

Highway Asset Management Strategy

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1. Introduction

The Importance of Transport Infrastructure to Warwickshire County Council

Warwickshire's transport network must be maintained in a serviceable condition in order to serve the needs of local residents, business and those visiting the area. Increasingly, there is a need to manage and maintain the network to respond to environmental change, and particularly to weather extremities. The County Council seeks to ensure it invests in the transport network in a timely manner, and that its resources are used effectively and provide optimum benefits both now and in the future. The safety of transport users continues to be of paramount importance for the County Council.

What is Asset Management?

Asset Management is a strategic approach that seeks to optimise the allocation of resources for the management, operation, preservation and enhancement of the highway infrastructure to meet the needs of current and future users of the transport network.

The County Council recognises the importance of applying the principles of asset management through the process of long-term planning and whole life costing, to ensure best value and optimal future funding and programming decisions are taken. Key elements of infrastructure asset management include adopting a life cycle approach, developing and deploying cost effective maintenance strategies for the medium and long term, identifying and providing affordable levels of service, and adopting a sustainable approach to the use of resources and continuous improvement in the highway services practices and processes.

Asset Management Policy

Warwickshire County Council has developed a Highway Asset Management Policy that sets out the County Council's commitment to highway asset management and demonstrates how the asset management approach aligns with the County Council's Core Purpose. It should also ensure that the investment in the highway maintenance service is consistent with its Asset Management Policy and at the same time clearly supports the County Council's wider transport objectives.

Asset Management Strategy

This Highways Asset Management Strategy sets out how Warwickshire's Asset Management Policy will be delivered. It is informed by the adoption of a highway infrastructure asset management framework which establishes the activities and processes that are necessary to develop, document, implement and to continually improve the transport asset management service within the County. This Strategy seeks to follow the latest asset management advice, particularly that from the Highway Maintenance Efficiency Programme (HMEP) led by the Department for Transport (DfT).

In support of the Council Plan 2020-2025 and the Local Transport Plan 2011-2026, WCC recognises that an asset management framework approach to the maintenance of its highway's infrastructure assets contributes to the Council's Core Purpose and it's LTP 3 objectives, which are set out below. Further information on the link between the core purpose, the corporate objectives and the transport objectives are set out in Figure 1-1.

Council's Core Purpose:	<p>"We want to make Warwickshire the best it can be."</p> <p>This is supported by two outcomes</p> <ul style="list-style-type: none"> • <i>Warwickshire's communities and individuals are supported to be safe, healthy and independent</i> • <i>Warwickshire's economy is vibrant and supported by the right jobs, training, skills and infrastructure</i>
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Warwickshire's Local Transport Plan 3	<p>Objectives:</p> <ol style="list-style-type: none"> 1. To promote greater equality of opportunity for all citizens in order to promote a fairer, more inclusive society; 2. To seek reliable and efficient transport networks which will help promote full employment and a strong, sustainable local and sub-regional economy; 3. To reduce the impact of transport on people and the [built and natural] environment and improve the journey experience of transport users; 4. To improve the safety, security and health of people by reducing the risk of death, injury or illness arising from transport, and by promoting travel modes that are beneficial to health; 5. To encourage integration of transport, both in terms of policy planning and the physical interchange of modes; 6. To reduce transport emissions of carbon dioxide and other greenhouse gases and address the need to adapt to climate change.
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The asset management strategy has been developed to support the LTP objectives, by utilising investment programmes to provide efficient and resilient highway and transport networks.

Levels of Service

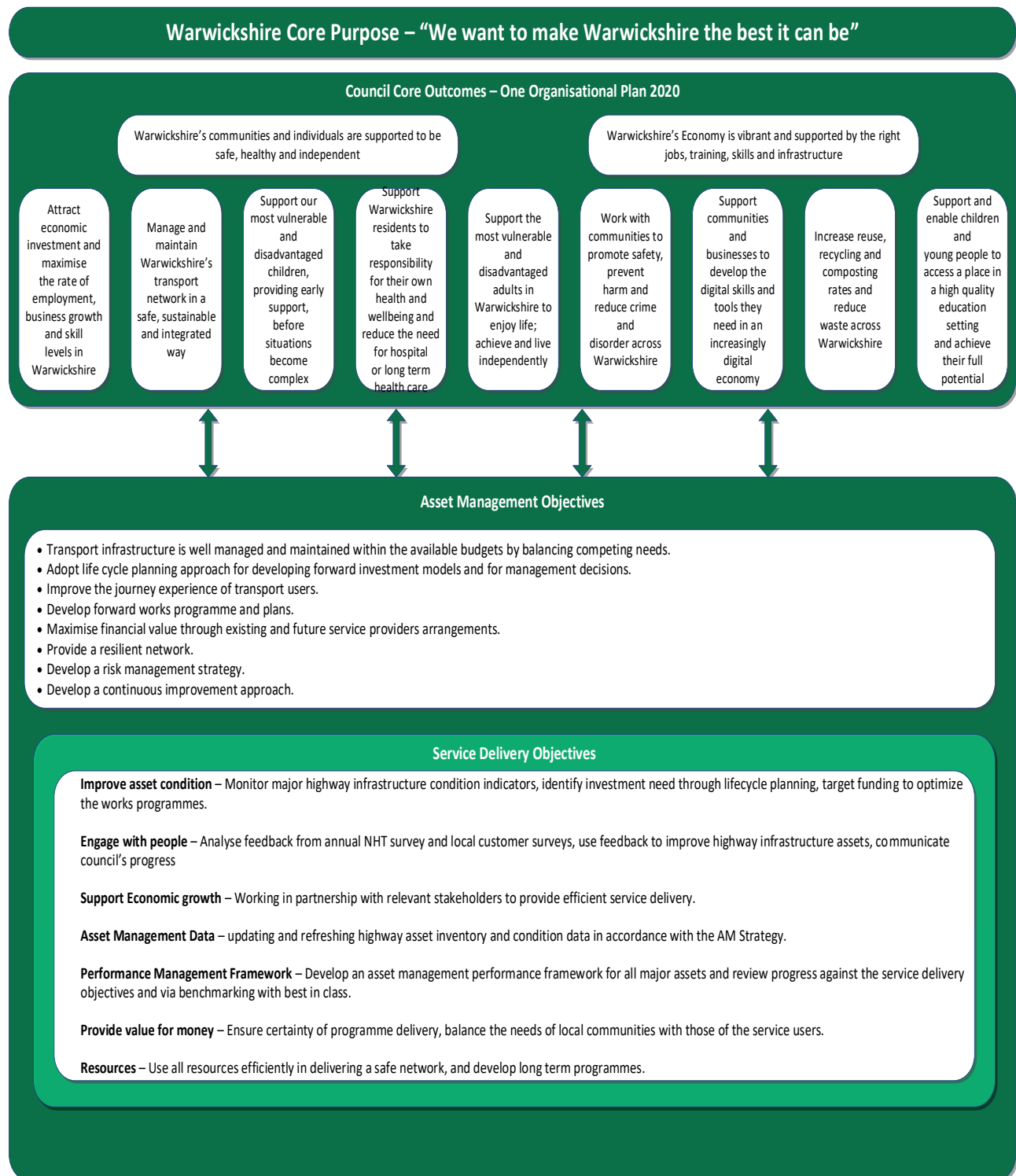
WCC recognises that the delivery of an effective transport asset management service requires well planned, prioritised and programmed management together with, good quality maintenance and investment in the highway infrastructure. It is therefore essential that all its key assets are managed and maintained to agreed and affordable levels of service. The Council is committed to investing in its transport assets to deliver the best infrastructure condition for the investment available and utilising asset management principles to deliver this at optimal cost and best value for money.

Asset Management Framework

Warwickshire's Council Plan 2020-2025 sets out our core purpose and a well maintained network can have a significant contribution towards meeting this core purpose. This can be achieved through setting a series of asset management objectives for managing the key assets. WCC has established its asset management objectives in its Asset Management Plan and in the Local Transport Plan 3.

These asset management objectives are summarised in the Figure 1.1.

Figure 1-1 Relationship between WCC's Outcomes and Asset Management Objectives



2. Asset Management Framework

WCC has developed a highway asset management framework which is based on that within the Asset Management Plan (AMP) and the Highways Maintenance Efficiency Programme's (HMEP) Highway Infrastructure Asset Management Guidance (HIAMG) published in 2013. The framework summarises all activities and processes that are necessary to develop, document, implement and continually improve our approach to asset management. The framework is shown in Figure 2 - 1 and is summarised below.

Asset Management Context

The asset management context encapsulates a variety of relevant and influencing factors that need to be taken into consideration when determining the travelling public's expectations for the asset management service. These factors include: National transport policy, WCC Core Purpose, its local transport policies, expectations of asset management stakeholders and the legal and financial constraints.

Asset Management Planning

This sets out the key activities of the asset management planning process. The activities include:

- **Asset Management Policy** – It is our published commitment to highway infrastructure asset management. This Policy has been developed and endorsed by the Executive. We are committed to publishing this Policy and reviewing it at appropriate times after approval and will also publish this Strategy.
- **Asset Management Strategy** – It is our statement on how the Asset Management Policy will be implemented through the asset management framework and demonstrates the management approach for each key asset group together with our commitment further work as required.
- **Asset Performance (Levels of Service)** – These indicate the affordable agreed levels of service to be delivered by the highway service and how its performance will be measured and reported. We have finalised initial work on this important area but recognise that there is more to be done and we are committed to setting this out in our next action plan.
- **Data** – We have reviewed our current data for carriageways and footways and we are confident that we have robust data sets in place to effectively manage and maintain those key asset groups. We recognise the importance of accurate and complete data to make informed decisions on the prioritisation of investment in the highway network. We further recognise that we need to review other asset group's data and we will evidence our commitment to this in our next action plan.
- **Life Cycle Planning** – We have undertaken life cycle planning exercises on our key asset groups and this work will inform our future highway maintenance investment programmes. This information will enable senior decision makers to make informed decisions on future levels of investment programmes.
- **Works Programmes** – Our programme of works will be updated based on lifecycle planning for the critical highway infrastructure asset group.

Asset Management Enablers

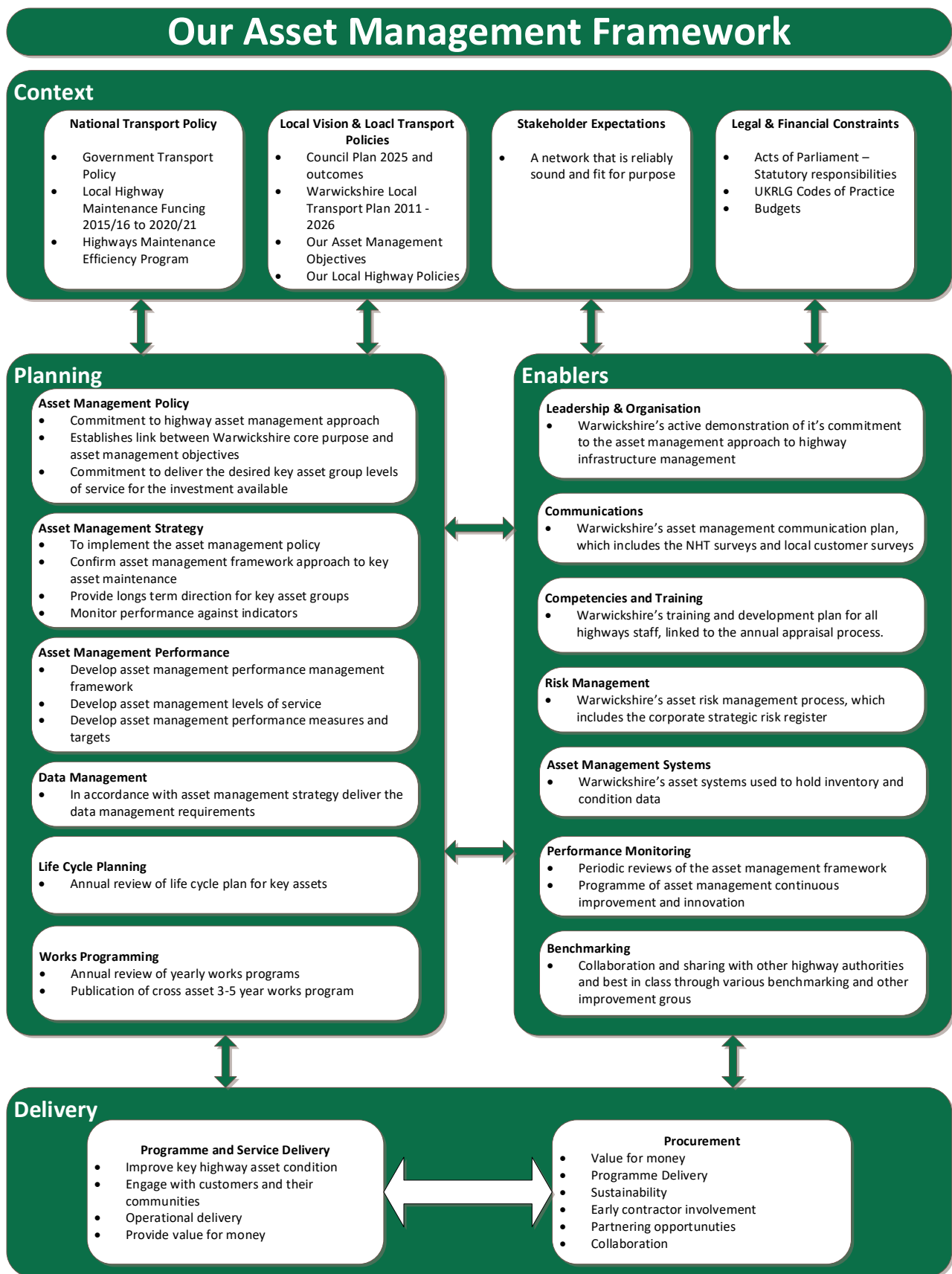
Our asset management strategy requires a series of supporting activities, called enablers, as part of the asset management framework. These include: proactive asset management leadership throughout the organisation, training and development to promote a strong asset management culture, effective asset management communications, collaborating with stakeholders and utilising risk management, asset management systems, performance monitoring and benchmarking with other highway authorities to enable an effective asset management based service to be delivered. Warwickshire CC is actively committed to adopting an asset management framework approach with these enablers as highlighted in Figure 2-1.

- **Leadership and Organisations** – The Portfolio Holder for Transport and Planning supports the approach to managing the highway assets providing strong and clear leadership that supports the approach to managing the highway assets. WCC has been able to provide additional funding for the key assets demonstrating the importance of the highway assets in the day to day life of its communities, its tourists and those travelling through.
- **Customer Satisfaction (Communications)** – The Council recognises the importance of customer feedback and customer satisfaction to help inform the way the highway maintenance services is being delivered. WCC is a member of the National Highways and Transport (NHT) survey network and uses this data to compare user satisfaction levels with similar size highway authorities. This enables identification of areas of effective service delivery and focus priorities for improvement. The Council will also ensure that customers have opportunities to provide feedback on all aspects of the highway service.
- **Competencies and Training** – WCC have developed an asset management competencies matrix to define the present level of AM competencies for all staff involved in asset management maintenance. From this matrix, the Council will also be able to develop individual asset management training requirements and the wider departmental asset management training plan.
- **Risk Management** – The WCC asset management approach is risk based so that optimum treatments are undertaken. The Council also has a risk-based approach to its resilient network.
- **Asset Management Systems** - Asset management systems provide information on all highway assets which includes their attributes, condition, network location, the extent and the overall performance of the highway network. Accurate, regularly updated data is vital in the decision-making process and reporting. We recognise the role of good data management systems to drive continuous improvement and effective investment modelling based on sound asset data. Benchmarking (Best Practice) - We are committed to developing best practice and continuous improvement as part of our culture. We promote and share best practice to improve efficiencies through collaboration with others, especially through a collaborative framework with other local authorities in the Midland Highway Alliance (MHA+).
- **Performance Monitoring** - Our performance management arrangements support our asset management delivery. Performance monitoring takes account of the asset management objectives and service delivery objectives.

Delivery

The works programme is the outcome from the asset management framework. It is made up of those schemes that are at the optimum point in their deterioration cycle and as a result the proposed treatments should deliver the greatest whole life cost improvement for the respective assets.

Figure 2-1 Asset Management Framework



3. Asset Management Strategy for Key Asset Groups

Introduction

This section summarises the existing key highway infrastructure assets, with some current condition information, and a summary of the asset management strategy to be adopted for each of these key asset types as required in this strategy. Gaps in highway asset and valuation data will be filled by WCC staff as part of the final review.

Key Highway Assets

The key highway asset data is shown below and with some a summary of their current condition.

Table 3-1 Summary of Highways Assets

Asset Group	Quantity	Condition
Carriageways	3,789Km.	Approximately 15% of the carriageway network is identified as requiring maintenance. This figure has been collected through the use of SCANNER and CVI surveys, although the principal road network percentage is 2.8% (2019/20), which is better than the national average when comparing English RCI 130-01 scores.
Footways and Cycleways	2,260 Km.	A new survey is being undertaken to ascertain the structural condition of the footway asset. This will be completed in 2020/21.
Structures	1755 structures of which 1176 are WCC owned highway structures, the others are owned by third parties, however these impact upon the highway, hence the need to check their condition through routine inspections. A further 432 structures are on rights of way network and require condition inspections.	For Warwickshire County Council owned highway structures, the Structure Stock Condition Indicator of the critical load bearing elements ($SSCI_{crit}$) is 68.50. The average of all structure elements ($SSCI_{av}$) is 87.42.
Drainage	111,509 drainage gullies.	Gully information is collected by our contractors during cyclical cleansing. The information on the silt levels is used to target those gullies which require emptying more often than others. A recent improvement in the collection system has also enable collection of pipe information. This will be collected electronically by contractors when undertaking jetting works and any investigations. Due to the size of the drainage network a complete inventory will take a number of years to collect/
Street Lighting	50,624 lighting points, and 7,447 associated assets such as illuminated bollards, unlit bollards, illuminated signs, vehicle activated signals.	Steel lighting columns are either under 25 years old or have a current structural test certificate; Aluminium columns do not fail catastrophically and are replaced as and when necessary; Cast Iron columns and wooden posts are being replaced as and when funds are available.
Traffic Signals	136 signal-controlled junctions and 254 pedestrian crossings.	The condition of traffic signal junctions and pedestrian crossings are monitored annually, and it is Communities Group target for 2019/20 to ensure that 90% of the traffic signal equipment is within the 15 years design life of the asset.

Note: As of December 2018.

Existing Highway Hierarchy

The carriageway and footway asset hierarchy has been reviewed in line with guidance in Well Managed Highway Infrastructure. The hierarchy has been changed from using road classification to being managed on a hierarchy based on the usage of the network as outlined in table 3-2 and 3-3. The purpose of the hierarchy is to easily identify the role and function of each road or footway in relation to others. This approach assists the in understanding the importance of each road with respect to its present and future maintenance and investment.

Table 3-2 Warwickshire County Council Carriageway Hierarchy

Hierarchy Description	Code	Type of Road General Description
Strategic Route	2	Trunk and some Principal 'A' roads between Primary Destinations
Main Distributor	3a	Major Urban Network and Inter-Primary Links. Short - medium distance traffic
Secondary Distributor	3b	Classified Road (B and C class) and unclassified urban bus routes carrying local traffic with frontage access and frequent junctions
Link Road	4a	Roads linking between the Main and Secondary Distributor Network with frontage access and frequent junctions
Local Access Road	4b	Roads serving limited numbers of properties carrying only access traffic
Minor Roads	5	Little used roads serving limited number of properties

Table 3-3 Warwickshire County Council Footway Hierarchy

Hierarchy Description	Code	Type of Road General Description
Prestige Walking Zones	1	The main pedestrianized shopping streets within the city centre
Primary Walking Routes	1a	City centre shopping areas with greater than 30 shops Main shopping street in local town centres with greater than 20 shops
Secondary Walking Routes	2	More than 5 shops Entrance to schools Entrance to Hospitals Entrance to large supermarkets Outside transport Interchanges
Link Footways	3	Local shops/retail premises Religious meeting places Industrial Estates Residential Homes or Care Homes
Local Access Footways	4	Predominately residential streets Low usage rural footways

Carriageways

Carriageways, one of the key assets, are the most valuable public asset in Warwickshire, having a Gross Replacement Cost of nearly £3.82bn. Capital (or renewals) funding for carriageways comes from capital settlements from the DfT (grant formula and competitive element) and revenue funding from WCC recognising the importance of the highway asset to its stakeholders.

The existing process takes the budget allocation provided and prioritise based on a set of criteria, including condition and deliverability. Historically the level of funding has been insufficient for the true need and therefore carriageway condition is deteriorating across the network.

The condition of the carriageway asset is measured through annual condition surveys, in 2013/14, approximately 15% of the network was identified as requiring further investigation and possible maintenance, the network deteriorated but has recently improved back to approximately 15% in 2019/20.

Planned maintenance is delivered through annual programmes of works which are capital funded and historically schemes are determined by a coarse visual inspection scoring process and based upon engineering judgement. The management of potholes and other carriageway safety issues across the network are delivered using highway maintenance revenue funding from WCC.

By employing an asset management-based approach through optimum levels of service and investment, better coordination of road maintenance and improvement activity. WCC is targeting to maintain the asset value achieved from its highway service, improve its network resilience and reduce the burden on revenue budgets.

Approach: Desired outcomes will be achieved through the continued development and implementation of the carriageway element of the asset management strategy, using lifecycle planning and scenario testing, together with effective performance management in line with the Warwickshire Highway Asset Management Framework, and following best practice through collaboration and consultation with our stakeholders.

Footways and Cycleway

Footways and cycleways are key assets used for utility and recreational purposes supporting local pedestrians and cyclists with access and mobility as well as being a healthy alternative to car travel. Securing continuous improvement in the safety and serviceability of footways and cycleways is necessary to support short journeys. Well maintained footways and cycleways aid social inclusion, particularly improving accessibility for vulnerable people.

WCC is responsible for the maintenance of approximately 2,260 km of footways and has a gross replacement cost of nearly £423m. The typical annual maintenance expenditure is around £1.8m, which is approximately 20% of the equivalent carriageway budget. In other words, the footway network funding is a small proportion of that for the road network.

WCC at present holds about 60% of its footway and cycleway inventory information and is presently in the process of collecting the rest of the footway inventory and condition data utilising a Annual Engineer Inspection (AEI). WCC is confident the footway and cycleway data it presently has is representative and has been accepted as being appropriate.

Footway condition is assessed through condition surveys and planned maintenance has historically been determined using condition and other criteria. The shortfall in maintenance budget / expenditure has resulted in overall deterioration of the footway and cycleway network, a problem experienced by highway authorities nationally.

Currently, life cycle planning is being undertaken for the footways assets and the output will inform senior decision makers of the investment need for footways and cycleways over a range of condition and investment scenarios.

Approach: Desired outcomes will be achieved through the continued development and implementation of the asset management strategy in line with the Warwickshire Highway Asset Management Framework.

Structures

Warwickshire County Council actively manages its highway structure assets in accordance with Well-Managed Highway Infrastructure: A Code of Practice published by UK Roads Liaison Group.

There are approximately 1,750 bridges, culverts and retaining walls forming part of the highway network, of which approximately 580 are owned by third parties. The total Gross Replacement Cost for highway structures owned by WCC is estimated to be £478M. Routine maintenance of these structures is based on a prioritised system of required work with the aim of minimising the risk to public safety and to minimise whole life maintenance costs.

The condition of highway structure assets is represented by two performance indicators, the Bridge Condition Indicator (BCI) for individual structures and the overall Structural Stock Condition Indicator (SSCI) which is weighted on asset value. These performance indicators are derived from bridge inspections and scored on a scale of 0 to 100 with higher values representing a better condition. A score is given for the average condition for all structure elements (SSCI_{av}) as well as for the condition of the structure's critical load bearing elements (SSCI_{crit}).

In accordance with the nationally recognised guidance and in common with most local authorities, the condition of the bridge stock slowly reduces as the structures approach the end of their design lives. The rate of decline is managed with a programme of maintenance and replacement. At present WCC's highway structures are within the range denoted as 'good' with a SSCI_{av} of 87.42.

Detailed asset information on the structure stock inventory and its condition is stored in a bespoke structure management system (SMS). This system enables risk-based inspection programming, asset valuations and lifecycle planning. The aim of the lifecycle planning tool is to ensure that the time for intervention of planned maintenance to a structure is determined to deliver the optimum return for the investment.

WCC's bridge maintenance team inspects all structures carrying or spanning the highway every two years regardless of ownership in order to ensure public safety. High risk structures are inspected more frequently. The findings of these inspections are recorded in the SMS and used to determine the maintenance required to ensure the structures remain safe for use and fit for purpose. Where safety critical components are identified as being deficient, steps are taken to make them safe as soon as possible.

The SMS also records the load carrying capacity of highway structures. Structures are designed and assessed to ensure they can safely carry vehicles of up to 40/44 tonnes gross weight. Where structures are found to be substandard in their load carrying capacity, they are managed in accordance with nationally agreed standards prior to being strengthened or replaced where feasible and cost effective. At present, 37 substandard structures are monitored to ensure their structural performance. A further 12 structures owned by Warwickshire and 34 owned by third parties have structural weight limits.

The principal factor for determining the forward strategy is to maintain the assets such that they remain safe for use and fit for purpose while minimising whole life maintenance costs. This involves maintaining a SSCI_{av} in the 'good' condition range and minimising the number of structures in the 'poor' and 'very poor' ranges. Additional objectives include reducing the number of sub-standard structures, enhancing safety at highway structures, mitigating the risk of vehicle incursion at sites adjacent to rail infrastructure and minimising delays where structures have been damaged as a result of traffic collisions.

Approach: The approach to achieving the desired outcomes is to use the findings of an annual programme of inspections and assessments along with asset lifecycle planning tools and engineering judgement to develop and implement a risk based, prioritised maintenance programme. The maintenance programme provides a cost-effective approach to repair damage caused by deterioration, vehicle collision or vandalism, slow or prevent the deterioration process, meet changing user demands and implement structural upgrades.

The inspection programme involves undertaking General Inspections every two years and more detailed Principal Inspections on a risk-based interval determined in accordance with nationally agreed standards and tailored to budget limitations. More frequent Special Inspections are undertaken of sub-standard structures and structures at risk of scour.

Drainage

The main function of the highway drainage asset is to facilitate the removal of water from the carriageway and footway to outfalls or watercourses, thereby reducing the amount of standing water forming on the carriageway and allowing vehicles to pass safely. Additionally, effective maintenance of highway drainage assets is essential as non-functioning or inadequate drainage has the potential to speed up the deterioration process of road and footway construction, through water ingress.

While at present there are no specific programmes of highway drainage improvement schemes included in the works programme, WCC ensures that when carrying out maintenance improvements on other highway assets, the condition of the highway drainage in the area is evaluated and improved where necessary. Some flood data may be collected by the Floods and Water Management Officer in the Strategic Planning Team and this would be available for scheme development. Flood record information collection is currently being undertaken through engagement with local parishes and residents.

Approach: WCC will continue to keep the drainage asset in a serviceable condition by undertaking routine maintenance of its gullies and catch pits as required. We will also continue with the programme of highway drainage jetting and cleaning at known areas susceptible to flooding. This work is funded from the revenue budget.

Street Lighting and Illuminated Signs

Street lighting is also a key asset. Warwickshire possesses an accurate, extensive and up to date street lighting inventory which is held electronically on a data management system called Mayrise.

WCC employ a specialist structural engineer who structurally inspects and tests steel lighting columns on a cyclical basis once they have been installed for their design life of 25 years.

Once steel columns reach 25 years, which is their design life, they are added to the cyclical structural testing programme, so they can be tested/inspected by a specialist street lighting structural engineering company (Kiwa CMT) and classified into risk-based categories.

- category 1 columns should be re-tested in 5 years' time,
- category 2 columns should be re-tested in 3 years' time,
- category 3 columns should be re-tested in 2 years' time,
- category 4 columns should be removed as soon as practicable
- category 5 column should be removed immediately.

The cyclic structural testing programme enables WCC to operate lighting columns for their "full life" and only replace them when necessary. WCC has a performance indicator where the contractor is required to attend to 97.5% of faults within 5 working days, and this target is regularly being exceeded. The traditional light source lanterns have a Bulk Lamp Change and Clean carried out based on the lamp manufacturers recommendations.

For illuminated signs, formal condition surveys are not presently undertaken, as the risk of failure and consequent damage to public and property is deemed to be low considering sign face heights are generally lower than 2m. Visual inspections however, are undertaken during routine maintenance and at the renewal time, Illuminated signs will be evaluated to determine whether there is still a need for them to be illuminated, and if not the lantern and service are removed as part of any replacement work.

Approach: We will continue with the routine inspection and maintenance programmes to keep the street lighting assets in a serviceable condition and to maintain street lighting assets in accordance with best practice. We will maintain target for repairing all non-urgent faults within 5 working days of reporting.

Traffic Signals

The primary objectives for providing traffic signal control at specific junctions are to reduce the conflict between opposing traffic streams and minimising traffic delays; this than directly improving the efficiency of the road network thus providing a better environment by reducing CO₂ emissions.

At uncontrolled junctions, conflicts between different traffic streams and types of road user can decrease the operational efficiency of junctions and increase the likelihood of accidents. Traffic signals contribute to reducing such conflicts by separating movements in time and position on the carriageway in a way that optimises junction performance and safely. Traffic signals also make a contribution to the local economy by the management of traffic and delays at all times of the day.

The existing traffic signal maintenance contract commenced on 1st July, 2019; the new contract will be available to Coventry City Council and Nottingham City Council via back to back agreement with WCC. The proposed contract is a seven year (five plus two additional one-year extensions). WCC have an up to date inventory of all the assets on site and the condition data. The database is updated as and when site surveys and condition inspections are carried out by the service provider and WCC.

As a part of the on-going maintenance contract both electrical and safety inspections are completed annually by the service provider. WCC staff complete audits of the service provider's inspections based on a target of a 10% sample of inspected sites on a monthly basis, the audit is a visual inspection to ensure that the contract inspections and data provided is valid.

To ensure that the traffic signals and controlled crossings are operating safely and efficiently, the condition of traffic signal junctions and pedestrian crossings are monitored annually and it is Communities Group target for financial year 2019/20 to ensure that 90% of the traffic signal equipment is within the 15 years design life of the asset.

WCC have implemented energy saving initiatives and safety systems which include switching to LED signals and extra low voltage systems through contract refurbishment works.

WCC have a programme to update the existing analogue communications used by various systems to digital networks within the next year; this will enable various applications to be moved to cloud based urban traffic control systems and reduce revenue costs, whilst providing better resilience within the network.

Approach: Effectively managing existing assets, reducing fault repair times and striving for efficiency saving through collaborative working with our partners and suppliers in order to continually improve our service to the general public.

4. Strategy Review

This strategy will be updated to align with any changes to the Council's core purpose or outcomes or Local Transport Plan. The DfT has set out a requirement for all local highway authorities to undertake self-assessments of its asset management approach on an annual basis. In completing this assessment, we will also determine whether our asset management strategy is still current.

Document Review	Review changes
November 2020	<ul style="list-style-type: none">• Corporate objectives remain current.• Updated data tables• Key highway asset strategies updated with changes to condition surveys and Well Managed Highway Infrastructure changes