

Highways Asset Management Strategy (HAMS)

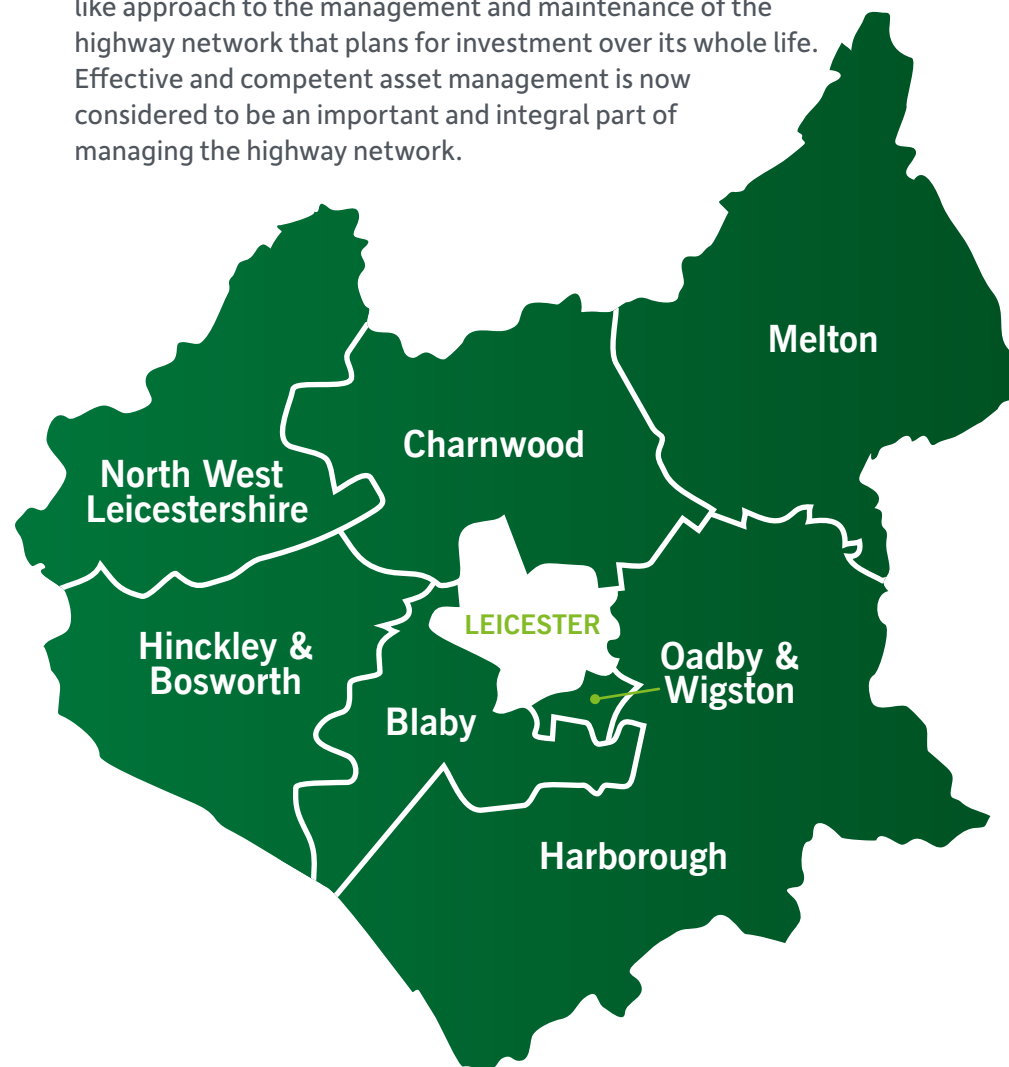


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1. Background and Context

- 1.1 Highway asset management is a well-established, and more business-like approach to the management and maintenance of the highway network that plans for investment over its whole life. Effective and competent asset management is now considered to be an important and integral part of managing the highway network.



The Leicestershire Context

- 1.2 Through its legal requirements, Leicestershire County Council functions as the Local Transport Authority and Local Highway Authority and is responsible to ensure that the transport network is well managed to ensure its safe, efficient and resilient operation for all its users.
- 1.3 In its role as the Transport and Highway Authority, Leicestershire County Council is responsible for the operation, maintenance and management of:
- 4,686km (2,921 miles) of roads across the county
 - 3,081km (1,914 miles) of Public Rights of Way across the county
 - 6 million miles (about 9.6 million km) of public transport routes across the county
 - providing support to 1.2 million miles (about 1.9 million km) of passenger transport services per year
 - 68,304 streetlights across the county's highway network
 - 901 structures (bridges etc.)
 - 3774 km (about 2345.05 miles) of cycleways
 - 102 km (about 63.38 miles) of Vehicle Restraint systems
 - 222 signalised crossings
 - 71,820 non-illuminated traffic signs
 - 998 culverts
 - 127,919 gullies
 - 10,789 million metres squared of grass verges.

Document Purpose

- 1.4 The purpose of this strategy is to set out how we will deliver the principles of our Asset Management Policy and thus achieve our long-term corporate objectives, such as delivering statutory obligations, addressing stakeholder needs and ensuring the overall performance of our assets.
- 1.5 This document sets out the broad objectives and the strategic direction that the County Council will adopt in support of the policies and supporting principles set out in our Highway Asset Management Policy (HAMP).
- 1.6 The Highway Asset Management Strategy (HAMS) sets out how the County Council will best manage the highway network, considering customer needs, local priorities, asset condition and best use of available resources.
- 1.7 In conjunction with the HAMP, it informs the Highway Infrastructure Asset Management Plan (HIAMP), which sets out how we will apply and operate our asset management principles to ensure that our highway network remains safe, serviceable, resilient and sustainable for the benefit of our stakeholders, taking account of available resources.



Highway Asset Management Framework

1.8 Figure 1.1 below shows how the Highway Asset Management Strategy document sits in the asset management document framework.



Figure 1.1 - Highway Asset Management document framework

1.9 This framework is guided by a wide range of national and local regulations, strategies, policies, guidance, and best practice etc., including the Council's Strategic Plan.

1.10 An illustration of some of these documents and their interaction with the Highway Asset Management framework are shown in Figure 1.2 below.

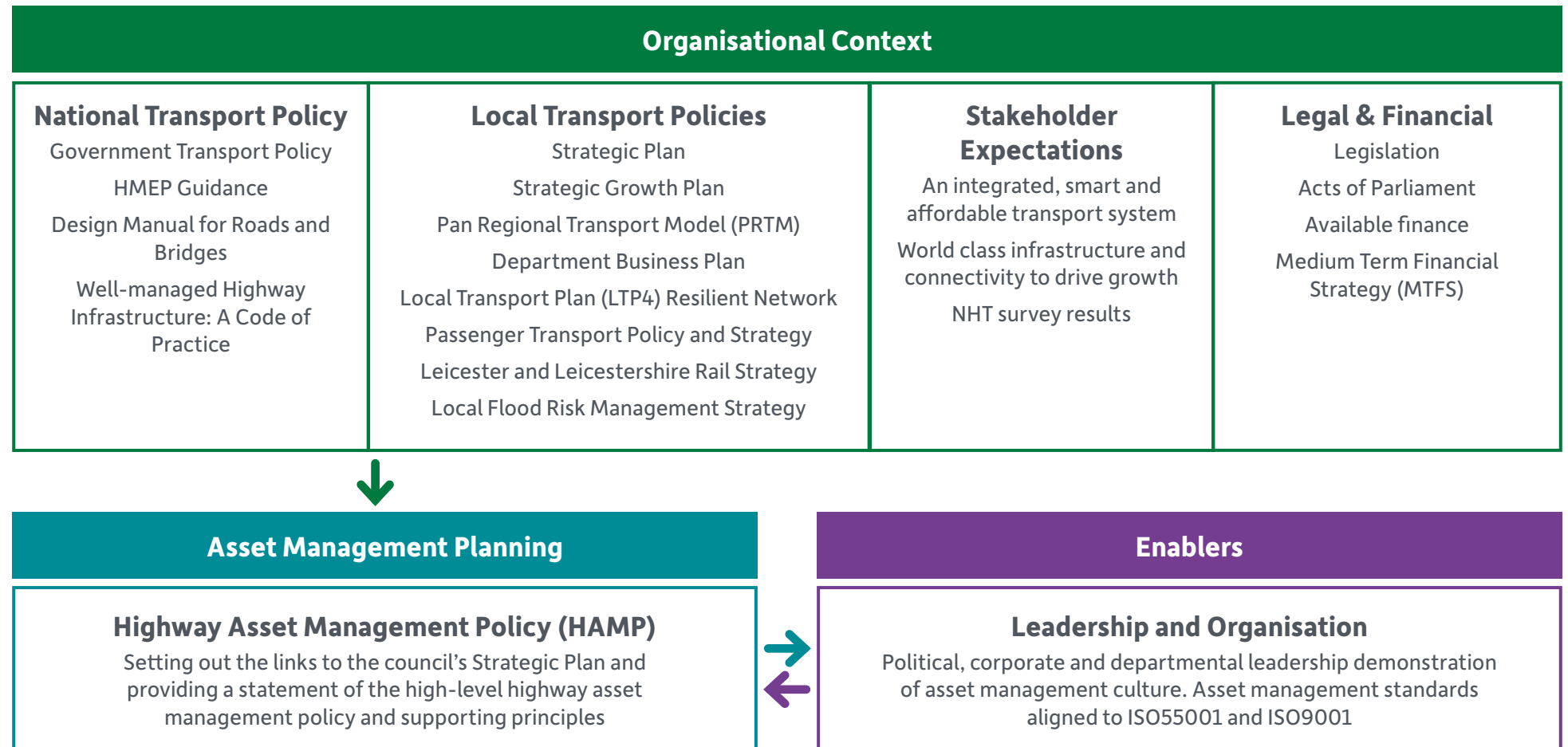
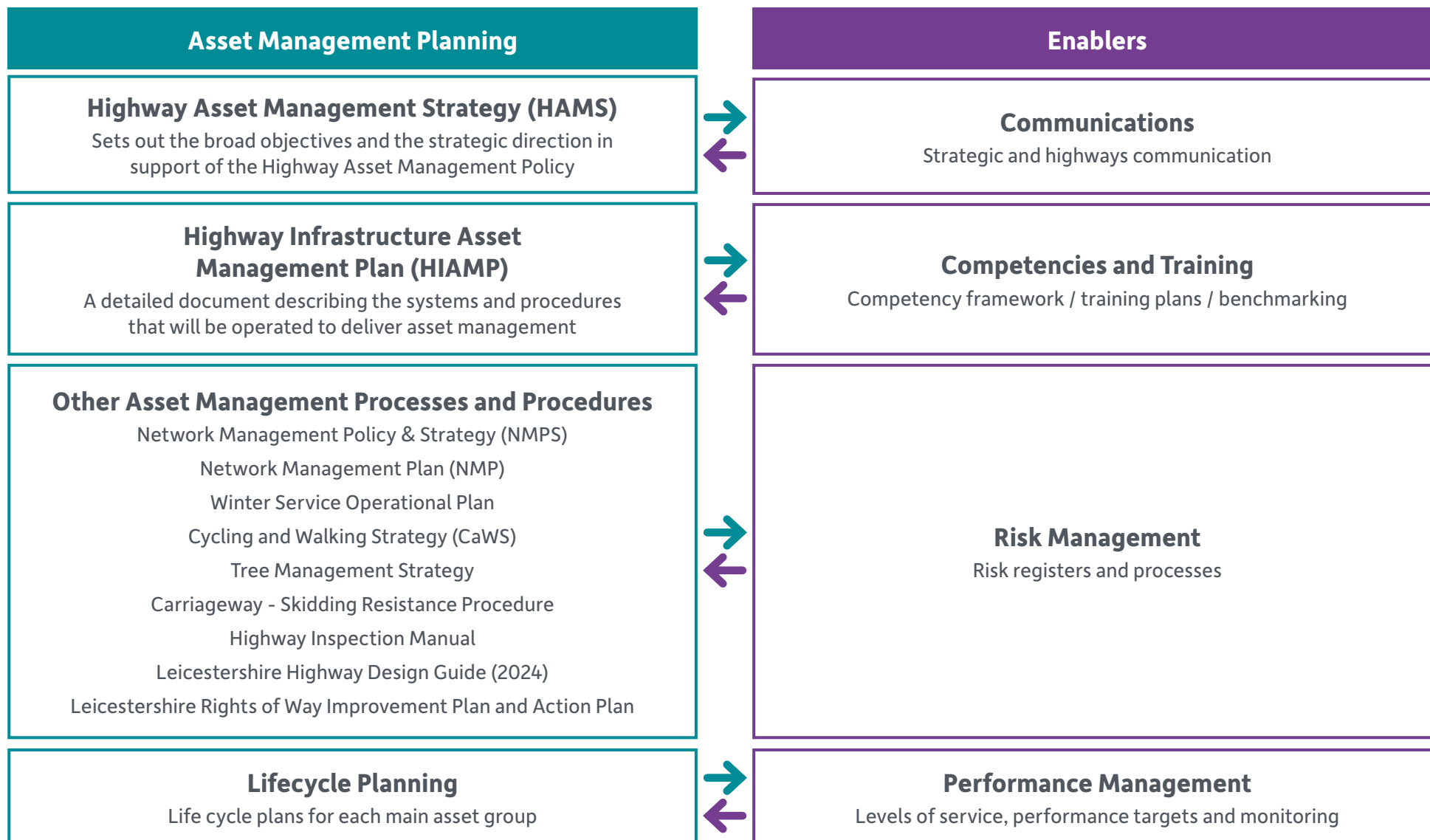
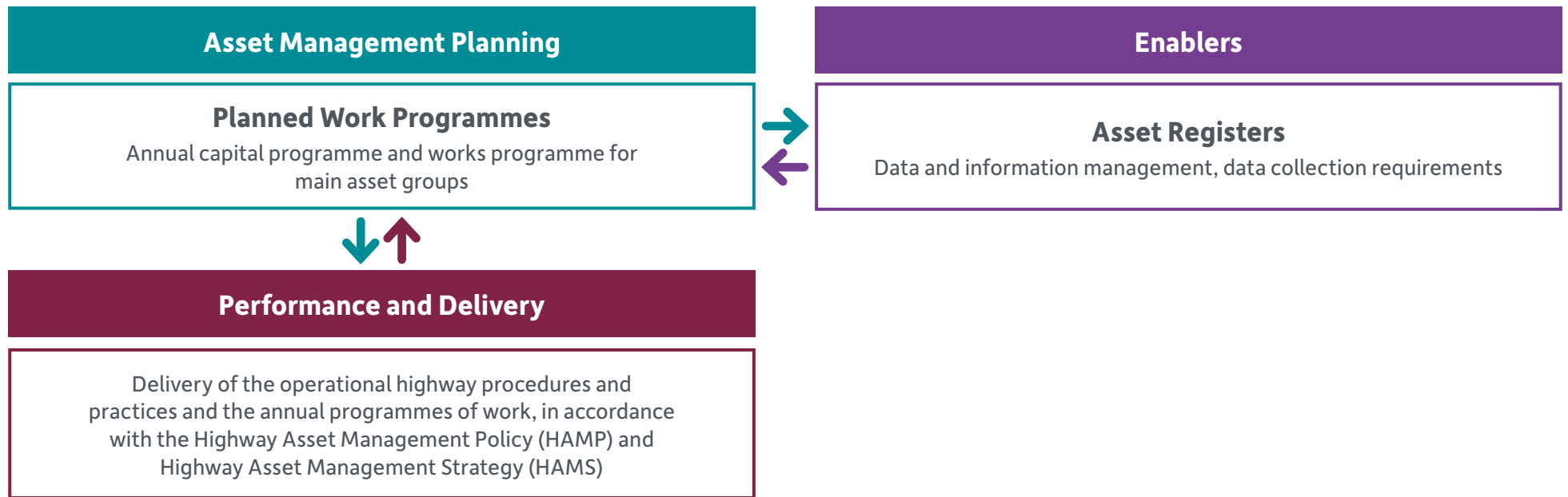


Figure 1.2 - Highway Asset Management Framework





2. The Challenge

- 2.1 Leicestershire's highway network is a functional asset. It is impacted by adverse weather, a changing climate and ongoing and increasing pressure from traffic use.
- 2.2 Deterioration of the many elements of the network is an ongoing cycle, and the County Council must continuously make decisions about when, how, and where to intervene and undertake repairs or renew the assets to minimise future levels of damage to Leicestershire County Council highway assets.
- 2.3 These decisions are becoming increasingly difficult, due to the challenging economic circumstances in which the County Council is currently operating because of:
 - increased demand for services e.g. from a growing and aging population (Leicestershire's population is set to grow 23.3% by 2043)
 - inflation and reduced Government funding
 - increased costs of materials and fuel
 - contracts - increased prices (15 – 30%) and some suppliers terminating contracts or not bidding for contracts
 - deteriorating assets
 - statutory requirements
 - more traffic (29% increase in vehicle kilometres travelled across the county by 2043), increasing wear on our highway assets (electric vehicles are also a lot heavier than the traditional internal combustion engine cars)
 - growth - new developments with associated new highway assets (a need to accommodate additional 120,000 homes by 2043)
 - government continues to identify new and evolving national priorities and initiatives including:
 - carbon reduction targets (5.5% increase in carbon emissions impacting on air quality and the health of our communities by 2043)
 - adapting to climate change
 - electric vehicles and the need to install charging points
 - walking and cycling initiatives.
- 2.4 The timely application of preventative maintenance across all highway assets cannot be achieved and therefore the asset management documents are key in managing the risk to the Council that this presents.
- 2.5 The management of the highway network is a key challenge for the Council. It is an area of high public expectation concerning an aging asset coupled with limited funding.
- 2.6 The aging nature of the highway network also presents further challenges when considering resilience. Climate change is already adversely impacting the highway network and communities in the county.
- 2.7 Formalising a strategic approach to maintaining highway assets is therefore essential to ensure that appropriately informed, cost-effective decisions are made about the treatment strategies that we apply.

3. Core Elements of the Strategy

3.1 The HAMS will aim to align with the strategic vision of the Local Transport Plan (LTP4), which is:

‘Delivering a safe, connected and integrated transport network which is resilient and well managed to support the ambitions and health of our growing communities, safeguards the environment whilst delivering economic prosperity.’

3.2 In addition, it will support the delivery of the five core themes identified below, and action these through application of the six core policies with the LTP4 Core Document, and the implementation of focused strategies, Multi Modal Area Investment Plans (MMAIPs) and County Strategic Transport Investment Plan.

- Enabling health and wellbeing
- Protecting the environment
- Delivering economic growth
- Enhancing out transport network’s resilience
- Embracing innovation

3.3 This document considers the strategic approach to nine core elements of our Asset Management Plan. When considered together, these elements will ensure that we make the best possible treatment decisions and that the finite resources available to the County Council deliver the best possible outcomes for our stakeholders, consistent with the County Council’s statutory duties as the Highway Authority. The core elements are shown in Figure 3.1 below.



Figure 3.1 - Asset Management Strategy - Nine Core elements

3.4 The Highway Infrastructure Asset Management Plan (HIAMP) will provide further operational details about how we will apply our strategy for each of these elements (see asset management framework figure 1.2 above).

Stakeholders

- 3.5 The main purpose of asset management is to ensure that our network meets the needs and expectations of our stakeholders. It is therefore important that the County Council listens to, and communicates with, stakeholders.
- 3.6 We want to ensure that our stakeholders are at the heart of our service. We recognise the improvements we need to make to continue to enhance the customer experience, keep our customers better informed and ensure our members are briefed in a timely manner. The County Council has subscribed to the annual National Highways & Transport (NHT) customer satisfaction survey since 2008. We will continue to assess the results of the survey and use this information to inform future decisions on highway maintenance.
- 3.7 We will make it easier for stakeholders to access information online, and by email. The County Council has been managing day-to-day customer enquiries since 2005 through the 'Confirm' Highway Management System (HMS). We have developed dashboard style reports for service areas, which collate enquiries by type and area. This helps us to identify both local and strategic weaknesses in the network or our service, for example by highlighting the levels of drainage related reports during a certain period or by locality.
- 3.8 We recognise the value of continuing to work with partner organisations and communities to achieve shared aspirations.

- 3.9 We will work closely with parish and town councils to help develop joint highway initiatives to undertake additional work on the highway within an agreed protocol.
- 3.10 We will continue to work closely with the Department for Transport and other national organisations on new approaches, innovations, and industry leading initiatives.

The Network

- 3.11 Understanding our network is fundamental to the delivery of strategic asset management and this begins with an inventory of our assets.
- 3.12 The Council holds a substantial amount of inventory data, particularly about our key assets (carriageways, footways and cycleways, structures, street lighting and drainage). We continue to expand our knowledge through our asset management approach.
- 3.13 We will continue to review our inventory and consolidate our Asset Register. We employ various hierarchies and network categorisations in the current management of our network. Subsets of road classification are used for reporting carriageway conditions.
- 3.14 To support a clearer strategic approach and to conform to the 'Well-managed Highway Infrastructure: A code of Practice', the County Council continues to review its local road hierarchy to ensure that it reflects stakeholder expectations, levels of use and strategic importance. These local road hierarchy are used to direct resources, define our inspection frequencies, support an assessment of risk, reflect network condition, prioritise our treatments and to further develop a risk-based approach to managing our highway assets.

3.15 To develop treatment strategies and to monitor their effectiveness, the County Council is also developing a classification of its network. This takes account of the key characteristics that affect the deterioration of carriageways, commercial traffic volume, adequacy of foundation, carriageway width and the presence of edge restraint.

3.16 We have developed a 'Resilient Network' to help target works at critical assets, ensuring that traffic movements in and around Leicestershire are kept moving, regardless of adverse weather events. During adverse weather, we currently focus resources on the 'Winter Service' network, which breaks the whole network down into four levels of priority. The Code of Practice 'Well-managed Highway Infrastructure' extends the function of the Resilient Network to cover all disruptive events, not just adverse weather, helping to prioritise highway works.

3.17 We collaborate with a variety of professional bodies and partnerships such as Midland Connect, which is a Sub-national Transport Body (STB), to identify and define the Midlands 'Major Route Network' to coordinate maintenance and management strategies.

3.18 The revised hierarchies and categorisations, aligning to the latest code of practice, are shown in Figure 3.2. below. This table highlights the complexity of local road network classification, which is driven by different and varying legislation and purposes.

Figure 3.2 - Highway Asset Management Hierarchies

Network	Hierarchy / classification	The key factors that contribute to the hierarchy / categorisation	How the hierarchy or Categorisation will be used
Resilience	Resilient Network	High level strategic purpose. Links to major infrastructure and emergency services.	To ensure the network is resilient to severe weather and other major disruptive events.
		Connectivity with other key transport networks. Traffic volume and composition.	To support the management of risk. To determine which parts of the network, receive investment priorities and prioritising maintenance treatments.
	Winter Service Network	Traffic volume. Road classification.	Will be used to determine the extent and priority of precautionary salting and snow ploughing across the highway network.
		Strategic purpose.	For the safety of highway users.

Network	Hierarchy / classification	The key factors that contribute to the hierarchy / categorisation	How the hierarchy or Categorisation will be used
Network Management	Major Road Network	Traffic volume.	Inform strategic funding decisions.
		Strategic purpose.	For supporting growth.
	Traffic-Sensitive Streets	New Roads and Street works Act (1991) designates ‘9’ criteria that can be used for defining a street as ‘traffic-sensitive’.	Used to help determine road space occupation as part of LCC Highway works permit scheme.
	Local Road Maintenance Network	Traffic Volume.	For prioritising treatments and managing risk.
		Strategic purpose.	To inform safety inspection frequencies.
		Stakeholder expectation.	To support our Network Management Plan objectives.
		“Well-managed Highway Infrastructure”- A Code of Practice.	To comply with the Code of Practice.
Asset Management	Existing Road Classification Network	Unchanged (based on the strategic level of the links destination).	For reporting and comparing condition data through national performance indicators and whole government accounting/ asset valuation.
	Carriageway	Adequacy of structural foundation.	To develop, deliver and monitor treatment strategies.
	Maintenance	Carriageway width.	Appropriate to the characteristics of the network.

Network	Hierarchy / classification	The key factors that contribute to the hierarchy / categorisation	How the hierarchy or Categorisation will be used
Asset Management	Homogeneous Road	Presence of edge restraint.	To support the management of risk.
	New Road and Street Works Act Reinstatement Categories	Road category based on the expected traffic to be carried over the next 20 years expressed in Millions Standard Axle (MSA).	Will be used to determine the price level for permitting as part of LCC's highway works permit scheme. To provide and inform utility companies what are suitable materials and layer thickness so that they can reinstate the road when they excavate trenches for their apparatus.



Condition Assessment

3.19 Monitoring the condition of our assets is a fundamental component of asset management. It helps to:

- demonstrate the levels of service that we are delivering
- identify trends in improvement or deterioration
- identify priorities for focusing our resources
- monitor the effect of our treatment strategies
- provide the base data required for lifecycle modelling (for all major assets) and the calculation of Depreciated Replacement Costs - DRC (the current cost of replacing an asset with its modern equivalent, less deductions for physical deterioration).

3.20 We undertake comprehensive annual surveys to collect condition data on our entire carriageway and footway asset such as Surface Condition Assessment for the National Network of Roads (SCANNER), which is a machine based surface condition survey, Sideway-force Coefficient Routine Investigation Machine (SCRIM), which is a skidding resistance survey and Vaisala Artificial Intelligence (AI) which is a data capture system and condition assessment, updating the data through a continuous annual cycle. This data is collected and analysed within the United Kingdom Pavement Management System (UKPMS) framework.

3.21 The Council collects data across the full spectrum of its highway assets. This data is collected and recorded in centrally managed databases that provide condition data and other information. Through this asset management risk-based approach, we continue to maximise the investment available to improve the condition and longevity of the asset. We will continue to review the data recorded, as well as the frequency and the way it is recorded.

3.22 The County Council undertakes scheduled safety inspections of all highways and some of our unsurfaced minor roads, to identify and respond to deterioration that is likely to cause a significant risk to users. We have revised network hierarchies to facilitate a risk based approach (RBA) with highway safety inspections. Frequencies will be established in accordance with the level of risk associated with each level of the local network hierarchy and aligned with the level of available inspection resource. This will help us to identify and respond more effectively to the most critical defects on the network.

3.23 All highway bridges, subways, and culverts that are the responsibility of the County Council are inspected, and their condition is scored using the national Bridge Condition Index (BCI) method and recorded on the Highways Management System (HMS). This data, along with an understanding of the route importance, enables the identified maintenance works to be prioritised.

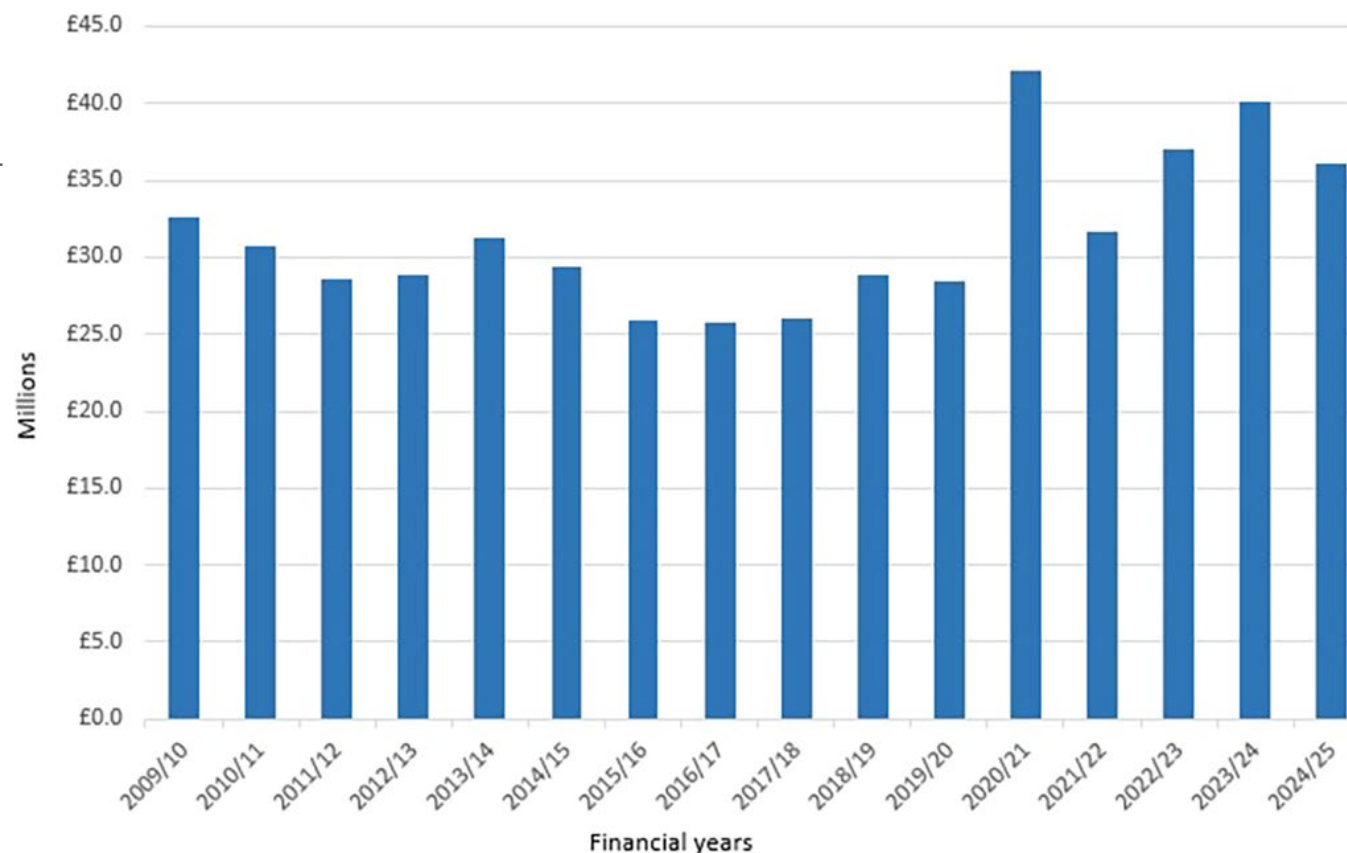
Budget and Resources

3.24 Figure 3.3 shows the County Council Asset Management funding from 2009/10.

3.25 The County Council continues to be proactive in dealing with the budgetary pressures that it faces, through the Medium-Term Financial Strategy (MTFS) process. The development of a revised approach to asset management, along with ongoing review of our services and associated resources, are part of the County Council's response to budgetary pressures.

3.26 If additional funding is made available for asset management, it will be utilised using the principles outlined in this strategy, where appropriate.

Figure 3.3 - Diagram showing the level of budget for Asset Management since 2009/10



Risk

- 3.27 The analysis of risk applies to asset management from a variety of different perspectives. These range from the broad strategic and corporate risks, such as the loss of the asset or a significant change in budget, to those affecting discrete processes or assets, such as the risk that an individual defect might present to stakeholders.
- 3.28 Risk is present throughout asset management because of the extensive treatment options possible with decisions, and how it will perform or the consequences of failure. Combined with a variety of uncertain external factors influencing the performance of the network, including weather, changes in budget provision and demands on the network, risk is ever present.
- 3.29 It is not possible to eliminate all risk from asset management. This means that while some mitigation is possible, the usual approach will be to understand the degree of risk and its possible consequences. This then needs to be balanced against the cost of reducing or eliminating the risk, as well as the benefits of accommodating the risk.
- 3.30 Risks affecting our strategic objectives are managed across different levels of the organisation, involving monthly review and assessment. The risk likelihood and severity are factored to provide a score, which is subsequently converted to a traffic light rating (Red, Amber, Green i.e. RAG). Significant strategic or corporate risks are reported through the management chain and consideration given to further mitigation.

- 3.31 More specific risks associated with the management of highway assets will be assessed against an understanding of the strategic importance of the asset or assets concerned. Fundamental to this will include consideration of the local road hierarchy and our Resilient Network. For example, an identical pothole on two different carriageways, both carrying the same volume of traffic, will have the same impact if a vehicle collides with it. However, it will have a higher priority on one of the carriageways if it is part of a link with more strategic importance.

Analysis (Life-Cycle Modelling)

- 3.32 Life cycle planning comprises the approach to the maintenance of an asset from construction (or assets that have evolved/not been designed) to disposal. It is the prediction of future performance of an asset, or a group of assets, based upon investment scenarios, usage, and maintenance strategies.
- 3.33 The County Council has been developing lifecycle plans for all its major assets (carriageways, footways, structures, street lighting and traffic signals). All of these are static assessments of the typical lifecycle that would be applied to these assets in optimum steady state (unchanging conditions (including inflation). They do not include an input of the actual budget or consider how different treatments would be triggered by variations in condition. While these lifecycle plans will provide a perspective on network need, they do not reflect current budget levels or the frequency of treatment interventions. They also do not include a dynamic assessment of the impact of treatments on condition. The County Council will try to employ this straightforward but static analysis of lifecycle planning to many of its minor asset groups.

- 3.34 For all our key assets, except drainage (where the reliability of asset data is uncertain), we will develop, validate and apply dynamic lifecycle modelling techniques.
- 3.35 These dynamic lifecycle models will allow us to model different scenarios in terms of the three-way relationship between condition, treatment, and cost. For example, we might model the consequences on condition if current spending is continued and compare this with the impact on condition if we apply the anticipated reducing budget. This analysis will support our treatment strategies and make decisions about the distribution of our budgets.
- 3.36 Lifecycle models will not be used to identify specific schemes or programmes of work. Instead, they allow us to determine how much money we want to spend on a treatment on specific road classification. They are tools for testing and managing our treatment strategies and to provide evidence to support and make the case for the allocation of budgets.

Asset Performance

- 3.37 Included within the HIAMP is a section on Asset Performance which defines the indicators that we will use to monitor, inform and develop the performance of our asset management policy and strategy. Many of these indicators are already measured, but we will group them in the following way to manage performance through consideration of levels and changes in asset condition, customer satisfaction, communication, and asset management delivery.
- 3.38 Examples of the performance indicators that we will use in each of these categories are shown in fig. 3.4 below. Where appropriate, performance indicators will also be categorised to reflect performance in terms of maintaining safety, serviceability, and sustainability.



Category	Performance Indicator
Condition	Scanner and CVI Current Condition Indicators
	Bridge Condition Indicator (BCI) scores
	Number of defect reports (Flooding, potholes, blocked gullies etc.)
	Depreciated replacement costs
	Number of damage / injuries claims
	Environmental Performance Indicators (PIs)
Customer Satisfaction	National Highways and Transport Network (NHT)
	Customer satisfaction survey PI's
	Customer enquiries (by category)
	Feedback forms via letter drops
	Public consultation feedback
Communication	Response times (to enquiries)
	Communication Log (documenting Parish newsletter articles, press releases)

Category	Performance Indicator
Delivery	Internal Asset Management Strategy / Delivery Profiles
	Climate change adaptations / Carbon Reduction Strategy
	Budget / spend profiles
	Statutory inspection completion
	Decommissioning by type and quantity
	Productivity measures

Figure 3.4 - Example of performance indicators

3.39 We are committed to sharing knowledge, experience and innovation in implementing asset management with other highway authorities across the country. We are active members of:

- Midlands Highway Alliance Plus (MHA+), which comprises a consortium of local authorities from our region and beyond
- The National Highways and Transport (NHT) survey and the Care Quality Commission (CQC)
- Local Council Roads Innovation Group (LCRIG)
- CIPFA (Chartered Institute of Public Finance and Accountancy) Highways Asset Management Planning (HAMP) Network
- Future Highways Research Group (FHRG)
- Association of Directors of Environment, Economy, Planning & Transport (ADEPT)

3.40 The most recent condition indicators for our key assets are shown in Figure 3.5 below.

Figure 3.5 - Key Asset Condition PI's Target

PI	Description	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24
Carriageway (All)	% of the classified road network (A, B & C class road) where structural maintenance should be considered (SCANNER)	2%	2%	2%	2%	2%	3%	3%	3%	3%	4%
Carriageway (A Class Roads)	% of the principal road network (A class roads) where structural maintenance should be considered (SCANNER)	1%	1%	1%	1%	1%	2%	2%	2%	2%	3%
Carriageway (B Class Roads)	% of non-principal road network (B class roads) where structural maintenance should be considered (SCANNER)	2%	2%	1%	1%	1%	2%	2%	2%	2%	3%
Carriageway (C Class Roads)	% of non-principal road network (C class roads) where structural maintenance should be considered (SCANNER)	3%	2%	2%	2%	2%	2%	3%	4%	3%	4%
Carriageway (Unclassified Roads)	% of the unclassified road network where structural maintenance should be considered (visual inspection)	8%	7%	9%	12%	15%	16%	-	11%	10%	12%
Footways	% of the footway network where structural maintenance should be considered (Footway Network Survey)	8.6%	3.8%	8.7%	30.4%	9.1%	29.4%	-	-	-	-
Street Lighting Columns	% of street lighting columns aged 40 years or more replaced	-	14%	12%	12%	10%	10%	10%	7.25%	6.76%	6.41%
Traffic Signals	% of traffic signal installations requiring complete renewal (age and fault history)	<4%	<4%	<4%	3.46%	4.32%	5.81%	8.5%	9%	10%	10%
Bridge Spans	% of bridge spans with a Bridge Condition Index critical value below 75	9.7%	9.6%	10.1%	9.2%	9.5%	10.2%	13.4%	14.8%	14.7%	14.9%

Treatment Strategies

- 3.41 The significant reduction in the maintenance budget (revenue) since 2009/10 requires the adoption of different treatment strategies from those previously applied to the network. Examples could include no footway resurfacing, less carriageway schemes, no footway slurry sealing and an increase in reactive work. It is anticipated that some service levels will need to be reduced.
- 3.42 It is important to recognise that the current condition of the network reflects the good level of preventative treatment and renewals undertaken over the last ten to twenty years and the good overall condition that Leicestershire's road network was in at the beginning of the period of austerity. However, the consequences of the current levels of investment are that our assets are in a steady decline.
- 3.43 We will continue to explore new technologies and materials, particularly the use of recycled materials and ways to decarbonise our operations.
- 3.44 We will also explore the inclusion of infrastructure that supports more environmentally sustainable transport while delivering maintenance schemes (e.g. electrical charging points) and develop innovative techniques and greater use of technology to improve efficiency.
- 3.45 The County Council will seek to maximise the serviceable life of assets to reduce the frequency of asset renewals. We will do this by focusing on preventative treatments such as surface dressing (which provides roads with an additional protective layer by sealing the surface) for carriageways, re-waterproofing bridge decks and re-pointing brickwork on structures.
- 3.46 To achieve the optimum whole-life cost from our assets, the County Council will intervene with these treatments as late as possible, taking account of the risk and stakeholder tolerance of the decline in service level prior to treatment.
- 3.47 For our highway assets, the County Council will define its strategies for each road group by categorising the proposed treatments into five strategic types. This will allow us to communicate our strategies in a clear way, to validate delivery of the strategy and to analyse its effectiveness in addressing the immediate safety and serviceability of the network, balanced with long-term sustainability.
- Treatment Type 1. Reactive (Restorative) – Unavoidable, unplanned, immediate treatments necessary to restore a safe and serviceable condition. The repair is likely to be more costly, with limited life and have a poor whole life cost benefit e.g. pothole repairs.
- The County Council will aim to minimise this type of repair, particularly on its unclassified network, as it generally results in lower public satisfaction, a gradual increase in third party injury claims, the need for more intervention and higher maintenance costs.
- Treatment Type 2. Planned (Restorative) – Scheduled repairs, required to restore local deterioration of the asset to maintain a serviceable condition. Intended to extend the serviceable life and improve whole life cost e.g. planned patching. Planned preventative maintenance is the most cost effective and efficient approach for maintaining our assets as it generally results in a progressive improvement in overall condition for longer periods of time, less frequent interventions required, improved public satisfaction, a gradual reduction in third party claims, more cost-effective long-term treatments, a progressive reduction in revenue costs over-time, more sustainable, and less disruptive.

- Treatment Type 3. Preventative – Intended to extend serviceable life and desirable to stop or delay further deterioration of the whole asset e.g. surface dressing. This has long been, and will continue to be, the primary treatment that will ensure we maintain network condition cost-effectively and with an appropriate balance between considerations of immediate safety, mid-term serviceability and long-term sustainability.

However, such treatments, although providing an excellent short to mid-life solution, cannot be used indefinitely. At some point more robust treatments are required to avoid the repetitive cycle of pothole repairs.

- Treatment Type 4. Improvement – Intended to bring the asset to an improved level that is fit-for-purpose e.g. strip-widening to manage overriding damage or deep reconstruction to ensure the foundation is fit for increasing traffic levels. This type of treatment usually has a high up-front cost but failing to upgrade carriageways that are no longer fit for purpose is likely to incur an even higher whole life cost due to frequent requirements for Type 1 and Type 2 repairs.
- Treatment Type 5. Renewal – Full replacement of an asset deemed beyond a serviceable / maintainable condition and therefore at the end of its lifecycle. The County Council will aim to avoid premature renewal of an asset by continuing to maintain it in a serviceable condition where it can be shown that Treatment Types 1, 2 and 3 remain cost-effective.

3.48 Although we have continued to maintain our assets, reduction in funding has had an impact on how we have been able to carry out planned maintenance. This has resulted in more urgent repairs being needed to keep the asset in a serviceable condition (keeping the assets safe for users, rather than improving their overall condition and restoring the structural integrity of the asset).

3.49 This approach ensured that potentially dangerous defects were kept to a minimum, helping to minimise third-party claims against the Authority. However, this reactive approach is one of the least cost-effective ways to manage highway assets and the relatively short-term fixes can increase costs over the life of the asset.

3.50 An increasing number of assets are ‘failing’ as they reach the end of their lives, requiring reactive maintenance or costly replacement of the whole asset.

3.51 Reactive maintenance is more costly and less efficient. This reactive approach has now become unsustainable and large scale planned maintenance is required to improve the overall condition of our assets.

3.52 There is no funding provision to replace highway infrastructure assets when they have failed. It is imperative that we tackle the deteriorating assets and maintain them in a serviceable condition, as inaction will result in an increase in asset deterioration and failure, an increased cost to address the issue and negative impact on our highways and delivery of our strategic objectives.

3.53 The list below provides a strategic overview of the broad approach that the County Council will apply to each of our asset groups.

Asset / Service Group with Outline Strategy and Service Levels

Carriageways

- The County Council has maintained its carriageways to a high standard. Whilst the unclassified rural network is showing some signs of increased deterioration, the County Council still has a network that is in comparatively good condition. However, due to underinvestment in carriageways, the network has seen a significant deterioration in recent years. Today, around 28% (1,230km) of carriageways are in a 'red' condition (i.e. poor) and 27% (1,190km) are in 'amber' condition (soon to be red).
- The pressures on the minor rural network and the limited budget for surface renewals will make it difficult to maintain existing conditions on the rest of the network.
- The County Council will rely on carriageway patching and surface dressing to maintain serviceability and sustainability, applying treatments as late as possible, without seriously compromising the surface condition.
- The County Council will aim to reduce pothole numbers by looking to move away from reactive repairs and the costly operation of our mobile roadmenders to more proactive repairs.
- Developing the risk-based approach may help us to focus only on those defects that represent a significant hazard, which may offset some of this concern.
- A large part of our unclassified road network has no formal construction. These roads have simply 'evolved' over the years from their previous stone-picked base through to their initial surfacing, probably bound with coal tar.
- Many of these roads are no longer fit for purpose, lacking the strength, width and edge restraint required to capably carry the traffic loads which they are subject to.
- Over time the County Council has addressed these problems by strengthening, widening and sometimes by providing passing bays and installing kerbs on the insides of bends.
- However, without an increase in the level of funding, there is little prospect that this type of work will be undertaken in the foreseeable future. These unclassified roads will therefore be particularly vulnerable to rapid failure.
- The County Council will consider carrying out additional inspections on these routes, where resources allow.
- If these roads suffer any catastrophic failure the County Council may have to consider temporary long-term closures or speed limits.



Footways

- The County Council will review and develop a footway hierarchy (and cycle hierarchy), in line with the WMHI code of practice and develop a risk-based approach to prioritising repairs and renewals, recognising that footways and cycle tracks are key assets in the sustainable transport agenda and enable people to choose modes of transport that have positive health and minimal carbon impacts.
- Developing our current lifecycle plan, to model the performance of the county's footways more effectively, is a key objective to inform future strategies and resource requirements.
- We will continue the development of our Local Cycle and Walking Infrastructure Plans (LCWIP's). These plans set out the vision and priorities for cycling and walking improvements in each of the areas to create convenient and practical cycling and walking networks to help and encourage people to travel more sustainably. While our footway network is deteriorating at a slower rate than our carriageways, it is showing signs of age. It will continue to require an extensive programme of renewal to maintain a steady state in the overall condition. The County Council will:
 - continue to undertake appropriate preventative treatment, where possible
 - review the use of a few remote rural footways in poor condition. However, due to extremely low levels of use, these are unlikely to be priorities for renewal
 - designate an additional category within the hierarchy that reflects the low level of use and assign maintenance standards comparable with our public rights of way network.

Cycle Tracks

- The term 'cycle track' is used in its widest sense (rather than the legal definition) to describe routes for cycling within the highway boundary that are physically separated from motor vehicles and pedestrians, such as by a kerb, verge, level difference or material delineation, or by paths away from the highway that have been designated for cycling or form part of the carriageway. Off-carriageway cycling provision may either be physically segregated from pedestrian facilities, or a common surface may be shared.
- Cycle tracks are currently managed as an integral part of either our footway or carriageway assets.
- The County Council will develop a separate inventory of cycle routes. This will enable the Council to:
 - understand the specific performance of the routes designated for cyclists
 - apply cyclist-specific risk assessments
 - develop service levels appropriate to cycling
 - monitor their condition and usage in relation to their location
 - develop lifecycle plans and plans based on current usage
 - develop future programme of works for their maintenance as defined in our Local Cycling and Walking Infrastructure Plans (LCWIP'S)
 - calculate the value of this asset.
- Subject to funding levels, the benefits of a more focused and risk-based approach will help to sustain the overall service level.

Drainage

- Improving the condition of highway drainage is a priority and better management of flooding (See Local Flood Risk Management Strategy 2024) is an essential part of improving resilience and sustainability of the network.
- The County Council does not have a full inventory of all its highway surface water drainage assets. In 2022, a survey to locate some culverts and drainage systems around rural county villages was undertaken. This survey discovered over 1,000 previously unrecorded culverts, 60 of which were large enough to be considered structures. A programme is in place to capture and log assets that are currently unrecorded.
- We have a comprehensive inventory of highway gullies, offlet kerbs, and highway culverts.
- Most of our interventions other than routine gully cleansing, are reactive i.e. in response to reports of flooding or blockages.
- A risk-based approach is undertaken for the cleansing of highway gullies and offlet kerbs, based on data that has been captured regarding silt levels at the time of cleansing.

Street Lighting and Electrical Assets

- The County Council faces a growing issue relating to the backlog of life-expired lighting columns in need of renewal. At the beginning of May 2024, 16,204 lighting columns (23.73%) were 30 years old or more (the design life is 25 years), with a further 4,594 lighting columns (6.73%) being past their service life (40 years old).
- The County Council's strategy for managing the risk to highway users is to undertake a programme of structural testing of the lighting columns, to undertake reactive maintenance as required and to seek appropriate renewal funding to enable the high-risk columns to be replaced (ideally as part of a planned scheme).
- Street lighting minor structures that are identified as being in 'Bad' condition are immediately reported for replacement - defects will include supports with visible holes or dents that will negatively affect its structural integrity.
- Street lighting minor structures are also subject to ad-hoc inspections, carried out when faults are reported (e.g. outages, luminaire issues etc). They are visually inspected, but no record of its condition is made – however, a works ticket is raised in the Highway Management System to tackle the reported fault.
- The other area of concern is the County Council's ageing network of buried electrical cables, most of which are laid directly in the ground. The cable networks supply the broader asset group (e.g. street lighting, illuminated signs and Variable Message Signs). There is an ever-increasing incidence of local cable faults which are becoming uneconomical to repair.

- The County Council's strategy for managing the electrical safety of this asset group is a programme of electrical testing, to undertake reactive maintenance as required and to seek appropriate renewal funding to enable the high-profile networks (e.g. Fosse Park / Everard's roundabout) to be replaced.
- The other lighting components in this asset group comprise luminaires, LED lamps, control cells and other associated equipment which were installed as part of the T5 Street Lighting Transformation Project (2014-19) and are maintained on a reactive basis.



Traffic Signals

- The Council's objective is to provide and maintain traffic signals and Intelligent Transport Systems (ITS) equipment to ensure the safety of road users and the efficient operation of the highway network.
- However, in 2022 13% of traffic signals were older than 20 years (typical lifespan is 15 years).
- Traffic signals are a key asset in terms of network management. The County Council will continue to maintain service levels (subject to budget levels and demand), to ensure efficiency and reliability of the network and to upgrade the communications telemetry through which we control and receive system management data.
- We will also undertake the upgrading of CCTV equipment and systems which have become obsolete.
- We will convert / replace non-LED signal equipment to LED to address future obsolescence issues regarding the supply of tungsten halogen lamps. This will also help to reduce both the energy use and carbon footprint to help meet the Council's net zero targets.
- We will continue to invest in Urban Traffic Control systems upgrades and new technological advancements and innovations.

Structures

- Highway structures cover a range of different sub-assets; the most visible are bridges, but there are other structures such as tunnels, culverts, retaining walls, and sign gantries.
- Highway-related structures concentrate the greatest amount of asset value into very discrete parts of the network, with any failure likely to be catastrophic in impacting local communities and costly to address. These assets are vital to maintaining accessibility, helping connect communities and support the economy.
- For this reason, structures are designed as long-term assets, and they require ongoing preventative maintenance to maximise their lifespan.
- The County Council's strategy is to undertake reactive and planned maintenance as required, based on the outcomes of the annual bridge inspection and assessment programmes.
- The County Council will target bridge repairs using a risk-based approach that will consider safety, immediate serviceability, long-term viability of the structure, network resilience and commercial traffic volumes (initially based on network hierarchy).
- Treatments to prolong the life of a structure will include strengthening works, brickwork repairs, concrete repairs, re-painting of steel beams and deck re-waterproofing.
- Treatments that prolong the life of non-structural components include parapet repainting and general minor maintenance repairs.
- The renewal of life-expired major bridges is expensive, requiring specific funding beyond that ordinarily provided for routine maintenance and renewal of smaller structures.
- The County Council will continue to target that no more than 15% of our bridge stock has a Bridge Condition Index (BCI) score less than 75 (out of 100) – a score at this level represents a structure in 'Fair' condition. A lower score represents a structure in 'Poor' or 'Very Poor' condition.

Safety Fencing / Vehicle Restraint System

- The County Council is developing a future programme of renewal and inspection.
- Future year re-tensioning programmes are to be developed with restorative repairs being undertaken where accidents compromise the function of the restraint.
- Leicestershire currently operates a four-year cyclical programme for inspection of its Vehicle Restraint System (VRS). Renewal works are undertaken within budget constraints and prioritised on a risk management approach. Dangerous defects will continue to be made safe reactively. As part of the Asset Management process, inspections to all known VRS locations and types, and the different asset type is either categorised or confirmed from a previous inspection. As part of the inspection a condition rating is made and any defects raised (for missing components, corrosion, vehicle impact etc.). The inspection data is kept within the County Council's Highway Asset Management System.
- In the first instance a risk management approach will be adopted with critical assets being assessed first. A risk rating is made against all reactive repairs and lists are maintained of all capital improvement repairs; within constrained budgets the most critical improvements are delivered first.

Road Markings

- The County Council will continue to improve the inventory of its carriageway markings and condition.
- Safety inspections are now recording observations about conditions. The County Council expects that these measures, coupled with the development of a risk-based approach, will enable it to improve the condition of those markings that support network safety.
- Safety critical and regulatory markings will be given priority.
- The following 'priority' road markings will be maintained:
 - stop and give way markings
 - markings associated with traffic regulation orders
 - double white line systems
 - warning centre line markings (TSRGD Legend 1004 and 1004.1)
 - markings associated with formal pedestrian crossing places e.g. signalised/ zebra crossings and mini roundabouts.
- Other markings will only be renewed, if still required, following maintenance work, or other identified needs.

Traffic Signs (Illuminated)

- The County Council will establish clear criteria for responding to sign damage using a risk-based approach and clarify the timescale for repairing or decommissioning low-risk signs.
- Priority will be given to safety critical and regulatory signing.
- Except for damaged signs that the County Council determines require a quick response, all other sign damage will be dealt with on a risk-based approach.
- We will establish criteria for undertaking decluttering of redundant signs in parallel with scheduled sign maintenance.

Traffic Signs (Non-illuminated)

- The approach will be the same as for illuminated signs, plus we will capture our inventory data for this asset group to help us manage their condition, type, replacement programmes, decluttering and maintenance.

Street Furniture

- Over the years there has been an increasing proliferation of this type of feature throughout the network, often installed without a clear strategy.
- We have basic inventory data about these assets, and we do not currently capture maintenance costs.
- We will consider collecting this data and adding it to our HMS system on an estimated basis, rather than developing an item-by-item record.
- These items will be reviewed using a case-by-case risk-based approach, leading to a register of locations where renewal is not required and making provision for subsequent decommissioning of the asset.
- The County Council will establish criteria for undertaking decluttering of redundant street furniture in parallel with scheduled street furniture maintenance.

Trees - Within the Adopted Boundary

- Trees contribute significantly to the quality of the highway corridor. They provide environmental, aesthetic, functional and economic benefits to the highway network and its users.
- Trees in the highway corridor have made a significant contribution to the Leicestershire landscape since the post war period.
- As such, the County Council's highway trees are considered as an asset.
- Trees are large, dynamic living organisms which can be affected by environmental factors and human activities.
- They can potentially become hazardous if they are not inspected and managed appropriately. It is important that appropriate species are selected for the location and that planting method is suitable giving trees the greatest chance of surviving and thriving so that they don't become a maintenance liability in the future.
- Trees within the highway are managed in accordance with the County Council's 'Tree Management Strategy', which balances the value of the tree assets against the potential risk they present to road users. The Tree Management Strategy states that we will conserve and enhance our trees. This is supported by regular highway inspections and works to make safe or remove trees that pose significant health and safety risks.
- The County Council has developed an action plan to address the risks of Ash Dieback disease.

Environment - Nature and Biodiversity

- We have a duty to conserve and enhance biodiversity under section 40 of the Natural Environment and Rural Communities Act 2006. We do this by:
 - Undertaking environmental appraisals to identify any protected habitats and species, to ensure that our highway design takes account and avoids / minimise loss and / or achieves a net gain for biodiversity.
 - Aiming to integrate good practice to support species and habitat into the specifications relating to grass and hedge cutting maintenance.
 - Undertaking the treatment of weeds where they can cause damage to the highway and record and treat isolated, invasive and noxious weeds.
 - Our work around monitoring the spread of Ash Dieback within the county is providing valuable intelligence to help further understanding of the disease and its' impact on ecology and landscape. We are also managing and working to reduce the impact of the disease on our assets.
 - When undertaking operational work on highway habitats we ensure that we are compliant with the Wildlife and Countryside Act 1981 and all other environmental legislation, such as the Environment Act 2021(for example Leicestershire, Leicester and Rutland Local Nature Recovery Strategy) that is relevant to our operational work.
- Whilst maintenance of these assets contributes very little to the serviceability of the network, the quality of life and biodiversity aspects are very important, as well as recognised health and well-being benefits and therefore need to be considered.
- We will work with others to help us promote species-rich highway landscapes, provide advice and support and fulfil any legal duties. For example, the Leicestershire Urban Verge Wildlife initiative.

Winter Treatment

- The County Council currently treats approximately 49% of the carriageway network with salt (including cycleways which form part of the carriageway) on a precautionary basis in advance of any forecast ice or snow.
- Footways are only treated when there is prolonged snow or ice.
- This service is highly valued by stakeholders.
- The County Council will annually review the winter service plans and network to ensure it is appropriate and meets statutory requirements.

Communication

- 3.54 Engagement with stakeholders (e.g. staff, elected member, senior officers, other agencies, media), is an important part of the process to ensure that our asset management strategy is properly informed and that stakeholders understand our intentions and priorities.
- 3.55 The Highway Infrastructure Asset Management Plan (HIAMP) describes how and what we will communicate with stakeholders.
- 3.56 We will build on the information we provide to our customers in a more user-friendly format, and we will seek feedback through satisfaction surveys on the improvements we implement, along with regular dashboard reporting on the overall performance of the service.
- 3.57 We will ensure that any information on programmed works being carried out is communicated in a timelier manner.



4. Alignment with the Network Management Plan

- 4.1 The Highway Asset Management Strategy (HAMS) and the supporting Highway Infrastructure Asset Management Plan detail the approach that the authority will take to managing and maintaining the fabric of the network.
- 4.2 These documents have been developed and operated in conjunction with the Network Management Plan (NMP), which details the County Council's approach to managing the operation of the network to ensure the expeditious movement of traffic. This delivers a co-ordinated approach to the overall management of the network.
- 4.3 Highway maintenance can improve network efficiency, through careful programming and coordination of maintenance works, especially on key routes, to minimise congestion and disruption. It can also reduce the likelihood of incidents on important routes and help encourage modal shift, by improving conditions for pedestrians and cyclists.
- 4.4 Activities within the highway resulting from highway maintenance can, however, affect how available and efficient the network functions.
- 4.5 When planning and undertaking maintenance works, the structural condition of the highway asset is first and foremost a major consideration, but prioritisation should also be informed by other factors, for instance our duty to keep traffic moving on the network.
- 4.6 To ensure that our network management duty is a key consideration when planning and delivering our highway maintenance functions, we will seek to:
- Make strategic decisions based on our understanding of both network condition and its function. Using common network hierarchies to ensure that the Highway Infrastructure Asset Management Plan and the Network Management Plan apply a consistent approach to prioritisation and the consideration of risk and resilience.
 - Make strategic decisions on treatment type. We will move decision making away from the imminent and the urgent to a planned regime, where the needs of the asset and network are better understood. This will enable appropriate 'preventative' maintenance treatments to be planned within a wider whole-life approach. We will minimise the number of unplanned repetitive 'reactive restorative' treatments by:
 - targeting 'preventative' work in the right place and at the right time to extend the serviceable life of the network
 - doing as much as possible in a planned and coordinated way to reduce the cost and create efficiencies (accepting that safety critical maintenance will take precedence)
 - treatment types. This may on occasions result in delaying maintenance works to coordinate with other planned works or opting (subject to funding) to a different more costly treatment type, for example a renewal treatment rather than planned restorative
 - Reduce our network occupation. Focusing on planning, coordination and scheduling of maintenance work. Considering the timing and duration of works to limit the impact or avoid peak time and aiming to carry out our works outside traffic sensitive periods, where possible
 - Demonstrate parity. Adhering to the processes and procedures set out in the Highway Permit Scheme and the principles outlined in the 'Road and Street Works Framework Guide', with regards to our expectations of works promoters, planning and delivering work on the network.

5. Climate Change

- 5.1 Accessible, safe, and reliable transport infrastructure is fundamental to day-to-day life. Climate change can disrupt operations and damage the transport network, through hazards such as flooding, subsidence, high and low temperatures, and other adverse weather events.
- 5.2 We will understand the need to adapt our operations to the changing climate, building our response into 'business as usual'.
- 5.3 Consideration will be given to whole life carbon costs; appraisal of materials, products and treatments for maintenance for environmental impact, nature conservation and biodiversity; and risk assessment and mitigations for the effects of extreme weather on highway infrastructure assets (Climate Change Adaptation).
- 5.4 We will consider the following issues when considering our approach to highway maintenance:
- carbon costs and energy reduction
 - noise
 - materials utilisation
 - waste management and recycling
 - air quality and pollution control
 - cost of adaptation
 - nature conservation and biodiversity
 - environmental intrusion.
- 5.5 Highway maintenance sustainability links to the wider environment and sustainability principles and outcomes of Leicestershire County Council, our stakeholders and partner contractors. Our key focus for responding to climate change includes the following:
- Utilising available guidance and tools to support and improve our ability in planning for and responding to seasonal and adverse weather events such as extreme temperatures, high winds, flooding, and precipitation.
 - Working with partners to improve air quality and reduce carbon footprint.
 - Increase usage of environmentally friendly and recycled materials such as Warm Mix Asphalts (WMA's).



6. Strategy Review

- 6.1 This Strategy is aligned to our Highway Asset Management Policy. Any changes in either document will be reflected across both.
- 6.2 This strategy will be continuously reviewed, either wholly or in part, and will be updated when appropriate. It will be fully reviewed at least every three years, or earlier, if there are significant changes in national policy or guidance that affect asset management.



7. Glossary and Abbreviations

Glossary

Annual Depreciation - The value by which the asset depreciates over a 12-month period because of condition deterioration.

Asset - An asset refers to an item that forms part of the highway fabric, i.e. carriageway, footway, and street lighting.

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 Management System - The hardware and software that supports Asset Management practices and processes. Used to store the asset data and information.

BS ISO 55000, 55001 & 55002 - The British and International Standard for the Implementation of Asset Management.

Capital Funding - Grants from Government through the Department for Transport and contributions to fund capital schemes to pay for items like roads.

Carriageway - Refers to a surfaced right of way intended for use by vehicles and maintained at the public expense.

Condition Surveys - Recommended to identify deficiencies which, if untreated, are likely to adversely affect long term performance, serviceability, and safety.

Culvert - A structure that allows the flow of water under an asset.

Cycleway - Facilities used by cyclists. These include cycle lanes on carriageways, cycle tracks adjacent to or away from carriageways, on carriageway provision with cycle symbols and shared use facilities.

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.

Footway - Pedestrian path maintained at public expense that is usually alongside a carriageway.

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

Hazard - A source of potential harm.

Highway - a highway is a road or street or thorough fair that is maintained at the public expense.

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

Infrastructure - Infrastructure describes fixed assets that form part of a larger network, such as carriageways, footways, drainage, lighting, fencing and the like.

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 - A term used to describe the activities and operations undertaken to manage / maintain highway assets, e.g. inspection, assessment, renewal, upgrade etc.

Metalled Roads - Those roads constructed with the aid of cement, concrete, or by bitumen, or coal.

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.

Pavement - Footway

Preventative Maintenance - The treatment of an asset at an optimal time to prevent asset deterioration, enabling the efficient use of funding. Essentially implementing the principle that prevention is better than cure.

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.

Revenue Funding - This is income that the authority gets to deliver everyday services. It is made up of an element of business rates and Government grants through the Department for Communities and Local Government.

Risk Based Approach - A risk-based approach for highways provides a framework for making proportional decisions about maintenance and repair activities, based on key factors and available data.

Safety Fence - A barrier intended to prevent an errant vehicle leaving the highway.

Safety Inspection - Designed to identify all defects likely to create danger or serious inconvenience to users of the network or the wider community. The risk of danger is assessed on site and the defect identified with an appropriate priority response.

Service Inspection - Contains detailed inspections tailored to the requirements of highway assets and elements to ensure that they meet requirements for serviceability. These inspections also include inspections for network integrity intended to maintain network availability and reliability.

Statutory Undertaker - Is a legal term used to describe those organisations and agencies that have certain legal rights and obligations when carrying out development and infrastructure work. Typically, they are utilities and telecoms companies: those who deal with water, gas, electricity, etc.

Structure - A structure can be a bridge, retaining wall or culvert.

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

Whole Life Cost - Total cost of the asset over the term of its life including planning, design, construction, acquisition, operation, maintenance, rehabilitation, and disposal.

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 / Acronyms

ADEPT	Association of the Directors of Environment, Economics, Planning and Transportation (formerly County Surveyors' Society (CSS))
BCI	Bridge Condition Indices
BSCI	Bridge Stock Condition Indicator
BS EN ISO	British Standard, European Standard, International Standard
CONFIRM	Computer Based Maintenance Management System
CVI	Coarse Visual Inspection
DfT	Department for Transport
DMRB	Design Manual for Roads and Bridges
GIS	Geographical Information System
GRC	Gross Replacement Cost
HAMP	Highway Asset Management Policy
HAMS	Highway Asset Management Strategy
HIAMP	Highway Infrastructure Asset Management Plan
HMOP	Highway Maintenance Operation Plan
LED	Light Emitting Diode

LTP	Local Transport Plan
MTFS	Medium Term Financial Strategy
PROW	Public Rights of Way
RBA	Risk Based Approach
ROW	Rights of Way
ROWIP	Rights of Way Improvement Plan
SCRIM	Sideways Force Coefficient Routine Investigation Machine
TRO	Traffic Regulation Order
UKPMS	United Kingdom Pavement Management System
UKRLG	United Kingdom Roads Liaison Group
VRS	Vehicle Restraint System
WMHI	Well Managed Highway Infrastructure
WGA	Whole of Government Accounting

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