
- For us the 'saving' is a cost avoidance by being more effective.

Introduction to Highways Asset Management

What is Asset Management?

The international Asset Management Standard ISO 55000 2014 defines Asset Management as;

" the coordinated activity of an organisation to realise value from its assets"

Asset Management brings together and aligns the knowledge, systems and actions an organisation undertakes to maximise how the infrastructure assets contribute to the organisations strategic objectives. Good asset management provides a clear link between the day to day decisions made and the organisations vision and mission.

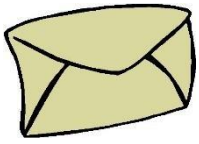
The value assets provide collectively and individually can be both tangible and intangible depending on the perspective of the stakeholder. For highways infrastructure the different assets provide specific services such as lighting or direction signing. Collectively all the highway assets provide the highway and contribute to safe travel.

For the management of our highways, developing our asset management approach will enable us to understand how the assets provide service and how they support our decisions on what level of service provide the best balance of cost, quality and risk for the users.

Highways asset management can be considered the process of optimising the maintenance, improvement and operation of all the elements of the highways service from carriageways to street furniture and Streetworks coordination to private drop kerbs.

The Benefits of Asset Management

- Using asset management helps make the best use of limited resources by improving the ability to make effective long term plans for budgeting and prioritising works. This enables the move towards optimum use of resources when managing and maintaining the road network.
- Focuses on customer outcomes through the development of clear deliverable levels of service with associated targets for performance.
- Maximise user benefit for the public money spent.
- Reduces costly reactive repairs by providing sound information for operational based prioritising and decision making.
- A more cost effective maintenance regime by considering whole life costing in the management of the assets.
- Prolongs asset life by carrying out the right maintenance at the right time.
- Efficiency gains and cost avoidance through realignment of funding via adoption of hierarchy and levels of service.
- The more the asset management approach matures the more efficiently funding can be used and the more effective the use of the funding is.
- Publishing the approach in an Asset Management Framework improves internal and external communication, awareness and understanding.
- Having this Framework and delivering the action plan it contains allow us to secure extra funding over the next 5 years.
- Support further successes in future DfT Fund bid process by identifying and evidencing the economic benefits of maintenance investment.



What Asset Management means for us

Asset Management is an approach to managing infrastructure and is being used world-wide to enable businesses, governments, and local authorities to provide the best value for money within their available resources.

For highway services, Asset Management is about using our available finance to maximise the usable lifetime and serviceability of our highway assets. This means we need to make decisions that balance our short term needs with the longer term objectives for our road network. To do this Asset Management unites engineering principles with good business and accounting practice. Asset Management always keeps the customer, in our case the road users and residents of South Gloucestershire, in focus.

Asset Management is most effective when clear objectives are identified for the short, medium and long term. This enables asset and financial data to be used to forecast needs and to calculate the effect of short term decisions on future liabilities. Asset Management helps us to connect the short, medium and long term requirements and demands. This was clear to see with the arrival of the ‘covid 19 pandemic’ and allowed resources to be diverted to changing demands such as active travel scheme support. Our planning needs to take into account future pressures of traffic growth and climate change in line with SGC climate change strategy, reducing our carbon emissions, via the consideration of new materials and processes and practices. Ultimately leading to the long term target of carbon neutrality by 2030.

Adopting Asset Management principles will maximise the contribution that management of our Highways makes to deliver our Core Strategy aims and objectives. Better managed and maintained roads will improve management of traffic and work to reduce congestion.

The West of England Partnership recognised the need for Asset Management and this is reflected in the Joint LTP asset management section. Within our Framework our Highways Asset Management Strategy and Highways Asset Management Plans provide the practical instruction we need to achieve asset management at an operational level.

Industries that have adopted asset management are reporting that they are able to improve the use of available funding by 5 to 15% by making the money they have go further and have a greater long-term impact. These industries are able to avoid future liabilities by making better decisions, have greater flexibility of maintenance operations, have greater confidence in anticipated funding needs and having accurate data to be able to show progress.

The National Funding Picture

For the current round of central government funding 2022-2027 the DfT has made major changes to how highways capital maintenance funding is allocated to drive the development of asset management within the industry.

It has been indicated WECA will allocate South Gloucestershire £10.23 million/annum for the 5 year period based on previous allocations of maintenance plus a sum for identified strategic route. This is roughly in line with previous DfT allocated funding which included both the challenge and incentive funds. As a member of the Combined Authority, we are guaranteed the level 3 incentive funding, but we do submit our self-assessment questionnaire and evidence of robust asset management for an authority to justify this level of funding.

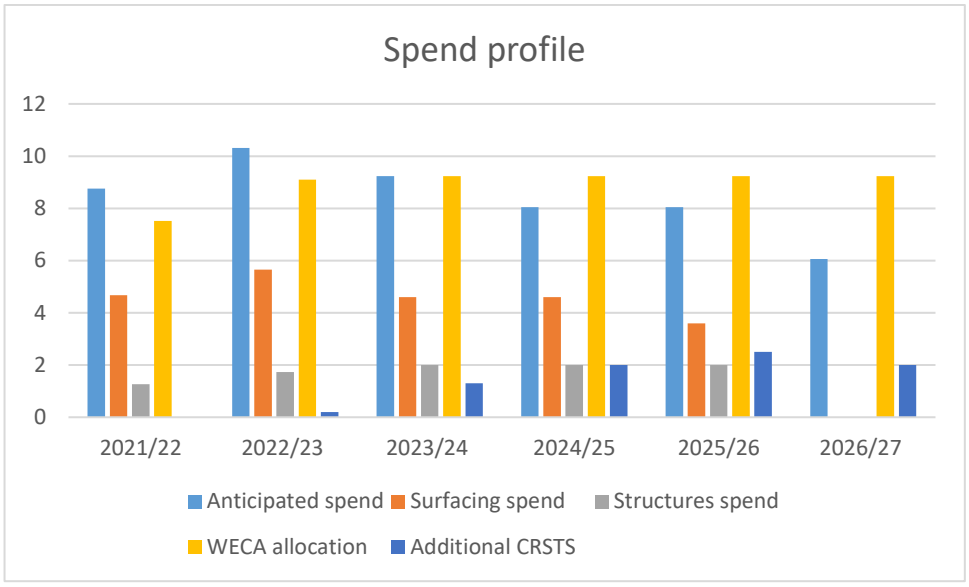
We have been highly successful in previous rounds of DfT bids (eg challenge fund 1& 2b) and will continue to submit bids to supplement the core funding. We have done this by evidencing a good asset management approach and demonstrating the economic benefits of our bids.

Since 2016 SGC has received the maximum incentive funding with our self-assessment evidence proving our good asset management approach. As part of a combined Authority, we presently receive level 3 as a default however we still self-assess to ensure we have evidence to prove we would keep this level if the rules were to change. The new pressures on funding due to extraordinary inflation and considerations of carbon reduction and increasing have meant our asset management processes need to be flexible reflecting areas of priority through our scoring systems.

Funding Profile Table (not inc. internal top up)– indicative 5 year allocation

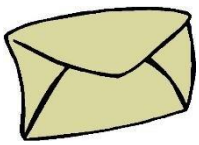
Year	Allocation £m includes - maint/structures/pot hole fund/drainage	Breakdown of Areas			
		Maint. Carriageways	Pot Hole Funds	Maint. Stuctures	Specific Additional maint funding
2021/22*	8.759	4.674	2.82	1.265	
**2022/23 ** **	10.31	8.574 (5.65)		1.735	CRSTS 8.0m over 5 years
2023/24 * **	9.043	7.043 (4.6)		2	
2024/25 ** **	7.989 (-1.241 pb)	7.043 (4.6)		2	
2025/26 ** **	8.030 (-1.2 pb)	6.043 (3.6)		2	
2026/27 ** **	8.230 (-1.0pb)	tbc		tbc	

* extra 1.241m brought fwd due to allocation
** extra 1.2m bought fwd
*** extra 1.0m brought fwd
**** Adjustments will have to be made to balance sums brought forward --- surfacing programme indicative spend in brackets



Implementing our action plan in this framework will secure the maximum funding from DfT. Altering the profile with the utilisation of internal funding helps our Highways Asset Management Action Plan to be flexible and gain efficiencies in spending.

Modelling Using indicative levels of spend shows us an anticipated deterioration of the network as a whole. While a full asset management approach allows us to treat the assets throughout the lifecycle, the further the network deteriorates the greater the late intervention programmes percentage may be. However, both clear strategic and political priorities combined with stability of funding from DfT (WECA) enable us to forward plan and improve both the high priority areas and change in the networks usage. This helps enable an increase in the level of lower cost early interventions where our priorities lie.



Key Message

- During this spending period DfT funding via WECA is indicative, however with economic uncertainty it may be beneficial to alter the spend profile and the asset management will have to be flexible to adapt to changed priorities.
- Implementing our Framework and continued asset management improvements will lead to increased chances of success in funding bids.
- Maximising funding enables us to adopt better long term maintenance strategies.

Highways Asset Management Policy

The highways asset management policy is our statement of principles by which we intend to manage our highways assets to ensure we do so in a sustainable, ethical and achievable way. It includes our vision for what our highways provide.

The principles set out will guide our efforts when designing, acquiring, maintaining, managing, administering, and disposing of highways infrastructure assets

Our Highways Asset Management Vision

"South Gloucestershire Council, through the application of Asset Management, aims to create a safe, reliable and accessible transportation system that supports development of a strong low carbon economy, maximising the opportunities for sustainable transport and protecting our environment."

Asset Management will play a key role in the successful delivery of our vision. The Highways Asset Management Framework is a suite of documents that defines how the highway asset will be managed in South Gloucestershire to achieve our vision in the most affordable way. Asset Management will support us in providing a fit-for-purpose

service through the management and maintenance of highway infrastructure. Our approach will be to balance user's needs, risk and available finance to provide a sustainable level of quality in our service delivery. Consulting with the strategic direction, the JLTP and Authorities forward plan.

Policy Objectives

The delivery of this asset management policy is based on a set of core principles that reflect our overall organisational objectives and values:

Safety

- We will manage the highway assets to prevent an increase in risk to users, our workforce and the general public and will endeavour to reduce risk where we can.
- We will comply with all relevant legislation and good practise when carrying out our asset management activities.
- **Reliability**
- We will organise our own works and the work of third parties to minimise disruption to road users as a result of infrastructure maintenance and improvements.

Connectivity

- We will manage and improve our highway assets so they are appropriate for their use and fit-for-purpose. Where we can, we will implement improvements to support future demands.

Integration

- We will manage the highway network as part of the wider holistic transportation infrastructure that supports society nationally. Our decisions will give regard to wider transport objectives.

Sustainability

- We will manage the network to minimise our carbon footprint and environmental impact through the use of modern environmentally sustainable materials and processes.

- We will implement strategies to maintain the highway assets so they are resilient in future climates, reducing the impact of extreme weather events where we can, by planning for future demands and risks.

- We will assess our programmes of maintenance with the climate and nature decision wheel to minimise impact on the environment were possible.

Efficiency

- We will manage the highway assets by adopting a whole life cost approach to our asset maintenance, inspection and improvement decision making, that includes clear risk management strategies to maximise beneficial outcomes for the long term.

Effectiveness

- We will manage the highway assets in their systems context managing them collectively to deliver the best overall Levels of Service to the public.
- We will develop our asset management capability to improve our stewardship of the highway through better understanding and decision making.
- We will base our decision making on meaningful data about condition and performance.

Delivery

- We will manage and assess our delivery through our asset management strategy that identifies our priorities and performance indicators.
- We will monitor our performance by using meaningful and accurate measures and benchmarking with industry peers and leading asset management organisations.

Relationships

- We will be open with all our stakeholders and share our key documents in an appropriate manner.

Key Influences

Our asset management policy is principally driven by the need to manage highways infrastructure in the most cost effective way throughout the life cycle of any given asset.

The needs of communities vary and our service delivery should reflect this. Successful delivery will be characterised by the way the highway assets support affordable, safe and reliable public transport, walking and cycling, and the use of private and alternative transport.

The scale and diversity of asset management means that there is no single simple process involved. The Highways Asset Management Framework encompasses all that we will do and how we intend to do it.

Policy Scope

This policy is applicable to all highway assets and the services we provide to support their use. It supports service delivery under the themes of Maintaining and Sustaining, Improving and Extending and, Managing Use. Regardless of who delivers them or how they are delivered. It does not apply to our offices and internal systems that form part of the wider organisational infrastructure.

Highways Asset Management Strategy

Highways Asset Management Strategy

Our strategy sets out how we need to maintain and manage our highways within the strategic environment in which they operate. The policy provides the direction for the operation plans, processes and decisions we use in our daily operations.

Strategic Context.

The highways infrastructure in South Gloucestershire supports our important rural communities and the increasingly expanding economy around Bristol. The demands placed on the main routes in and around the urban area require a different approach to those placed on the more rural lanes and estate roads. This means we need to be managing our roads to different levels to better meet the differing demands.

More than 2.316 billion vehicle miles each year are driven on South Gloucestershire's roads. Cyclists account for 0.5 billion miles across the South West region, and 10% of journeys in South Gloucestershire. This is coupled with all road users accessing the network by using the footway in some form. With traffic predicted to grow annually by 1.4%, equivalent to an additional 32 million miles a year resulting in increased wear and tear will result and impact the rate of deterioration of our highway assets.

The strategic direction is influenced by strategic planning Spatial planning policy, strategic infrastructure master plan, JLTP, and the Authorities emergency Climate Strategy. Together with customer satisfaction and political priorities.

Traffic growth and development

Highways Asset Management whilst currently focused in the industry on the maintenance and management of existing infrastructure is also important in the choices we make when extending and improving the road network to support economic development.

What we choose to build or install as part of a transport improvement scheme will need to be maintained throughout its life. Around 70% of the whole life cost of owning and maintaining an asset is locked at the design stage. This maintenance cost will need to be found by the Authority.

We must be realistic in what additions to the network we can afford to maintain. Where appropriate we may need to depart from the traditional high cost high quality trunk road design standards and put in risk assessed, practical, affordable but still safe solutions.

We need to manage the network in a way that supports a sustainable approach to provision for cyclists and bus transport so that roads users feel able to shift to sustainable transport modes. As road users shift we need to maintain the network to an appropriate standard for the modes they are using.

Keeping our cycleways and footways well maintained will support healthier travel and further reduce dependence on car use. Planning and funding maintenance at an early stage in an assets life enable the use of materials that use less carbon in their production and construction.

Climate Change and Environmental Sustainability

The highway network can and should contribute to the mitigation of the gasses that contribute to climate change. We can do this by seeking road improvements that provide a better environment for sustainable transport modes and public transport to reduce dependency on car use. An asset management approach that maximises early planned maintenance interventions to avoid costly reactive works, programmes and

designs will reduce disruption and congestion on the road network cutting journey times, reducing fuel use and the carbon footprint of travel.

Carbon Reduction

Measuring the carbon footprint of our maintenance decisions/programmes should give us a better understanding of the impact we have on the overall carbon production of the authority. This will be used in the decision-making process of material and process choices as well as how the impact can be offset by other initiatives within streetcare such as doubling tree canopy and utilising waste for the production of biofuels.

Maintenance

Adapting to the unavoidable effects of climate change to provide a network that is resilient to weather events is a crucial aspect of good asset management. Identifying resilience risk and building in resilience measures to the economically important routes for business and commuter traffic will enable our economy to operate more effectively in adverse weather and reduce the impacts of major weather events. Ensuring maintenance regimes are fit for purpose and risk is highlighted where resources are scarce.

The highway verges are an important environment for wildlife and this needs to be supported through our application of asset management. The highway provides a safe habitat for a wide range of species of flora and fauna, as they are left relatively undisturbed. Managing our verge habitat responsibly not only protects vulnerable species it provides important health benefits though the air cleansing effects of the trees and plants. Appropriate planting decisions and maintenance regimes need to be established. The questioning and review of maintenance processes and regimes need to be common practice to ensure the authority maximises latest technology and thinking.

External National/international influence

The recent pandemic had meant a shift in the immediate and medium term network flows in choice of transport mediums. Working patterns and the fluctuating cost of fuel may well alter the volume and frequency of traffic.

A rapid downturn in the world economy with rising inflation and pressures on material, plant and labour resources effects the affordable outputs of maintenance processes and hence the effective management of the asset.

Legal Responsibilities

A wide range of legislation influences how our highways are managed and protected. The principal legislation consisting of the **Highways Act 1980, New Roads and**

Street Works Act 1991 (NRSWA) and the Traffic Management Act 2004 (TMA) hold the key duties and powers.

The Highways Act establishes the duty to maintain the highways infrastructure in a safe and useable condition by removing danger and managing/protecting use. The act provides the power to extend and improve the highway and its assets. However if we carry out improvement we then have a duty to maintain the new infrastructure. To avoid increasing maintenance costs more than necessary we must ensure that improvements are appropriately designed for future maintenance. In general terms 70% of the whole life costs of an asset are locked in at the design stage so a poor decision on materials at this stage can dramatically increase the cost of maintaining the infrastructure into the future.

The NRSWA and TMA combined place duties on the authority to minimise the disruption caused to traffic of works on the highway. An effective planned maintenance regime will enable us to minimise the impact of our own maintenance works on traffic flow which in turn supports the economy and our communities by reducing delays and traffic queues.

Technology and Innovation

Building on the current traffic signal systems a more proactive system of identifying and managing network congestion will support more informed travel choice. Combined with an automatic approach to informing road users and public transport providers of planned delays and traffic incidents on the most used parts of the network. A proactive travel information system will help reduce overall congestion and reduce the carbon footprint of traffic on our network.

Using mobile technology within the delivery of the service improves information flow and enable a quicker response to customer demands. Implementation of a new asset Management system (Alloy) at the start of 2021 has enabled a better ability to capture and use information and will improve the information we can provide, on a self-service basis, to users and make our service delivery more efficient.

The use of modern techniques and materials in construction can reduce the need for maintenance in the longer term and reduce the costs of keeping the assets in good condition as well as reduce energy consumption of running the electrical assets. This means rethinking what we have traditionally done and using modern materials to reduce the longer term costs.

Financial

In line with recent government decisions the stability and assurance of medium term funding is the best method of maximising Asset management principals in line with this WECA has been given an indicative funding profile for the 5 years (22-27)., the amount provided however is not enough to cover the cost of maintaining the assets at

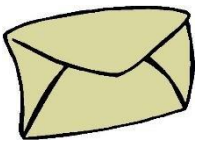
steady state. This will result in a continued decline in the condition of the assets. We can manage this by rationalising some of the assets, such as signs to provide only a level necessary for safety and removing or not replacing assets that are desirable rather than essential and prioritising areas of the network dependent on their strategic status and a risk management approach.

As assets decline in condition, there is a greater need for revenue funded reactive maintenance to keep users safe. With the current economic climate and funding pressures facing the authority it is crucial that we plan our maintenance through asset management to make best use of the funding we have available. We need to be targeting it to the activities that provide the best value for money and keep costly reactive maintenance to the minimum we can.

Adding assets to the highways through traffic management and improvement schemes increases the maintenance liabilities. Future schemes need to be carefully considered to avoid increasing pressure on maintenance funding.

Listening to our public

Ensuring customer satisfaction surveys are carried out analysed and considered. Ensuring works are communicated in a timely fashion and our processes and practice are communicated to ensure transparency and accountability



Key Message

- Making use of technology, revisiting the way we do things and the smart use of data are all areas to develop.
- There is increasing pressure on revenue as well as capital funding budgets so any alteration or addition to the assets we own needs more careful consideration.

Our Objectives and the Requirements of our Highway Assets

One of the biggest issues affecting the travelling public and businesses living, working and visiting South Gloucestershire is the condition of our highways. This is not surprising as transport infrastructure is critical to the wellbeing and prosperity of South Gloucestershire, the region and the country as a whole. It supports our everyday social and business activities by linking communities and connecting people with services.

The fundamental objective of asset management is to maximise the value obtained from the assets for level of investment made in them. For the maintenance of our highways this means maintaining them in a safe and useable condition in the most cost effective way for the funding we have. We need to balance the day to day serviceability with the need for the assets to sustain that service into the future

The aim of our asset management approach is to maintain each of the assets that make up the highway as a whole in a fit-for-purpose state for the use it receives, and the service demanded of it. To do this in an affordable manner we need to investment more of our available time and effort into the most used roads and do less on the less used roads. This will balance the risk, in broad terms, across the network and the asset types. In turn this enables us to achieve greater value for money from our highway maintenance funding regardless of how much is available.

To achieve this balance of cost, quality and risk we need to use a hierarchy based approach where we split the road network into a number of levels of hierarchy that reflect how the roads are used. Levels of Service are then defined that reflect the needs of the users. These levels of service then inform and guide the maintenance frequencies and activities that are carried out on the assets.

.

What are our highways assets?

Our highway assets are the diverse elements of infrastructure that support road travel throughout South Gloucestershire. This includes the Carriageways, Footways, Cycleways and Public Rights of Way and the associated drainage, bridges, verges and street furniture. Some key assets and their quantities are outlined below.

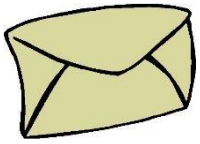
The Key Assets We Manage

	Size of Asset	Equivalent
Carriageway	1478 km (918 miles)	Yate to Rome
Footway	1396 km (867 miles)	Thornbury to Seville
Cycle routes	121 km (75 miles)	Warmley to Worcester
Public Rights of Way	2,600 km (1,625 miles)	Almondsbury to Istanbul
Traffic Signals	74 Junctions 127 Crossings	Fairy lights stretching 2 km 1 km of zebra stripes on the road
Drainage **Gullies** **Drainage Grips** **Connecting Pipes** **Main Pipes** **Ditches** **Trash Screens and Grills**	 50,000 Gulleys 11,500 150 km (93 miles) 290 km (180 miles) 90km (56 miles) 250	 3.2 Olympic pools of water Winterbourne to Slough Patchway to Plymouth Filton to Worcester
Structures **Bridges**	 788 Bridges with total deck surface area of 47,500m^2	 7 football pitches
Retaining Walls	341 Highway Retaining Walls with total length of 15 km	Yate to Kingswood

Street Lighting	29,500 Units (5,888 tonnes CO2)	Lighting for 128,000 homes
Grass Verges	2.9 million m^2	425 football pitches

All the assets need to be maintained to a fit-for-purpose standard for them to provide a safe and sustainable level of service to the public.

Above are only an indication of our key assets however we mustn't forget we also need to manage and maintain all the other assets. The signs and road markings, benches and bollards, railings and drainage ditches amongst them.



Key Message

- We are responsible for maintaining many significant and important assets.
- While we primarily prioritise spend on a risk based approach there are many other influences that can play a part.
- Traffic growth is a significant issue increasing wear and tear on our roads.

The Costs of Maintaining and Managing our Assets.

The Asset Value

South Gloucestershire Council's highway asset is valued with a depreciated value of £3.842 billion (latest WGA return). This is by far the Council's most valuable asset and as such requires a level of investment that sustains this asset for future generations. The authority is now reporting on capital spend and the revised value of the new and depreciated assets on an annual basis.

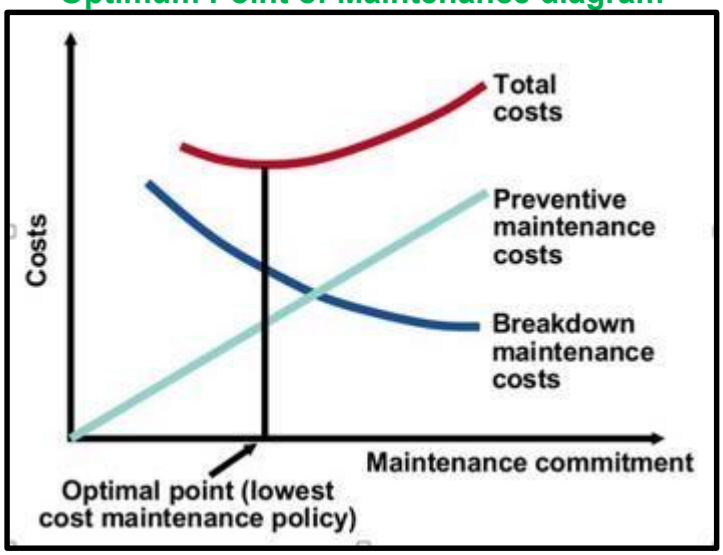
Management Accounts - Highways

At present funding for highway maintenance comprises two streams. One is Capital funding for investment in renewal and long term maintenance interventions to improve the underlying condition of the asset. The other is Revenue funding which is to fix small problems instantaneously and make safe the superficial condition and does not add life to the asset.

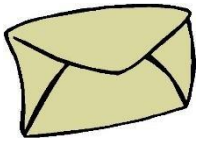
Optimum Point of Maintenance

The Optimal Point of Maintenance provides the best value in terms of capital investment at the point in time when the asset is starting to put pressure on revenue spend. For example in a highway situation this will be at the point where the level of potholes and cracking justifies a larger investment to renew the road surface. The graph below demonstrates the Optimal Point of Maintenance, which we are aiming to achieve to deliver efficient and effective maintenance and management of the highways assets.

Optimum Point of Maintenance diagram



At present the Capital funding is a mix of funding from central government, typically 90% of our funding, and 10% of the funding is invested by South Gloucestershire. Revenue funding is solely provided by South Gloucestershire but in past years central government has provided small elements of funding to help with severe winters and flooding damage to the highway. Part of the central government allocation is linked to the assessment level of the asset management maturity assessment. SGC current self-assesses at the top of the assessment scoring level 3.



Key Message

- Our Highway Assets are worth £2.178 billion
- Demonstrable asset management and efficiencies will Guarantee optimum funding level 3 must be maintained requiring constant improvement.

What state are our assets in?

Our previous 5 year strategy concentrated our improvement on the unclassified network, the anticipated deterioration on the A, B/C networks foresaw a steady decline over the 5 year period. This was balanced against the relatively good condition of those networks. The rural unclassified network is deteriorating and needs reinvestment against the balance of usage. The table below shows the last 5 years performance figures. The trends show that the A and B Class network is declining whilst the unclassified network has improved over the last two years. This is due to the continued investment in the estate road urban network over the last 5 year period. Money has also been brought forward to assist in the decline of the urban unclassified network.

Year	A Red	B Red	C Red	UC Red
2018/19	2	3	8	20
2019/20	2.4	3	9	22
2020/21	2.5	3	9	24
2021/22	2.5	3	9	17
2022/23	2.9	3.4	8.2	17

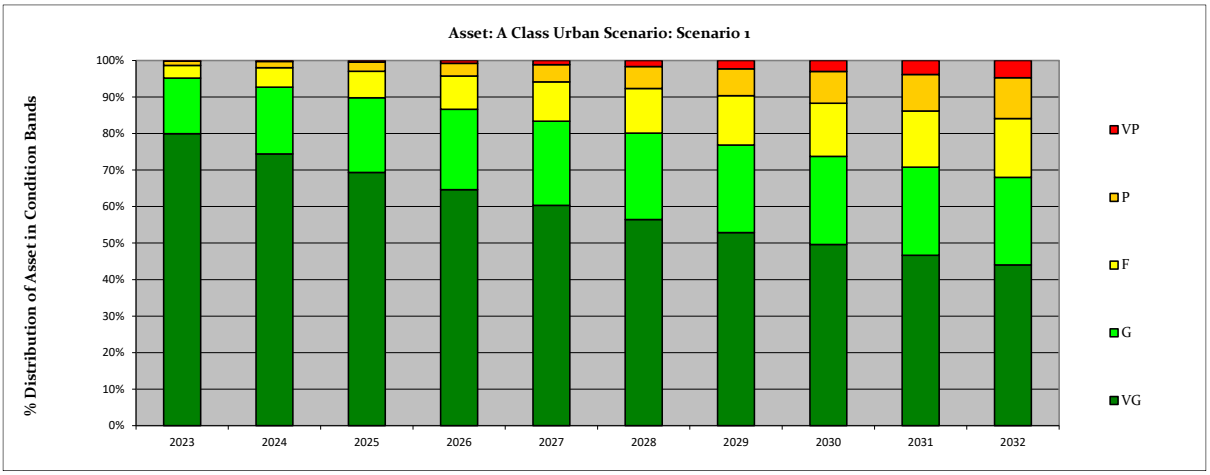
To help understand the condition of some of the key assets we have carried out a mixture of condition forecast modelling feedback from safety inspections and targeted surveys for the Carriageway, Footway and Cycleway, Drainage and Traffic Signal assets. The data shows us what we can expect the assets to be like in future years by forecasting the trend. The models used are based on the National Highways Maintenance Efficiency Programme Tools.

The signals have recently been assessed and a strategy put in place to address the decline and has secured 250k/yr for the next 5 year (22-27) period.

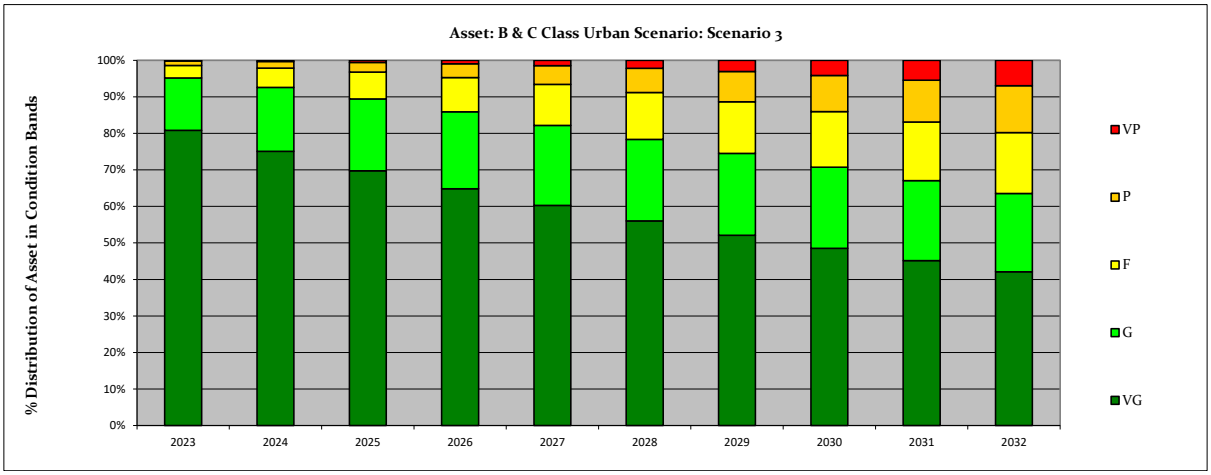
Carriageways

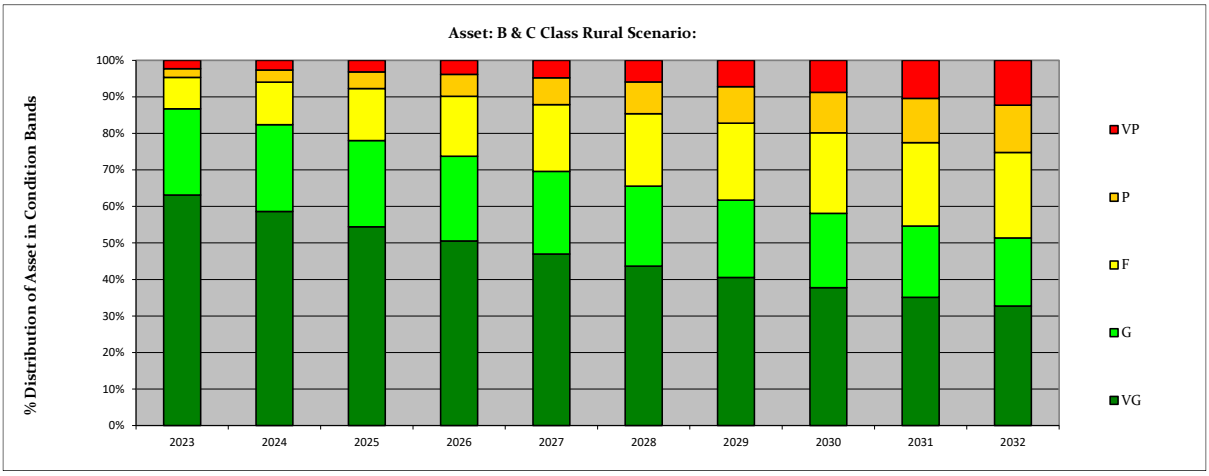
The three tables below show the direction of travel for our A, B and C and Unclassified Roads based on the current level of capital investment. The underlying condition of the assets is represented by Green for good, Amber Ok but needing repairs and Red for poor condition requiring urgent major repairs.

A Roads



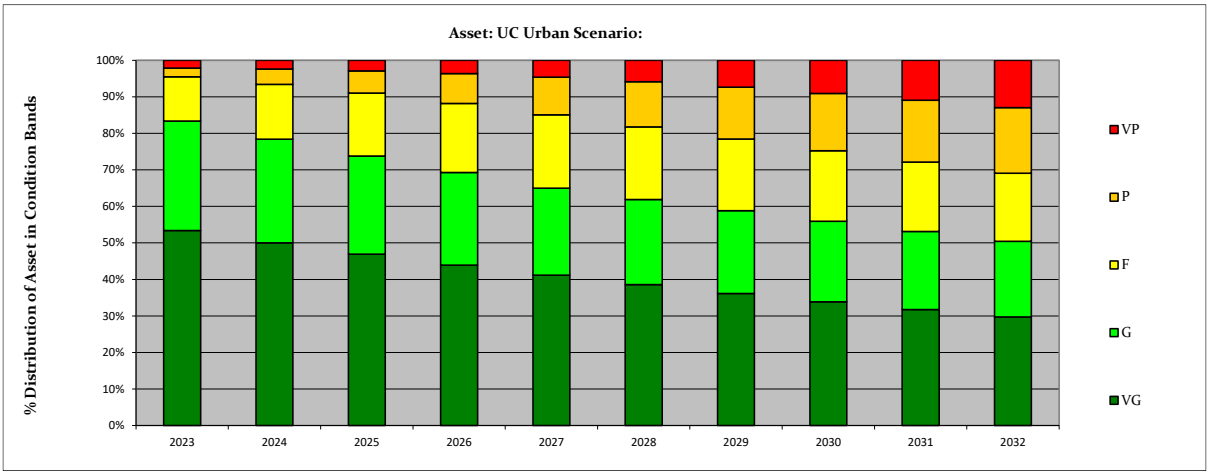
Our A Class network is starting to show signs of deteriorating condition over the last 3-4 years. The recent strategy of diverting funds to the estate road network has meant the A Road network will continue to decline without a change of strategy to improve the strategic network. B and C Roads

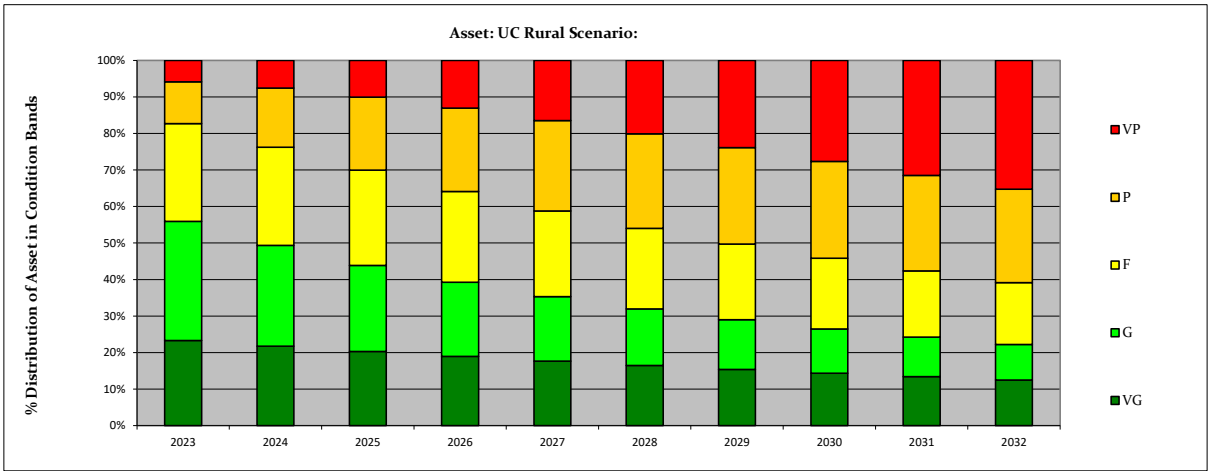




Our B and C roads continue to deteriorate and could reach a poor state in the next 3 to 4 years. A diversion of funds to this part of the network will slow this decline.

Unclassified Roads



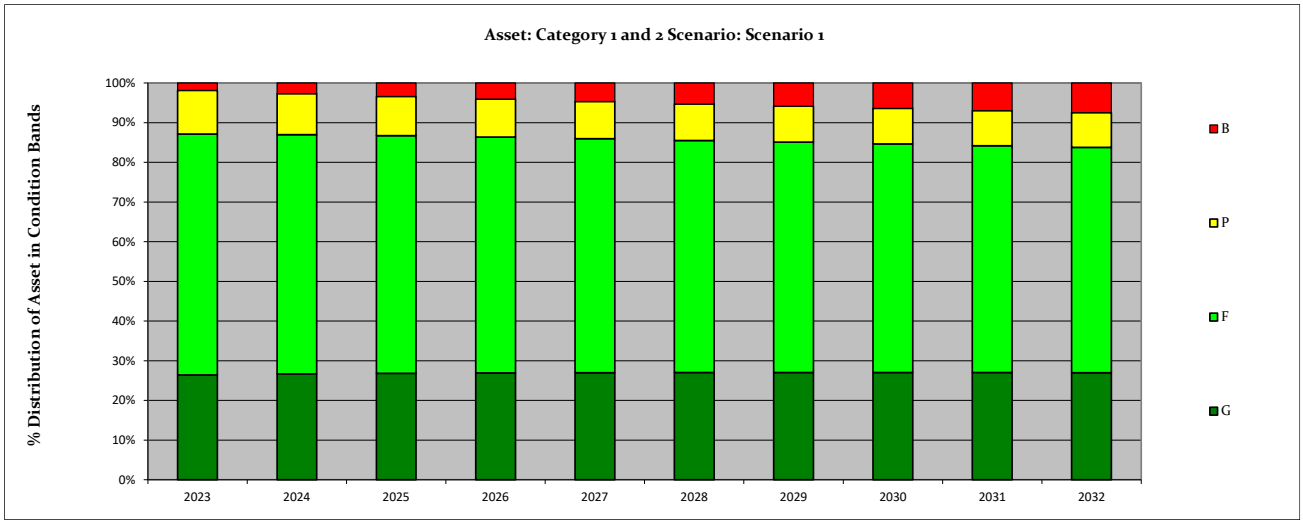


Our Unclassified roads are in the worst state and are already considered in a poor condition. The recent strategy over the last 5 years has focused on the urban section of this network which has improved the condition. This has led to a detriment to the strategic network and seen the unclassified rural network continue to decline.

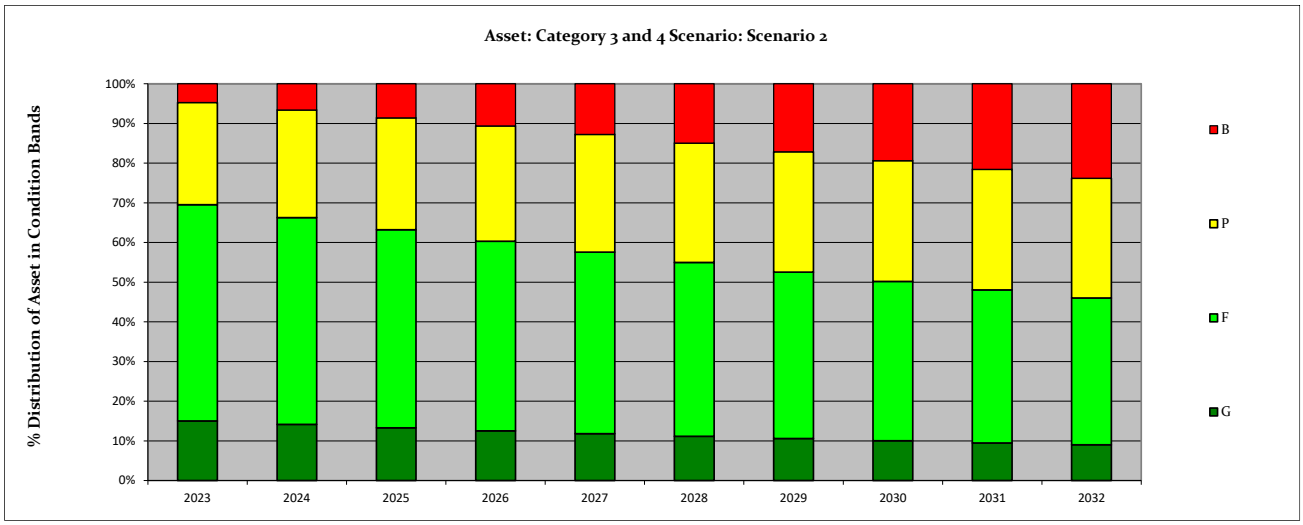
Footways

Our Footways are split into two groups. Footway category 1 and 2 are the most used footways in the towns and village highstreets. The 3 and 4 Footways are those within housing estates, the suburban and rural areas.

Category 1 and 2 Footways

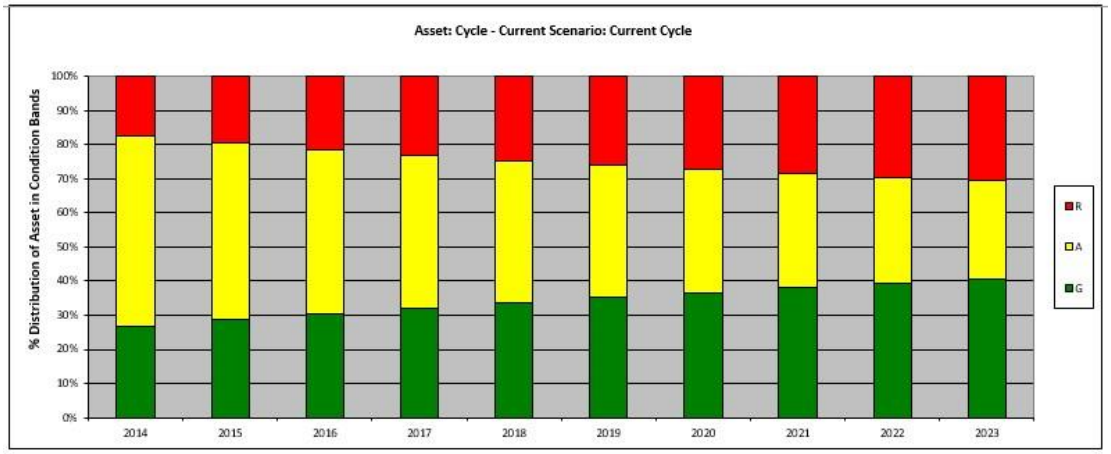


Category 3 and 4 Footways



There is a continued under investment in the footway network. This is shown in the cat 3 and 4 footways where there is continued decline in the condition and will only be halted by a significant influx of funds. The Councils continued direction of moving towards a healthy life style strategy needs to be matched with an increase of funding on the footway network.

Cycleways



Our cycleway network has been significantly extended over the last 10 years without a comparable increase in maintenance funding. The poor sections (RED) tend to be where the cycleway shares the footway so investment in cycleways will in some cases provide a benefit to pedestrians.

Traffic Signals and Traffic Management Systems

Our traffic control infrastructure is crucial to controlling the flow of traffic, particularly on the routes serving the enterprize areas, industrial estates and commercial areas.

A high proportion of our traffic control infrastructure is at the end or very near the end of its operational life. The age of this asset is leading to increasing short term failures which in turn cause traffic congestion. This scenario is BEING ADRESSED BY INCREASE IN CAPITAL EXPENDITURE OVER THE NEXT 5 YR INDICATICE SETTLEMENT

Drainage Assets

Modelling for drainage assets is not as developed as for other assets. We have carried out some basic modelling based on our current condition and historic maintenance activities. This Data (together with structure) allowed additional unfunded maintenance to secure £2.0m for 23/24. However future funding is required to ensure this one off allocation is effective in the long term

Structures

The modelling outputs for structures is ongoing. This is because of the very technical nature of structures and the requirement of inspection under regulation and guidance. Structures have produced a 5 year indicative programme which requires increased investment on the basis of the more detailed condition inspection reports so far received. Anticipated lifecycle parameters are stored in to structures database and routine as well as more major maintenance milestones are programmed within their safety windows

Modelling Summary

The modelling provides an indication of the requirements for the assets on network basis. The use of Hierarchy and Levels of Service (explained later) will enable us to remodel on more local focus which should reduce the indicated level of investment required by making the modelling more accurate.

We have focused the modelling on the higher financial and user value assets. As we develop our asset management we will look more closely at the other assets.

Understanding Condition

Ensuring that our highway assets are in the most appropriate fit-for-purpose condition requires us to understand how the condition affects the safety and accessibility of those using the highway. This is a factor of two elements of asset condition:

Superficial condition relates to its immediate use such as what a road surface is like and the service it gives on a day to day basis. A carriageway in poor superficial condition has lots of potholes and cracks and perhaps be rather bumpy for drivers and cyclists. We can see and feel superficial condition.

Underlying condition is the ability of the asset to last or continue to be used over time. It is the structural strength left in the asset that enables it to support demands placed on it. A carriageway in poor underlying condition will have little engineering life left in it. We don't see or feel underlying condition but it is important in making engineering decisions.

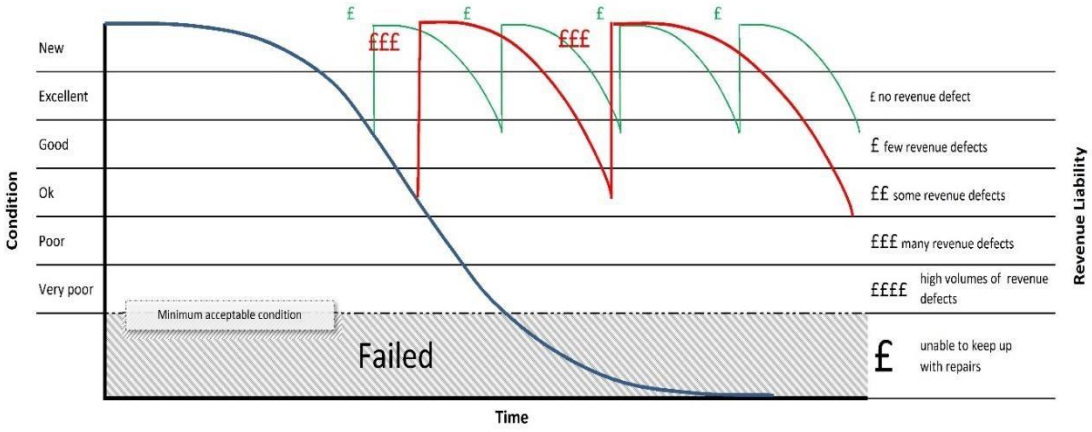
Superficial Condition and Underlying Condition are inextricably linked. Good Underlying Condition sustains good Superficial Condition. Poor Underlying Condition results in poor Superficial Condition. In general, the underlying condition of an asset gets worse as it gets older. In turn, as the underlying condition gets worse, the superficial condition deteriorates. This means that keeping a good underlying condition through capital maintenance reduces the need for costly reactive superficial repairs.

Public opinions are more likely to be influenced by the superficial condition than by the underlying condition. However, in the long term the best approach for everyone is

investing to keep the underlying condition in a good state so the potholes don't appear and need to be fixed rather than focusing on expensive reactive repairs after the damage is done.

The graph below shows how keeping the asset in good underlying condition maintains good superficial condition.

Maintaining the asset



The green line shows short term early life maintenance keeps the asset in a better overall condition as opposed to the red line approach of leaving things longer before maintaining. Both the red and green line are managing underlying condition. Superficial Condition becomes evident as the deterioration moves along the blue line into the OK zone and increasing through Poor and Very Poor to failure. As this continues we see more defects on the surface and the risk of safety issues increases.

As we collect information on our asset condition we can become more precise at calculating the maintenance need of the assets. This in turn will enable us to work out how much we need to spend to keep the assets in the most appropriate condition for their level of use. It will guide us to make best use of the money we have.

The table below show our current asset condition and claims profile, target for 2027 and the three year historic trend.

Superficial Condition		Trend (3 yrs)	Current (2022)	Target (2027)
Carriageway	Claims successful.	Reducing slightly / no change	115	100
	Potholes	Slight increase	6865	6000

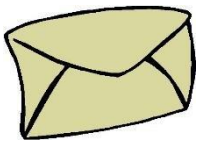
	Requests for Service	No change	8663	Steady state
Footway	Claims	Reducing	18	15
Cycleway	Claims	No change	1	1
Drainage	Number of flooding incidents	Increase	405**	250
Underlying Condition		**Trend (3 yrs)**	**Current (2022)**	**Target (2027)**
Carriageway	Principal A road: B class C class Unclassified road	**Declining** Steady state Steady state Improving urban, decline in rural	2.9%* 3.4%* 9%* 17%	2.9%* 4%* 9%* 18%*
Footway	Primary walking	N/A	27%*	27%*
Cycleway		Improving***	7%*	6%*
Structures and Retaining Walls	Average Structures Stock Condition Indicator (CI_{AVG})	Declining	85	TBC
	Critical Structures Stock Condition Indicator (CI_{CRIT})	Declining	79	TBC
Street Lighting	Energy usage Units replaced	Reducing	12.8m kwh 1,200est	8m kwh 1,000/yr

* Percentage of network the needs major maintenance now. Due to categorisation and calculation criteria condition in reality declining. Visual and defect criteria show tru reality

** Possibly due to new way of recording flooded events.

*** Primarily due to grant funding

Some target are going to be adversely effected due to climate change



Key Message

- Highway asset condition consists of superficial and underlying condition
- User experience and satisfaction are most influenced by superficial condition
- Improving superficial condition is best achieved by investing in improvements to the underlying condition rather than costly reactive repairs

What do we want our assets to be like?

Highways exist to provide a service for the public, businesses and communities. Their performance can have a significant impact on the prosperity or decline of businesses and communities. It is important that we recognise this when managing our highway assets in a fit-for-purpose condition. Our decision making should not be solely based on engineering considerations.

The public want a safe and trouble free journey whether they are on foot, cycling or driving. They want a nice look and feel to their community and the wider environment. Our highway assets all have an impact on this in tangible ways such as potholes and road markings and intangible ways such as a pleasant vista and a feeling of safety.

As the Highway Authority we have a statutory duty to maintain the highway network that is fit-for-purpose. The level of maintenance and quality we apply is at our discretion, but we must take into account safe use by the public and give full consideration to our duties, responsibilities, liability and affordability.

We want our highways to be in a suitable overall condition to support their use both now and for the foreseeable future. In practice, this means that different types of road will be maintained to different standards. An ‘A’ road needs to be generally maintained to a higher standard than a rural, unclassified back lane in order to provide a safe route for people to travel.

We have organised our roads into a hierarchy based on their use and importance. This is more useful for identifying where it is most appropriate to focus our maintenance and improvements in the future.

Category	Hierarchy Description	Examples	Type of Road General Description	Description
1	Motorway	M5	Limited Access. Motorway Regulations apply.	Not applicable
2	Strategic Route	A4174 Avon Ring Road A38 Gloucester Road, Almondsbury A403 Severn Road, Severn Beach	National primary, County regional And freight routes	Roads forming the strategic backbone of the Authority's network, diversion routes for motorways, catering for Heavy Goods Vehicles and longer distance traffic connecting the County to adjoining counties and the national road network.
3	Main Distributor	A432 Badminton Road, Yate B4058 Bristol Road, Hambrook C318 Blackhorse Road, Kingswood	Heavily trafficked routes, freight and major bus routes.	Roads connecting the larger towns and industrial estates to each other and to the strategic routes.
4	Secondary Distributor	A4017 North Road, Staple Hill B4060 Wickwar Road, Wickwar C251 Stoke Lane, Patchway	Other heavily trafficked routes	Important links in the network connecting towns and the larger villages/residential estates.
5	Local Distributor	A4175 Teewell Hill, Staple Hill B4461 Main Road, Aust C293 Culverhill Road, Chipping Sodbury	Roads connecting towns, larger villages and urban areas to the distributor road network.	Roads within towns and urban areas and rural roads that connect the larger villages/residential estates and industrial estates to the distributor road network.
6	Collector Road	B4064 Green Lane, Pilning C306 Bury Lane, Doynton Long Road, Mangotsfield	Roads connecting villages to the distributor road network	Roads serving smaller villages and connecting communities and smaller industrial estates to the distributor road network.
7	Minor Collector Road	C247 Northville Road, Filton Leap Valley Crescent, Downend Robel Avenue, Frampton Cotterell Station Road, Charfield Common Road, Hanham	Minor roads serving cul-desacs and hamlets	Roads providing access to residential properties in both urban and rural areas.
8	Service Road	Kingfisher Close, Thornbury Acacia Avenue, Staple Hill Harts Croft, Yate Cider Mill Lane, Siston Tarragon Place, Bradley Stoke	Cul-de-sacs and no through roads predominantly serving residential properties.	Cul-de-sacs and other minor roads serving fewer properties - some of these may not be surfaced.
9	Minor Road	Avening Green, Tortworth Leigh Lane, Westerleigh	Minor roads may be paved or unpaved. Generally in the rural areas	Minor routes and low use tracks - some may already be "Unsuitable for motors"
10	Lanes	Rear Access To Durban/Worthing, Patchway Dog Lane, Hallen	Narrow Lanes serving few properties or rear access to garages	Very minor routes usually only serving as a vehicle access
11	Green Lanes and Tracks	Foxhole Lane, Cromhall	Usually Non-metalled tracks	Very minor routes serving 1 or 2 rural properties
12	Disused Tracks	The Sands, Hawkesbury	Minor tracks and lanes in the rural area generally not used by 'normal' traffic.	Often signed as Unsuitable for Motors and only used by farm vehicles

Levels of Service

The asset management concept that we use to set and identify the appropriate fit-for purpose Standards is called Levels of Service. To set levels of service we need to review our current maintenance regimes and revise or set new ones for each level of hierarchy.

What we can achieve in terms of Levels of Service is dependent on the money we have to invest in our revenue and capital maintenance programmes. It is important that we balance safety of use, longevity of the assets and affordability.

This could mean that in order to meet the need of the more used roads we will have to reduce the maintenance to nothing on the least used roads and offer them back to the landowner after stopping up the public right of access.

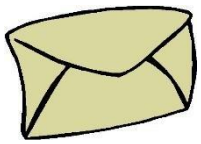
For our Revenue funded maintenance we will be most cost effective when we have moved more of our activities into a planned or cyclic approach as this will minimise the amount of reactive maintenance we need to do. Many of our activities are already cyclic but by adopting hierarchy we can do more on the most used roads and less on the lower use roads for the same cost.

For our Capital funded maintenance that replaces worn out assets and improves the underlying condition we have a number of investment options which fall into three broad categories:

Improve the underlying condition of the assets by investing more now.
Over time this strategy will reduce the future financial requirements for maintaining the highway, drive down reactive revenue maintenance and improve the look and feel of the highway for users and the communities. An improved highway will contribute to economic development by making South Gloucestershire more attractive to businesses. Provide a safer environment for travel resulting in reduced claims and improved public satisfaction.

Maintain current condition by spending what the assets need now.
This will require an increase in funding but less than trying to improve the assets. We will not allow the assets to deteriorate any further but will be maintaining them at a more costly point than the optimum point of maintenance. Public satisfaction will remain broadly the same as will the level of claims so we would not make any revenue savings or improve the exposure for the public through this option.

Let the assets decline in a managed way by identifying the funding required for a controlled deterioration of the assets.
This would not involve an increase in funding but would require re-apportioning what we do have in a way that controls the risk to road users in the best way we can. This option would not support economic growth or improve the environment of our communities. Defect numbers will rise along with claims. Public satisfaction will reduce as the assets get into a poorer and poorer condition. It will also impact future funding from central government and can have a knock on effect on other assets and services.



Key Message

- Hierarchy enables us to better maintain assets according to use and user risk
- Levels of Service help us to make best use of our funding from a customer perspective
- What we spend now strongly influences what we will need to spend in the future.
- Future strategic direction influences current spend.

What we need to be doing.

To ensure that we are making the right asset management decisions we will measure both the outcomes that are important to the public as well as the engineering outputs we are trying to achieve.

It is important that we choose public outcome measures that reflect their experience of using the highway. Measuring such public outcomes helps us to make sure we are doing the right things for businesses and communities in South Gloucestershire.

Tracking our asset management outputs will ensure we are focused on value for money over the long term. Choosing and monitoring effective measures helps us make better decisions at a strategic and operational level.

Asset Management Outputs

To keep track of how beneficial our decisions are to the assets whole life

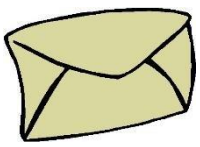
We will measure the underlying and superficial condition of the assets.

- Our aim is to minimise the rate of planned decline
- We will monitor the levels of highway defects. Our aim is to reduce them
- We will monitor our costs. Our aim is to be more efficient in what we need to do.

Public Outcomes

To keep track of how well our approach is meeting the needs of the economy and our residents.

- We will regularly survey the public for their views. NHT survey
- We will benchmark via, NHT, CQC and the market.
- We will analyse the volume and cost of claims associated with highway matters.
- We will analyse our public enquiries and call centre demand to find out what is causing the public to contact us.
- We will engage with members, parishes, towns and districts to discuss their concerns and priorities.



Key Message

- We will measure what is important to the public and the economy as well as the assets themselves
- It is important that our measures inform our Levels of Service and decision making

Our Asset Management Development Plan

ACTION PLAN – Areas of address

- **MAINTAIN ISO55001 Jo**
- **IMPROVING & MAINTAIN ASSET REGISTER (ALLOY) INCUSION FOR REMAINING AREAS. STREETLIGHTING, OPEN SPACES AND WASTE & CLEANSING show of process**
- **REVIEW HIEARACHY – review annually on hierarchy structure**
- **ANNUAL REVIEW OF LEVELS OF SERVICE – DEPT MANAGERS PERFORMANCE DATA**
- **UPDATE OUR ASSET INFORMATION STRATEGY - DD**
- **UPDATE ASSET MANAGEMENT MATURITY ASSESSMENT – CONSULTANTS wpm/metis - DD**
- **REVIEW SPECIFIC ASSET MANAGEMENT PLANS – Trees SP/ Open space TR/ Structures MJ/ PROW ? / Street lighting AP ETC..**
- **ANNUAL COMPLETION OF CIPFA dd hyperlink**
- **CONTINUAL REVIEW AND DEVELOPMENT BASED ON CUSTOMER FEEDBACK - JO**
- **YEARLY REVIEW OF MAINTENANCE PLAN DOCUMENTS TO CHECK NO EXTERNAL/INTERNAL INFLUENCES HAVE CHANGED DIRECTION.**
- **REVIEW QUALITY OF STREETWORK REINSTATEMENTS AND PROCESS OF MONITORING**
- **RECTIFY ANOMOLIES OF CLASSIFICATION**
- **DEVELOP PROCESS FOR COLLECTION OF ESSENTIAL DATA FOR CARBON CALCULATION – AND AGREE A CARBON CALCULATOR**
- **IMPLEMENT A MONITORING SYSTEM TO ENSURE CARBON REDUCTION YEAR ON YEAR**
-

Glossary and Abbreviations

Glossary

Asset Lifecycle Planning - This enables us to work out how much we need to spend and when on our highway assets to maintain their condition at various levels over their lifetime

Asset Management - Asset Management is a modern approach to managing infrastructure and is being used world-wide to enable businesses, governments and local authorities to provide the best value for money within their available resources. It is a strategic approach that identifies the optimal allocation of resources for the management, operation, preservation and enhancement of the highway infrastructure to meet the needs of current and future customers.

Asset Register - This is the register containing information about each of our 11 asset groups and their associated sub groups

Cyclic Maintenance - This refers to routine highway maintenance work that is carried out annually to an agreed schedule. This will include activities such as grass-cutting and gully emptying.

Depreciated Replacement Cost - This is a valuation of what it would cost to replace all our assets to their current level of condition

Gross Replacement Cost - This is a capital valuation of what it would cost to replace all our current highway assets with equivalent new ones

Highways Management Accounts - These are the financial figures that we use to run highways. They help with our capital and revenue funding decisions

Levels of Service - Are descriptions of what we want the different types of roads in our network to be like and tell the public what they can expect when using them.

Maintenance Backlog - The cost of bringing the asset condition back to a usable, steady state – described by the

Needs Based Budget - This is the funding required to get an asset from its current condition to the condition associated with the desired Levels of Service

Optimum Point of Maintenance - This refers to the most economical condition in which to maintain an asset – where the revenue and capital spend required to keep the asset in an appropriate condition are at a minimum.

Reactive Maintenance - This refers to routine maintenance work that is carried out in response to problems arising on the highway that could endanger the safety of users. This could include activities such as repair of potholes, broken drain covers and response to flooding events

Road Network Hierarchy - In South Gloucestershire we have categorised our roads into a hierarchy containing 9 different levels based on their use and importance.

Superficial Condition - The visual appearance of the asset and the service it gives on a day to day basis

Underlying Condition - The structural strength left in the asset that enables it to support use and survive the demands placed on it

Whole of Government Accounting (WGA) - This is a central Government initiative to produce a comprehensive set of accounts for the whole of the public sector using generally accepted accounting practice.

Abbreviations

LTP	Local Transport Plan
WGA	Whole of Government Accounting
DfT	Department for Transport
JTAMP	Joint Transport Asset Management Plan
WOE	West of England

Useful links

CIPFA - www.**cipfa**.org

Institute of Asset Management - www.theiam.org