

Leicestershire County Council's Highway Infrastructure Asset Management Plan – Review

Control details

Document location	Leicestershire County Council – Transport Policy and Strategy Group:
Production software	Microsoft Word
Author	Royston Kemp

Document amendment record

Issue	Amendment Detail	Author	Date considered	Approved
2	Two-year refresh	RK	Oct-19	LM/AC

Contents

1	Background and Context.....	4
1.1	Introduction	4
1.1.1	What is highway asset management?	4
1.1.2	The benefits of asset management	4
1.2	Purpose of this document	5
1.2.1	Supporting the corporate strategic plan	8
1.2.2	Supporting the Local Transport Plan (LTP3)	8
1.2.3	Supporting the Environment & Transport Commissioning Strategy	10
1.3	What are the highway assets?	10
1.4	The value of the asset.....	12
1.5	Legal requirements	12
1.6	Asset management goals.....	13
2	Current state of assets and how we measure	15
2.1	Historical investment summary	15
2.2	Network Hierarchies.....	16
2.3	Condition Assessment and Asset Performance	21
2.3.1	Safety Inspections	21
2.3.2	Service Inspections	21
2.3.3	Condition Surveys	21
2.3.4	Classification of asset condition.....	23
2.4	The condition of our assets	24
3	Service Aspirations	27
3.1	Stakeholder expectations.....	27
3.2	Life cycle planning.....	29
3.3	Levels of service and Performance	42
3.4	Funding requirements for steady state.....	44
4	Delivery of the plan	45
4.1	Communication	45
4.2	Customer Feedback.....	47
4.3	Data Management.....	48
4.4	Competences and Training	49
4.5	Principles of a risk based approach	49
4.6	Developing a works programme.....	50

4.7	Investment aspirations	51
4.8	Milestones.....	52
5	Risks	53
5.1	Managing risk.....	53
5.2	Protecting the environment and dealing with climate change	54
5.3	Network Resilience	55
5.4	Growth in demand.....	55
6	Governance	56

1 Background and Context

1.1 Introduction

The highway infrastructure asset in Leicestershire forms a critical part of the social and economic infrastructure that supports the well-being of the County's residents and businesses as well as those in the wider regions. The highway infrastructure asset is a large and diverse asset including carriageways and footways, bridges, street lighting, traffic signals and drainage. It is the County Council's greatest asset which is valued at just under £ 10.4 Billion.

Maintaining such an asset requires significant funding and many co-ordinated operations. In order to provide the best outcomes, operations must be well managed to extract the greatest value for the funding invested.

1.1.1 What is highway asset management?

The International Standard for asset management (ISO 55000) defines *asset management* as the "coordinated activity of an organization to realize value from assets". Assets are thus defined as items, things or entities that have potential or actual value to an organisation. Highway asset management is the term that is used to explain the systems and processes that affect the highway in order to deliver value.

Although asset management covers every stage of an asset's lifecycle from acquisition to disposal, this asset management plan is focussed on the management and maintenance aspects of highway infrastructure assets since this is where the majority of the County Council's highway related activities and funding are focussed.

A robust asset management plan provides answers to the following key questions:

- What assets do we have?
- What condition is it in?
- What do we want the asset to provide?
- How will we ensure that the asset provides what we want and what will it cost to achieve this?

1.1.2 The benefits of asset management

There are many benefits of asset management. The County Council sees the main benefits as:

- Making better informed decisions about investments. Decisions are made using a long-term 'whole-life' approach leading to optimum outcomes.
- Better understanding risks associated with these assets, not simply health and safety, but also financial risks, environmental risks and hazards which may affect the service it provides; for example, preventing the closure of a bridge.

- Aligning highway maintenance service provision to the County Council’s objectives.
- Aligning the service or value provided by the asset to customer expectations.
- Increasing transparency of the challenges faced and the performance of the asset as well as how we are meeting our statutory duties leading to improved customer satisfaction, stakeholder awareness and confidence.
- Establishing clear levels of service.
- Understanding the consequences of changes to investment levels.

A key benefit of an asset management approach is to move decision making away from the imminent and the urgent to a planned regime where the needs of the asset are better understood so that appropriate preventative maintenance treatments can be planned within a wider whole-life approach. This enables decisions to change from those based on a worst-first priority to those that delivers greatest value.

1.2 Purpose of this document

The County Council considers asset management to be a framework which can be applied to any of its highway assets as set out in Figure 1. This plan describes the framework within which answers to the key questions in Section 1.1.1 - What is highway asset management, are provided.

The purpose of this plan and the intended audience is:

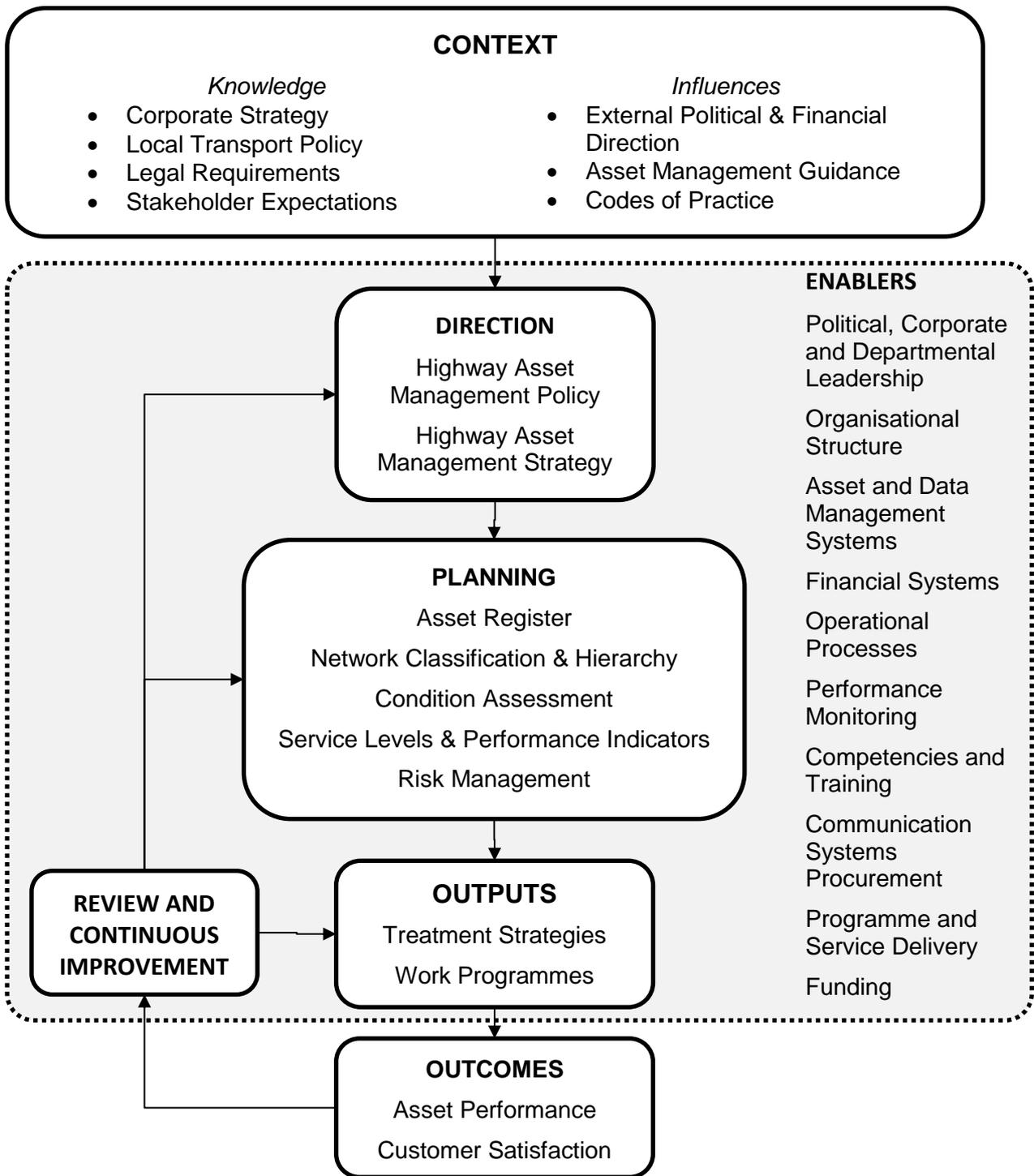
- To provide a reference for staff members of the Environment and Transport directorate and its contractors on specific aspects of highway maintenance.
- To provide a document for Council Members that assists with decisions to be made about managing and maintaining the highway asset.
- To allow members of the public to gain sufficient understanding on the challenges ahead and actions to be taken to maintain the highway.
- To better understand risk and its impacts on the asset.
- To set out the asset management requirements for the highway asset in a recognised format.

The plan also includes aspirations and milestones to be achieved in the period to 2022/23.

The document has been produced following the UK Roads Liaison Group Well-Managed Highway Infrastructure: A Code of Practice (published October 2016) and the Highway Maintenance Efficiency Programme (HMEP) - Highway Infrastructure Asset Management Guidance Document (published May 2013). These guidance’s provides the basis for a consistent approach and understanding of the implementation and delivery of asset management benefits. This HIAMP explains how the County Council is adopting each of the 36 recommendations in Well-Managed Highway Infrastructure and the 14 recommendations in the Highway Infrastructure Asset Management guidance document

As a framework, it does not include all details of the highways service. The County Council maintains detailed operating procedures for internal use which are some of the enablers of this plan as shown in Figure 1. Communication with internal and external stakeholders is vital and information about how the County Council will communicate its activities is included. Data collection and management is also a key activity which supports all the functions on this framework and the County Council's approach to this activity is also included.

Figure 1. The Asset Management Framework



1.2.1 Supporting the corporate strategic plan

The Strategic Plan sets out the council's vision and priorities for the county and the organisation and has developed Five strategic outcomes that describe the councils vision for the people in the county:

1. Strong Economy
2. Wellbeing and Opportunity
3. Keeping People Safe
4. Great Communities
5. Affordable and Quality Homes

The Strategic Plan recognises that in the foreseeable future the council is facing major challenges dealing with the most difficult funding position that it has faced since World War II, with significant reductions now needed in our spending, due to budget deficit reduction requirements imposed by central government. The Strategic Plan sets out how the county council will continue to support the corporate vision through this period of austerity by focussing on the five strategic priority areas. The HIAMP will directly contribute to supporting these strategic priorities.

Strategic Priority	The highway infrastructure asset management plan supports this by:
Wellbeing & opportunity / Affordable and quality homes	Recognising the need to change the way that we deliver services and by looking at the life cycle of assets in order to promote growth
Strong Economy	Developing the asset management approach in order to make better informed strategic decisions and to ensure that the best use of resources is made.
Keeping people safe / Great Communities	This asset management approach will support the development of an analytical "risk-based" approach to asset management to ensure that, within the constraints of reducing budgets, treatments will be more effectively directed to optimise the condition of the network.

1.2.2 Supporting the Local Transport Plan (LTP3)

The Local Transport Plan (2011-2026) defines a long-term vision for Leicestershire's transport system as:

"Leicestershire to be recognised as a place that has, with the help of its residents and businesses, a first-class transport system that enables economic and social travel in ways that improve people's health, safety and prosperity, as well as their environment and their quality of life."

The following priorities in the LTP are supported by the HIAMP.

LTP Priority	The HIAMP supports this by:
Our transport system provides more consistent, predictable and reliable journey times for the movement of people and goods	The provision of an up-to-date local road hierarchy which more appropriately reflects stakeholder expectations, levels of use and strategic importance.
Our transport system and its assets are effectively managed and well maintained	Deploying a formalised asset management approach to ensure the optimal use and direction of the county council's resources in maintaining the county's highway assets for the benefit of current and future stakeholders.
Our transport system is resilient to the impacts of climate change	Using the Resilient Network to influence the way we make decisions about the asset.
The negative impact of our transport system on the environment and individuals is reduced	Prioritising maintenance interventions and treatment choices using a risk-based approach. Seeking to maximise the serviceable life of assets and therefore reduce the frequency of asset renewals. Acknowledging that Environmental assets contribute significant amenity value to stakeholders.
More people walk, cycle and use public transport as part of their daily journeys, including to access key services	The provision of an up-to-date network hierarchy for carriageways, footways and cycleways that more appropriately reflects stakeholder expectations, levels of use and strategic importance. Defining an inventory of cycle routes that will allow the county council to better understand the value of this asset.
The number of road casualties is reduced	Prioritising maintenance interventions and treatment choices using a risk-based approach.
There is improved satisfaction with the transport system amongst both users and residents	Developing a new reporting approach to ensure that those areas where our surveys of customer satisfaction demonstrate inadequate satisfaction are carefully considered.
The natural environment can be accessed easily and efficiently, particularly by bike or on foot	The application of up-to-date footway and cycleway hierarchies with associated treatment strategies.

1.2.3 Supporting the Environment & Transport Commissioning Strategy

The County Council recognises the significant challenge that it faces in delivering services against a background of austerity measures. The Medium Term Financial Strategy (MTFS) sets out this challenge and identifies where the council intends to deliver efficiencies and savings in the medium term. To help support these changes the council has developed a Corporate Commissioning and Procurement Strategy which was introduced in 2014/15. The Environment and Transport department has developed a Commissioning Strategy, adopting the principles set out in the Corporate Strategy to ensure that services remain fit-for-purpose and that decisions about service delivery are evidence based and that the implications of any changes in service delivery are understood and appreciated. This HIAMP supports the Environment & Transport Commissioning Strategy by setting out an evidence-based approach for commissioning appropriate work programmes that will meet the management and maintenance needs of the highway infrastructure asset.

1.3 What are the highway assets?

The assets covered by this HIAMP have been divided into asset groups. The key asset groups are carriageways, footways and cycleways, structures, street lighting, traffic signals and drainage; these comprise the majority of our asset by asset value. There are a number of other assets which are also covered by aspects of this plan; these have been grouped under street furniture and soft estate. Summary information about the assets in our Asset Registers is given in Table 1.

Table 1. Our highway assets

Asset Group	Asset Type	Quantity
Carriageway	A Roads	421 km (262 miles)
	B Roads	238 km (148 miles)
	C Roads	1,308 km (813 miles)
	Unclassified Roads	2,368 km (1,690 miles)
	<i>Total</i>	4,335 km (2,694 miles)
Footways and Cycle ways	Primary Walking Routes	67 km (42 miles)
	Secondary Walking Routes	230 km (143 miles)
	Link Footways	759km (472 miles)
	Local Access Footways	2,719 km (1,690 miles)
	<i>Total</i>	3,775 km (2,347 miles)
	Cycle lane forming part of the carriageway	TBC km
Cycle track, a highway route for cyclists <u>not</u> forming part of the public footway or carriageway	TBC km	
Cycle trails, leisure routes through open spaces.	TBC km	

	<i>Total</i>	TBC	km
Structures	Bridges	707	No.
	Footbridges	60	No.
	Culverts	139	No.
	Subways	15	No.
	Retaining Walls	116	No.
	Gantries	9	No.
Street Lighting	Street Lights	71,292	No.
	Illuminated Signs and Bollards	9,017	No.
	Subway Units	270	No.
	LCC owned private electricity cable	404.32	Km
	Feeder pillars	555	No.
	Base stations	33	No.
Traffic Management	Signalised Junctions	404	No.
	Zebra Crossings	112	No.
	Pelican Crossings	372	No.
	Puffin Crossings	11	No.
	Toucan Crossings	125	No.
	School Flashing Units	519	No.
	Vehicle Activated Signs	421	No.
Drainage	Gullies	128,983	No.
	Grips	38,060	No.
	Linear drainage channels also, drainage connections, soakaways, Sustainable Urban Drainage Systems (SUDS) in the highway and attenuation assets	2,133	No.
Street Furniture	Non-Illuminated Signs	89,965	No.
	Non-Illuminated Bollards	2,229	No.
	Grit Bins	780	No.
	Cattle Grids	60	No.
	Vehicle Restraint Systems	102km	.
	Weather Stations	6	No.
Soft Estate	Trees, verges, visibility splays and hedgerows		

Assets on the Public Rights of Way (PROW) network are not included in this plan but are covered in the Rights of Way Improvement Plan for Leicestershire.

With a small number of exceptions, the following assets are typically managed by other organisations, although they may be within the highway:

- Park and Ride sites
- Car Parks
- Bus Shelters
- Street name plates
- Assets managed by Highways England
- Car Parking Assets including Pay & Display machines

1.4 The value of the asset

The highway infrastructure assets in Leicestershire have been valued in accordance with Whole of Government Accounting (WGA) principles. WGA values the asset based on a replacement with a modern equivalent asset rather than on an historical cost basis. The investment that would be required to completely replace the asset with an 'as new' modern asset is called Gross Replacement Cost (GRC). An assessment of the deterioration in the asset is also used to calculate an amount of depreciation and, by deduction from the GRC, the current value of the asset or Depreciated Replacement Cost (DRC) is obtained. Acquiring assets and disposing of assets will affect both GRC and DRC while maintenance activity on existing assets will affect only the DRC.

Table 2. Summary table of the WGA asset valuation

Asset	Gross Replacement Cost (GRC) £ ,000's	Depreciation £ ,000's	Depreciated Replacement Cost (DRC) £ ,000's
Carriageway	4,837,440	14,955	4,696,575
Footways + Cycle ways	570,314	67,949	73,454
Structures	403,505	6,167	192,638
Street Lighting	105,227	815	72,629
Traffic management	12,964	754	6,041
Street furniture	29,292	772	11,371
Total	5,958,742	91,412	5,052,708

In Leicestershire, the Gross Replacement Cost of highway infrastructure assets (excluding land) was valued at just under £6 billion; currently the value of these assets has been calculated at just over £5. billion.

1.5 Legal requirements

The County Council has many statutory duties which are set out in legislation. For this document, the principal duties are:

- As a highway authority, the County Council must maintain highways maintainable at public expense - Section 41 of the Highways Act (1980).
- As a local traffic authority, the County Council must manage the road network to secure the expeditious movement of traffic on its own network and to facilitate the expeditious movement of traffic on other road networks -Section 16 of the Traffic Management Act (2004).

These statutory duties must be fulfilled above and beyond the objectives of this HIAMP.

1.6 Asset management goals

A number of statements about asset management and supporting principles have been set out in the Highway Asset Management Policy. These have been interpreted for this document as our asset management goals and a set of actions to achieve these goals.

Our Asset Management goals are to:

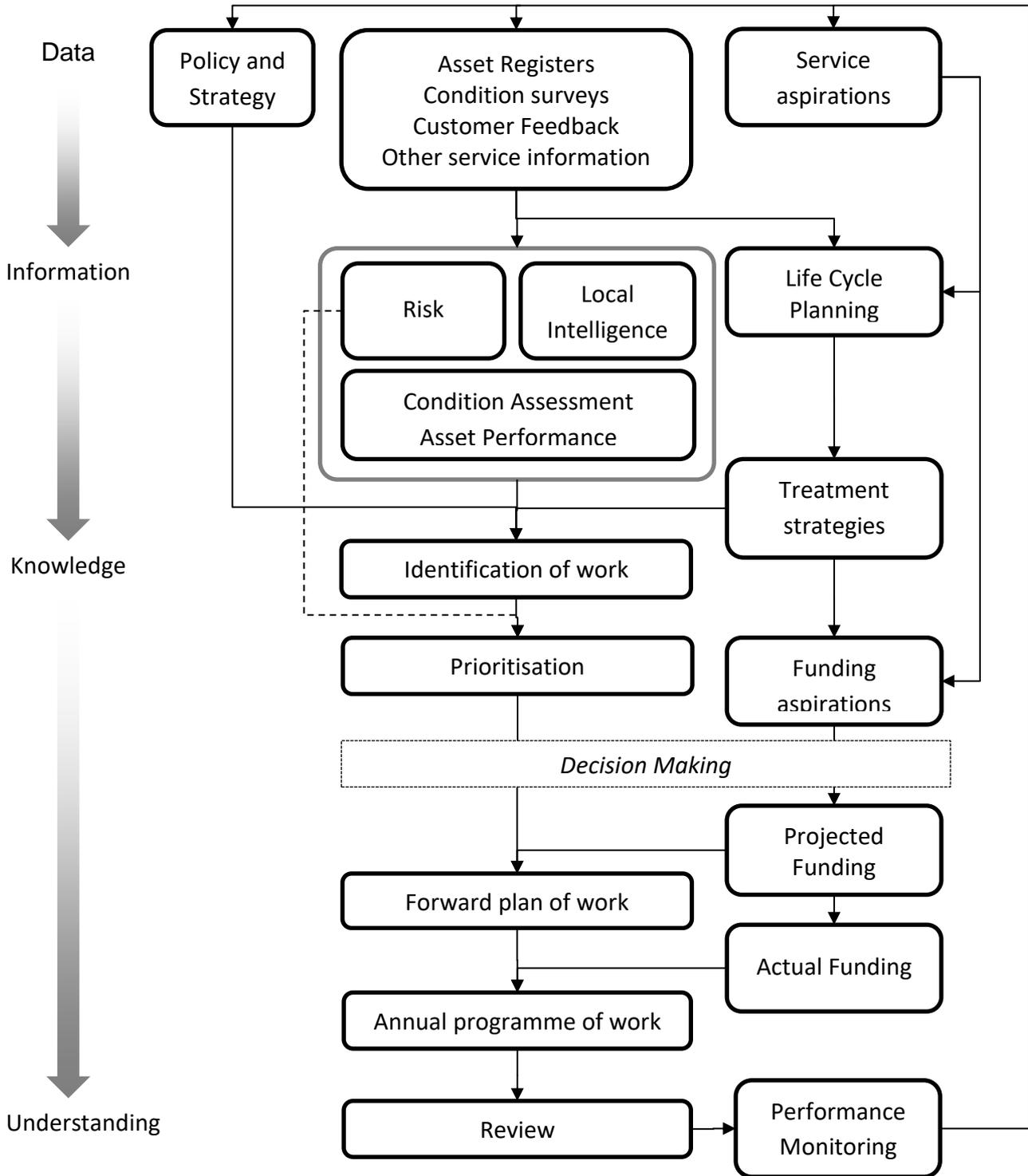
- Ensure the optimal use and direction of the County Council's resources in maintaining the county's highway infrastructure assets for the benefit of current and future stakeholders
- Take account of the safety of stakeholders, customer expectations, network hierarchy, levels of use, network condition, environmental impact and the available resources to prioritise maintenance interventions and treatment choices.

To achieve these goals, we will:

- Adopt an asset management approach.
- Consult with stakeholders.
- Use preventative and restorative treatments in the right place and at the right time.
- Make informed decisions supported by life cycle analysis.
- Develop programmes of work for all key assets.
- Rationalise our assets by removing redundant and low value items.
- Develop our processes to focus on how our assets can be improved to encourage sustainable travel.
- Account for the environmental impact of our work.
- Improve our decision making through the use of the resilient network.
- Endeavour to maintain our winter service networks.
- Collaborate with others.
- Continue to review and challenge our approach.

Our asset management approach is set out as a generic system in Figure 2. This system shows that the use of data is fundamental and develops into greater understanding throughout the cycle. The items in this system are covered in the relevant sections throughout this HIAMP.

Figure 2. The generic asset management system



2 Current state of assets and how we measure our performance

2.1 Historical investment summary

Funding for the highway infrastructure is in the form of either capital or revenue and can come from a variety of sources.

Capital investment must be spent on acquiring assets or structural maintenance. Capital expenditure adds to the value of the asset rather than just maintains it. Capital investment comes from the central government via the road maintenance grant and the local transport grant as well as discretionary grants such as the incentive fund scheme and the challenge fund. Capital investment can also be raised from within the Council through prudential borrowing, raising capital receipts or by directing revenue funding to capital use.

Revenue funding is typically spent on all other areas that support the operation of the highway infrastructure such as routine maintenance, for example grass cutting and energy for street lighting. Revenue expenditure covers day to day expenditure which maintains, rather than enhances, the value of the asset. Revenue funding comes from the central government revenue support grant and locally raised revenue such as council tax and business rates.

Figure 3 provides an overview of recent expenditure on the highway infrastructure asset.

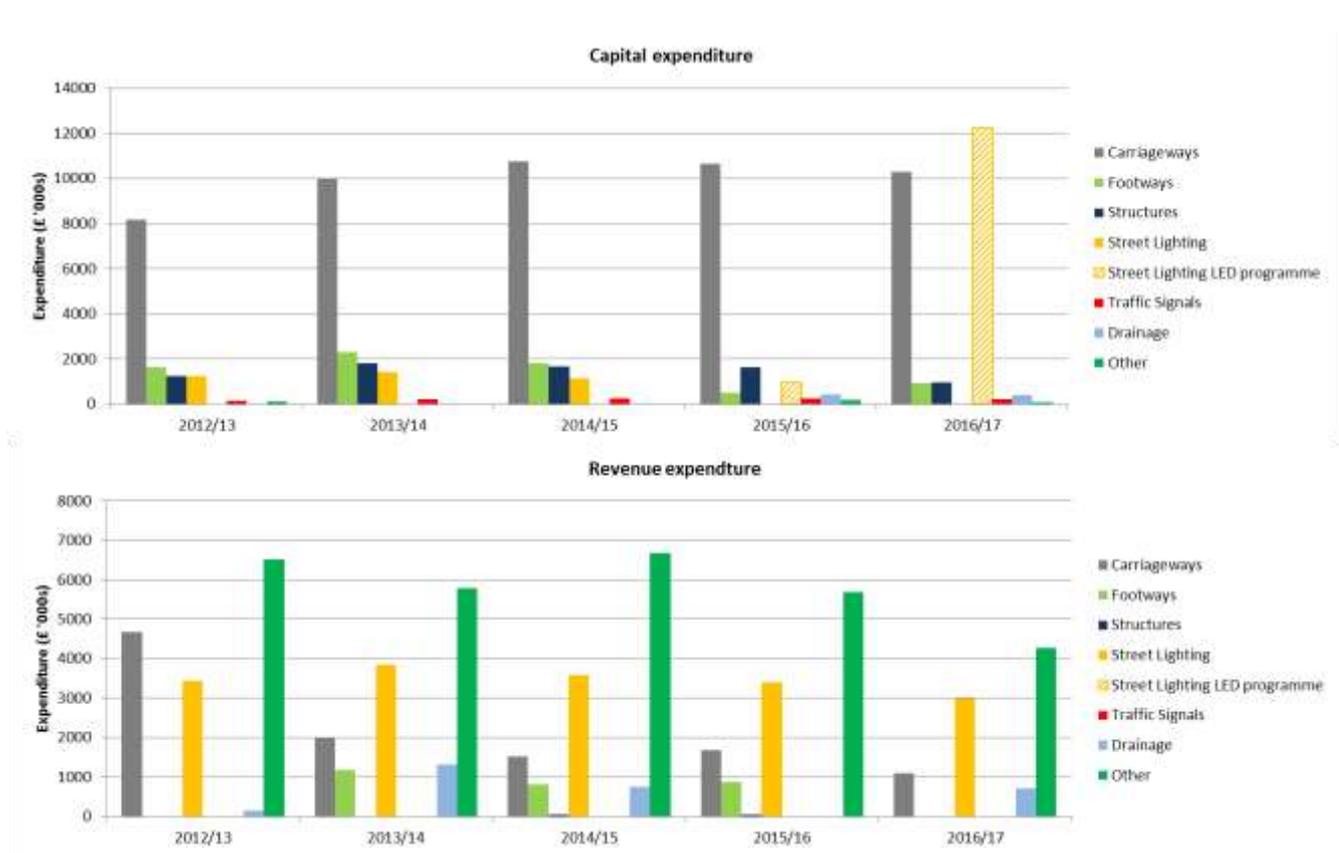


Figure 3. Recent expenditure on the highway infrastructure asset

2.2 Network hierarchies

A network hierarchy based on the function of the road is a foundation of our asset management approach for carriageway, footway and cycleway assets and enables risk-based maintenance strategies to be formed. The Council has defined a local network hierarchy as recommended by the Code of Practice “Well-Managed Highway Infrastructure” and this is presented in Tables 3 and 4.

The network can be presented in different ways according to different needs, for example:

- Road Classification is still used for the collection and presentation of carriageway condition data. Although this does not precisely reflect the road network hierarchy, it is produced due to statutory reporting requirements.
- A Resilient Network is defined as to receive priority over other hierarchies to ensure economic activity and access to key services during disruptive events.
- A Winter Service Network is defined to manage which part of the network gritting treatment is needed during the winter.
- Traffic Sensitive Network is defined to support network management activities.

The network hierarchy has been formed in order to most appropriately represent the type and use of roads in the county. The hierarchies in the Code of Practice have been used as a basis with the following key amendments:

- Leicestershire is centrally located, and its network provides key strategic transport links in the region. Strategic Routes have been separated into Major Routes and Other Routes. Major Strategic Routes play the biggest role in local and regional economies.
- It is recognised that the utility of rural roads is different to that of urban roads. For example, minor urban roads provide a greater level of amenity value than minor rural roads and are usually engineered with higher quality kerbing and increased drainage.
- Field roads, divorced laybys, redundant footways and defined un-metalled footways have been added to the hierarchy as part of our risk-based approach so that a specific maintenance regime can be defined for these assets.

Within these hierarchies, either an urban or rural locality is a key factor used to classify the asset. These localities are defined in this HIAMP as:

- A carriageway or footway in an urban locality will typically have a high density of properties with frontages. The road will typically have restrictions in the form of a traffic regulation order, road markings and signage, have positive drainage, street lighting and have kerbs and footway provision. Footways will be constructed to a high specification with a likelihood of vehicle over-run and there will be dedicated vehicle accesses. Speed limits are typically 40mph or less. A residential road or footway with these properties in a rural village could be classified as an urban locality.

- A carriageway or footway in a rural locality will typically have a low density of properties with frontages. The road will typically have no restrictions in the form of traffic regulation orders and will have limited highway infrastructure in place in terms of drainage, street lighting and footway provision. Speed limits are typically more than 40 mph. Footways will be constructed to a lower specification than in urban localities due to low likelihood of vehicle over-run with dedicated vehicle accesses.

The network hierarchy has been defined to optimise both the safety inspection regime but also the highway maintenance strategy using a risk-based approach. The County Council recognises that due to the function of the asset and customer expectation, different maintenance approaches can be taken to optimise resources. It would be expected that the surface of a high-speed strategic route is maintained to a higher standard than a rural country lane; the user of the latter should drive at a lower speed than on a strategic route as they would reasonably expect a lower ride quality, some surface imperfections and potentially to encounter other road users in the centre of the carriageway. Likewise, pedestrians using a Defined Un-Metalled Footpath would be expected to exercise more care than in Primary Walking Zones as the maintenance of these assets would be appropriate to their level of use.

Table 3. Carriageway hierarchy

Category	Detailed Description
Major Strategic Routes (1)	Routes for fast moving long distance traffic with little frontage access or pedestrian traffic. Most likely in rural localities and where there are few junctions. Pedestrian crossings are either segregated or controlled and parked vehicles are generally prohibited. These routes play the biggest role in local and regional economies and connect the greatest number of places.
Strategic Urban Routes (2U)	Routes in urban localities for long distance traffic typically comprising Primary 'A' roads; pedestrian crossings are either segregated or controlled and parked vehicles are generally prohibited.
Strategic Rural Routes (2R)	Routes in rural localities for long distance traffic typically comprising Primary 'A' roads. There are few junctions. Pedestrian crossings are either segregated or controlled and parked vehicles are generally prohibited.
Urban Main Distributor Roads (3AU)	Routes in urban localities between Strategic Routes and linking urban centres to the strategic network with limited frontage access. They will usually have a speed limit of 40 mph or less. Parking is likely to be restricted at peak times and there are positive measures for pedestrian safety. The routes may comprise 'A' roads and heavily trafficked 'B' Roads (greater than 30,000 vehicles and 1,500 HGVs per day).

Category	Detailed Description
Rural Main Distributor Roads (3AR)	Routes in rural localities between Strategic Routes and linking urban centres to the strategic network carrying short to medium distance traffic. The routes typically comprise 'A' roads and heavily trafficked 'B' Roads (greater than 12,000 vehicles and 1,000 HGVs per day).
Urban Secondary Distributor Roads (3BU)	In urban localities, these roads have a speed limit of 30 mph or less and very high levels of pedestrian activity with some crossing facilities including zebra crossings. On-street parking is generally unrestricted except for safety reasons. They carry local traffic with frontage access and frequent junctions. The routes typically comprise 'B' roads and heavily trafficked 'C' roads (greater than 20,000 vehicles and 300 HGVs per day) and some unclassified carrying bus routes.
Rural Secondary Distributor Roads (3BR)	In rural localities, these roads link the larger villages and HGV generators to the Strategic and Main Distributor Network. The routes typically comprise 'B' roads and heavily trafficked 'C' roads (greater than 5,000 vehicles and 100 HGVs per day).
Urban Link Roads (4AU)	These roads in urban localities are residential or industrial interconnecting roads with speed limit of 30 mph or less, random pedestrian movements and uncontrolled parking. They will have frequent junctions and frontages. The routes typically comprise 'C' roads and heavily trafficked unclassified roads (greater than 15,000 vehicles and 150 HGVs per day).
Rural Link Roads (4AR)	These roads in rural localities are of varying width and not always capable of carrying two-way traffic. The routes typically comprise 'C' roads and heavily trafficked unclassified roads (greater than 5,000 vehicles and 100 HGVs per day).
Urban Local Access Roads (4BU)	Residential or industrial interconnecting roads with 20 or 30 mph speed limits; random pedestrian movements and uncontrolled parking
Rural Local Access Roads (4BR)	These roads serve small settlements and provide access to individual properties and land. They are often only single lane width and unsuitable for HGVs.
Field Roads (5F)	A highway associated with occasional use and its use is not limited to a specific class of traffic. These roads exist because they have been defined historically. They may be un-metalled but are not legally defined as byways open to all traffic (BOAT's).

Category	Detailed Description
Laybys divorced from the carriageway (5L)	A paved area for vehicles to stop safely which is separated from the main carriageway by a verge or embankment; the road surface is not fully visible from the main carriageway.

Table 4: Footway and Cycleway hierarchy

Category	Detailed Description
Prestige Walking Zones (1A)	Very busy areas of towns with a concentration of public spaces and a high street scene contribution; these zones will carry high levels of pedestrian footfall and will have an important role in respect to socio-economic value to the local and wider environs.
Primary Walking Zones (1B)	Primary walking zones form busy urban shopping and business areas whilst also forming main pedestrian routes and links. The primary walking zones will carry high levels of pedestrian footfall and will have a role in respect to socio-economic value to the local and wider environs.
Secondary Walking Zones (2)	Medium usage routes through local areas feeding into the designated primary routes; local shopping areas and other areas of specific local interest creating significant footfall.
Urban Link Footways (3U)	Linking local access footways through an urban locality, residential estates and routes with low pedestrian usage.
Rural Link Footways (3R)	Busier footways in a rural locality.
Local Access Footways (4U)	The local access footway network consists of cul-de-sacs and short estate roads in an urban locality which will form links to the main route through a residential area.
Minor Footways (4R)	Minor footways such as those in little used rural localities serving very limited numbers of properties; they may be contiguous with the carriageway or remote with verges or embankments between the footway and the carriageway.

Category	Detailed Description
Defined Un-Metalled Footpath (5)	A minor footpath linking footways at either end and which is clearly marked on the definitive footpath network and where footfall is actively encouraged. No formal pavement construction exists. The footpath may have historically crossed open countryside, however due to development of the surrounding environs the existing footpath is retained through housing developments. Footfall will be dependent on the demographic and extent of development to which it serves therefore any inspection frequencies should be based on the higher level of the footway inspection regime at either end to which it is linked.
Residual Footways (6)	These footways are associated with occasional use and are currently providing little value to the overall highway network. The demand will have changed from initial construction and now strategically does not serve any useful function. These footways may be situated in either an urban or rural locality.
Primary Cycle Way (1)	Cycle ways associated with high usage particularly by commuters linking key settlements and areas of high business, leisure and residential development, forming part of the carriageway or as a dedicated cycle route. Typically forming part of a wider cycling network, they will benefit from signage and improved road markings. A Primary Cycle Way may be segregated, designated by a white line or undesignated with cycles sharing the space with other highway users.
Secondary Cycle Way (2)	Cycle ways forming part of the carriageway for general use; cyclists share the space with other highways users with some cycle provision aided by the placement of signage to promote the use and indicate to other road users the presence of cyclists.
Cycle Tracks (3)	A highway route for cyclists that is not contiguous with the carriageway; it will be an undesignated space with some cycle provision, for example a small amount of signage, typically a shared cycle / pedestrian path either segregated by a white line or other physical segregation; or equally may be unsegregated. The cycle tracks will be associated with low usage and predominantly, but not solely, used for leisure rather than commuter links.
Cycle Trails (4)	Cycle trails will follow routes though open space and will not necessarily be the responsibility of the Highway Authority but maintained by the authority under local agreements, other powers or duties.

2.3 Condition assessment and asset performance

The performance of our assets is assessed using a range of inspections. Each type of inspection has a particular function or objective that collectively ensures that the County Council understands the performance provided by the asset.

2.3.1 Safety inspections

Safety inspections are carried out to identify defects on highway assets which may present a hazard to the highway user or that will affect the future performance of the asset. They are a visual survey which is carried out by a competent condition technician who identifies the hazard, assesses the risk and the nature and priority of the response. These surveys/inspections can be carried out from a slow-moving vehicle, on foot or on a bike as appropriate. Safety inspections are routinely conducted on carriageways, footways and cycleways; however, the scope of the inspection includes any asset which is presenting a hazard. Where hazards are present on assets managed by 3rd parties, the County Council will follow the relevant procedures to inform the 3rd party and ensure that the defect is resolved.

The County Council undertakes safety inspections of the highway according to a risk-based approach. The frequency of inspection and the response to defects is determined by the risk presented to highway users. The method for undertaking safety inspections and dealing with defects is set out in our safety inspection operating procedure (Highway Inspection Operational Manual).

2.3.2 Service inspections

Service inspections are undertaken to assess whether the asset is providing the appropriate level of service. The most common inspections of this type are street works inspections which allow the County Council to take enforcement action under the Traffic Management Act 2004 if works by a third party have not been carried out to the required standard. Other types of service inspections can include night scouting to determine the correct functioning of highway lighting and retro-reflectometry surveys to check the night-time performance of lining and signs.

2.3.3 Condition surveys

Condition surveys are undertaken to understand the current performance of the asset and identify future asset management risks. The approach taken will depend on the type of asset and the function upon which information about current and future performance is being sought. Currently the approach to condition surveys is as shown in Table 5

Table 5. Summary of asset condition surveys

Asset type	Survey Type	Scope	Performance assessed
Carriageways	SCANNER (Surface Condition Assessment for the National Network of Roads)	A, B and C class roads	Surface condition
	CVI (Coarse Visual Inspection)	Unclassified Roads	Surface condition
	SCRIM (Sideways-force Coefficient Routine Investigation Machine)	A, B & C Class roads	Surface friction
	Grip Tester	Accident Investigation Sites	
Footways	FNS (Footway Network Survey)	All footways	Surface condition
Structures	BCI (Bridge Condition Index)	All bridge spans \geq 1.5m	Structural and functional condition
Lighting	Well-managed Highway Infrastructure: A Code of Practice / Static Load testing /Electrical testing	All columns beyond action age	Risk of structural failure

Note. The structural condition of carriageways and footways is derived from an assessment of the surface condition.

Detail on the survey types is given below:

SCANNER A traffic speed survey which measures many properties of the road surface including texture, rutting, roughness and cracking.

- Grip Tester** A traffic speed survey that measures the friction properties of the surface using a braked wheel towed behind the survey vehicle.
- FNS** Footway Network Survey is a walked visual inspection that grades the deterioration and extent of deterioration from 'as-new' to 'structurally impaired'.
- BCI** A system developed by the County Surveyors Society (now ADEPT) to generate a Bridge Condition Indicator based on the condition of individual elements of the bridge.
- CoP** As defined in the current Code of Practice "Well-Managed Highway Infrastructure". Currently undertake Static Load tests to establish structural integrity

2.3.4 Classification of asset condition

The levels of service table, in Section 3.3, include a number of condition grades. These grades have been adopted to enable the levels of service to be communicated to all stakeholders. The grades also allow for a comparison of condition across the asset groups. The grades are a representation of technical performance the classification of which is provided below

Table 6

	Excellent	Good	Average	Poor
Condition of A class roads - The percentage of principal roads where maintenance should be considered.	<3%	3% - 5%	6% - 10%	>10%
Condition of B and C class roads - The percentage of non-principal classified roads where maintenance should be considered.	<6%	6% - 10%	11% - 14%	>14%
Condition of minor roads - The percentage of unclassified roads where maintenance should be considered	<10%	10% - 15%	16% - 20%	>20%
Condition of footways - The percentage of the surveyed length of footway that is Structurally Unsound or Functionally Impaired.	<10%	10% - 15%	16% - 20%	>20%

Condition of bridges - The percentage of bridge spans with a BCIcrit score of less than 75.	<6%	6%-10%	11% - 20%	>20%
Condition of street lighting - The percentage of street lighting columns which have undergone structural testing and have failed the test.	< 1 in 5000	< 1 in 1000	1 in 200	> 1 in 200
Condition of traffic signals - The percentage of traffic signal sites greater than 20 years old.	<2%	2-4%	>4% - 8%	>8%

The grades have been defined from national guidance, regional best practice or local knowledge where available.

2.4 The condition of our assets

The condition of the key asset groups is summarised in the charts shown in below. These condition measures support the levels of service as defined in Section 3.3.

No condition data is available for the drainage asset so the number of customer service requests for drainage is presented as a proxy measure.

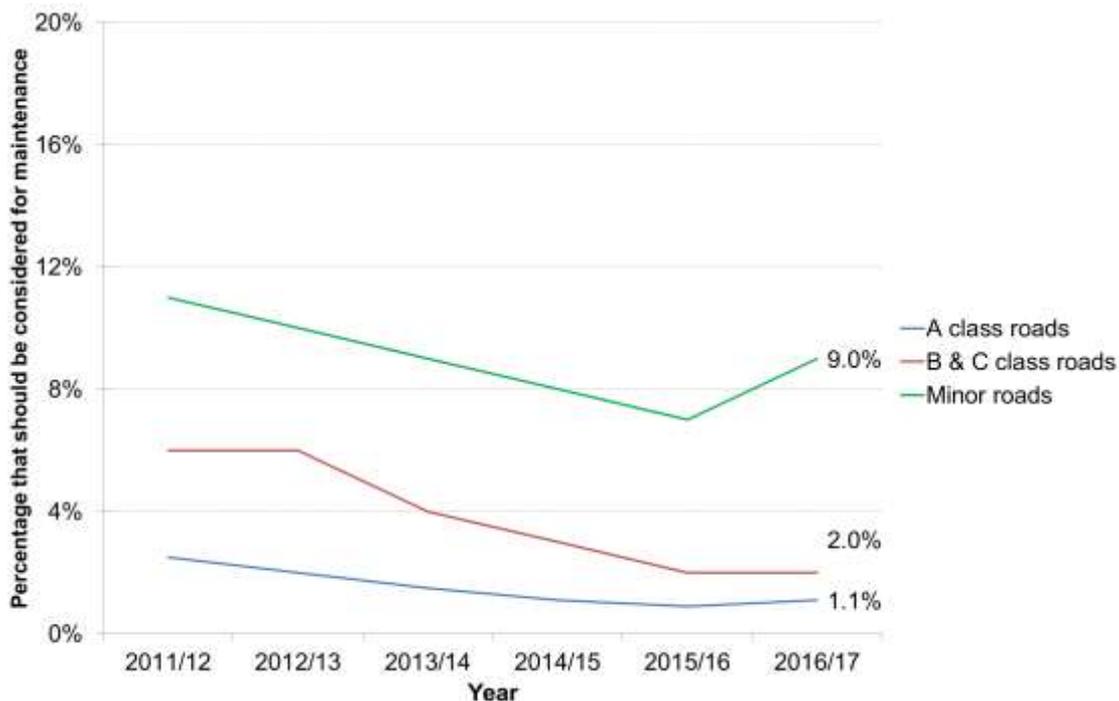


Figure 4A: The condition of carriageways

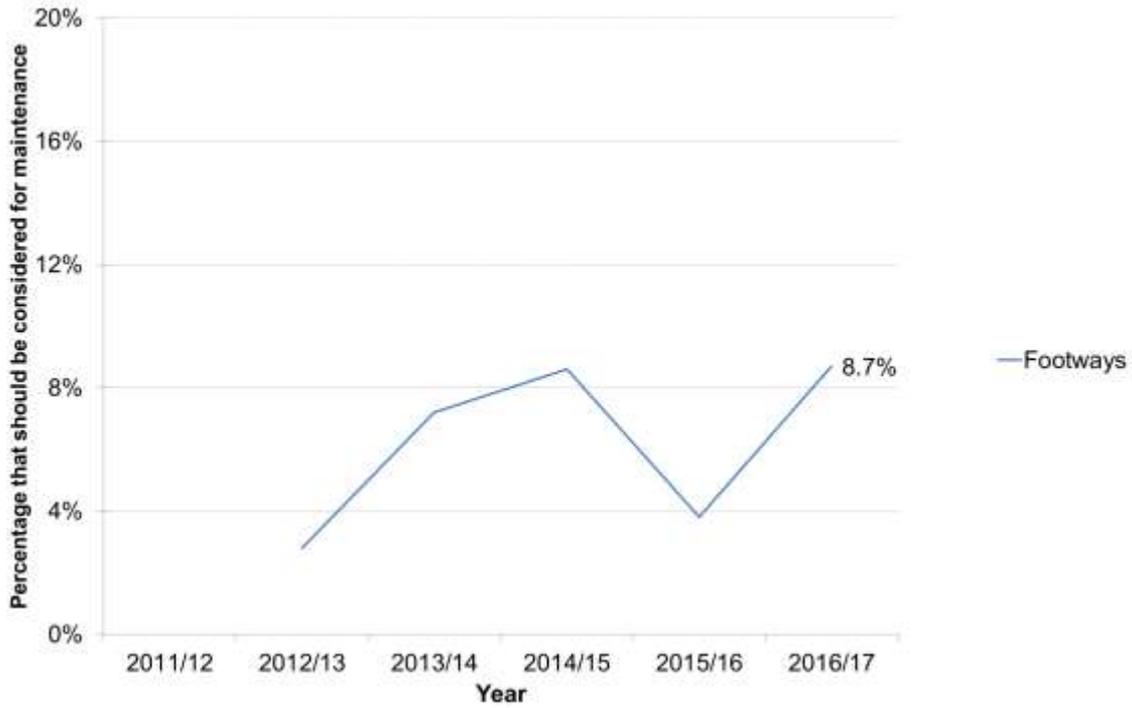


Figure 4B: The condition of footways

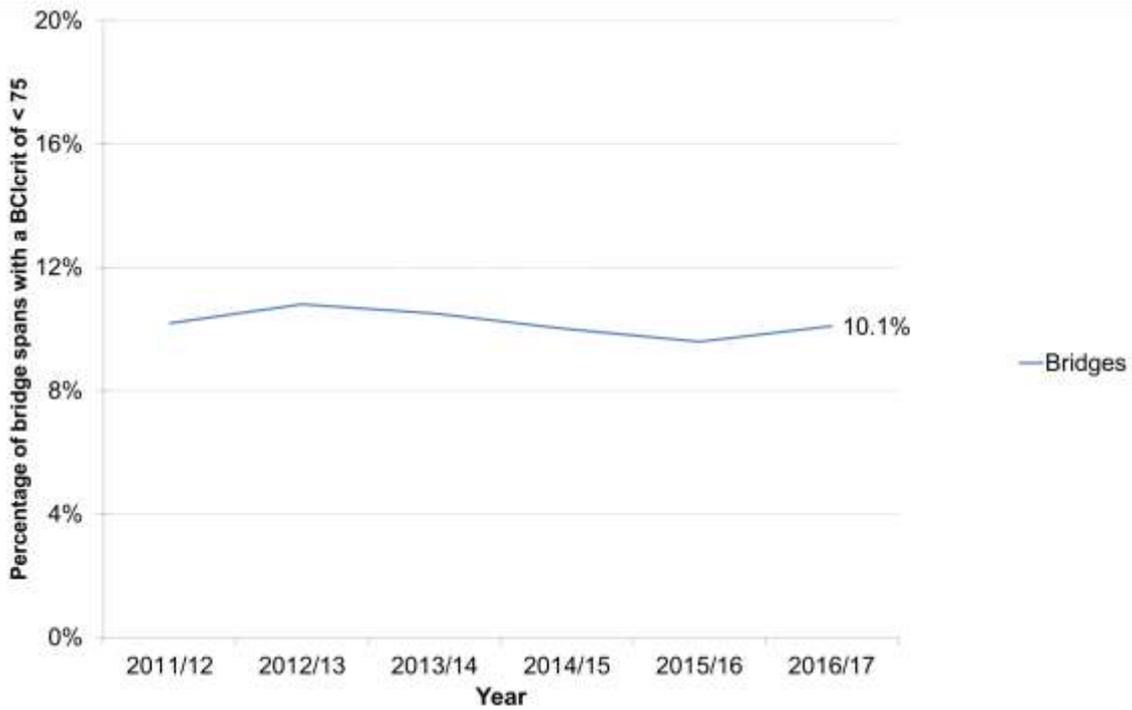


Figure 4C: The condition of bridges

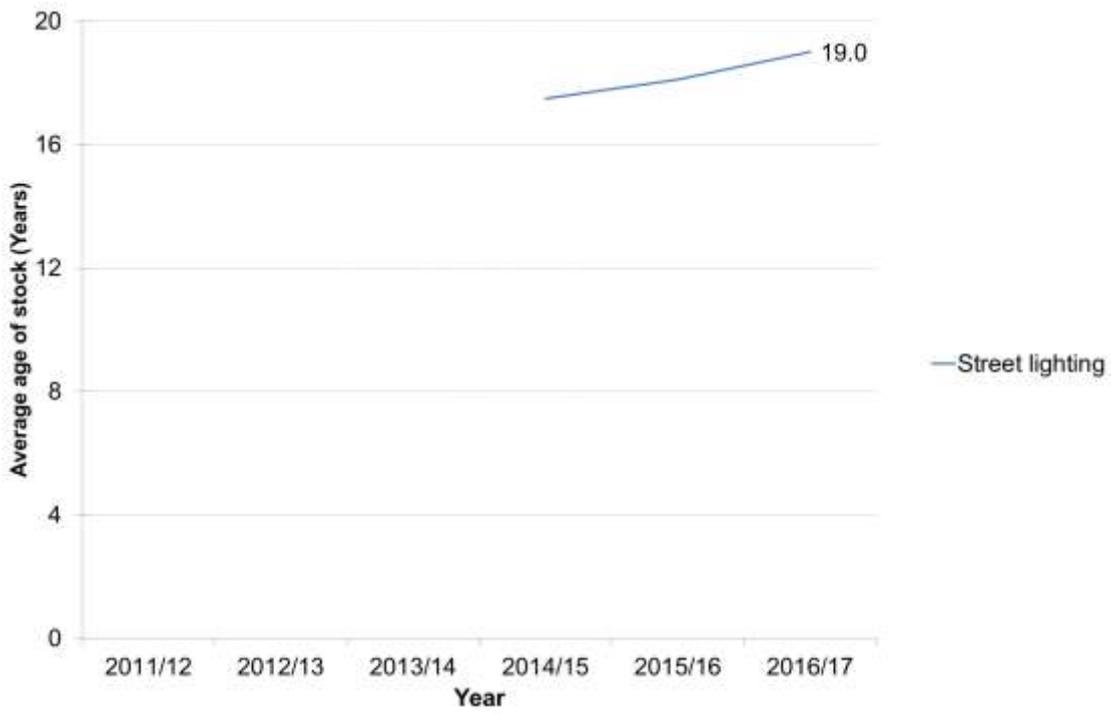


Figure 4D: The condition of street lighting

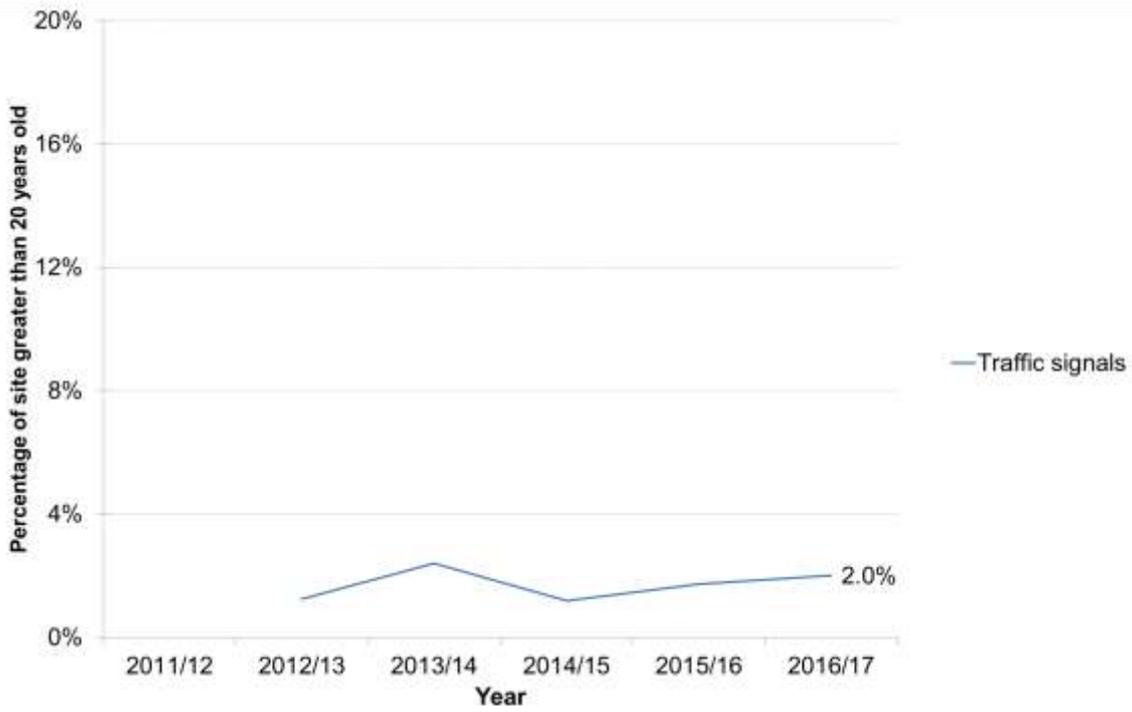


Figure 4E: The condition of traffic signals

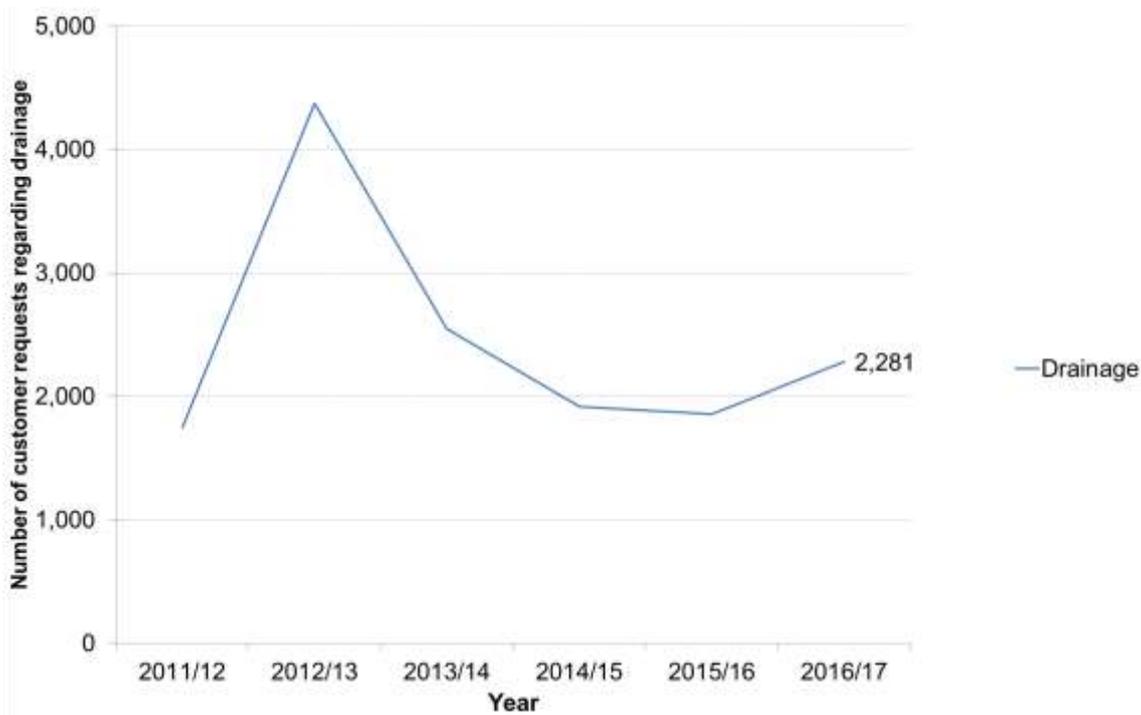


Figure 4F. The condition of drainage

3 Service Aspirations

3.1 Stakeholder expectations

The County Council monitors stakeholder expectations using the National Highways and Transport (NHT) customer satisfaction survey and through *ad-hoc* consultation exercises as shown in Table 6.

As part of the development of the Highway Asset Management Policy and Highway Asset Management Strategy, an extensive consultation exercise was undertaken with local borough, town and parish councils in which stakeholders were asked about the importance of a range of asset types, their maintenance and their importance. The County Council participates in the NHT customer satisfaction survey each year and the outcomes of this survey are used to inform asset management planning. As well as assessing the levels of customer satisfaction the survey asks customers about what levels of service are (or not) acceptable to reduce, these responses indicate a priority for our stakeholders. This is of particular relevance to this plan in the context of dealing with the challenge set out in the MTFS

Table 7. Overview of feedback obtained from stakeholder consultations

Source	Feedback	Priorities (in order)
--------	----------	-----------------------

Policy Consultation	How to prioritise investment	Cost of ad-hoc repairs if not maintained regularly
		Risk to safety if not maintained regularly
		Impact on users if not maintained regularly
		Amount of use/wear received
	Where to focus resources	Rural roads – high use
		Urban roads – high use
		Rural roads – average use
		Town centre/shopping area pavements
	Assets to retain	Road markings
		Vehicle Restraint Systems
	Service to be retained	Winter gritting (High? /lower priority roads and the resilient network)
	Importance to maintain	Roadside drains, gullies and culverts
		Roads
Pavements		
NHT (National Highways and Transport Network Survey ?)	Level of service to be retained (not acceptable to reduce)	Roads
		Gullies & drains
		Gritting and snow clearance
		Pavements

Table 7 provides an overview of stakeholder priorities as determined from these two exercises in 2016/17. The feedback reveals the following expectations in terms of priorities. Stakeholders expect that the Council:

- Prioritises funding to manage the safety risk to road users and to limit the cost of reactive work.
- Focuses its resources on more highly used parts of the network while acknowledging the value provided by other parts of the network.
- Preserves its approach to winter service across the whole network.
- Maintains roads, highway drainage and pavements as a priority.

The expectation that funding is prioritised to limit the cost of reactive work is supported by the asset management goal of ensuring the optimal use of resources. Furthermore, the expectation that funding is also prioritised to manage safety risks to highway users is a key function of the highways maintenance service as it is a duty for the Highway Authority under

the Highway Act (1980) and it is now a key recommendation of the current Code of Practice (Well-Managed Highway Infrastructure). The expectation that resources should be focussed on highly used parts of the network is supported by the asset management goal to “take account of ... levels of use ... to prioritise maintenance treatments and treatment choices”.

Winter service is important to stakeholders and this is reflected in the priorities from both sources of feedback. The maintenance of roads, highway drainage and pavements were similarly highlighted in both sources of feedback indicating a strong and consistent expectation about the service to be provided on these assets.

These priorities are acknowledged in this HIAMP and will be considered as the asset management plan is deployed.

3.2 Life cycle planning

In order to appraise the viability asset aspirations in the future, life cycle planning is used.

Life cycle planning is the broad method that enables us to model the future consequences of investments in our assets.

A life cycle plan for a stock of assets can be formed into a process as shown in Figure 5. The Define Requirements stage sets out the function and scope of the assets and how this will meet the policy; in effect how, the asset will create value. The Measure Performance stage considers what value the asset is providing; asset life cycle modelling can be used to forecast future performance. The Identify Gaps and Risks stage allows for all key information that is likely to prevent the asset providing the required value to be captured. The maintenance strategy and investment strategy stage describe how the asset will be managed and invested in respectively; performance gaps and risks can be mitigated using appropriate strategies.



Figure 5. The life cycle planning process

The following life cycle plans are presented for each of the key asset groups. Each plan follows the process in Figure 5.

Where possible, the life cycle models used in these plans have been adopted from national best practice such as those provided by HMEP. A bespoke street lighting model has been developed which is based on the individual assets within the asset register. In all cases, the models have been calibrated using the Leicestershire asset data.

Carriageways Life Cycle Plan

Inventory																																									
Road class	Length (km)																																								
A roads	421 (262 miles)																																								
B roads	238 (148 miles)																																								
C roads	1,308 (813 miles)																																								
Unclassified roads	2,368 (1,471 miles)																																								
Performance Requirements																																									
<p>The required function of this asset is defined in the maintenance hierarchy. The long-term aspiration for the carriageway asset is that overall it performs at least as well as the carriageways in the surrounding authority networks.</p>																																									
Asset Performance																																									
<table border="1"> <caption>Asset Performance Data (2014/15 to 2022/23)</caption> <thead> <tr> <th>Year</th> <th>Green (%)</th> <th>Amber (%)</th> <th>Red (%)</th> </tr> </thead> <tbody> <tr> <td>2014/15</td> <td>67.0%</td> <td>27.4%</td> <td>5.6%</td> </tr> <tr> <td>2015/16</td> <td>67.0%</td> <td>27.8%</td> <td>5.2%</td> </tr> <tr> <td>2016/17</td> <td>67.0%</td> <td>26.1%</td> <td>6.9%</td> </tr> <tr> <td>2017/18</td> <td>65.7%</td> <td>27.7%</td> <td>6.6%</td> </tr> <tr> <td>2018/19</td> <td>64.2%</td> <td>28.6%</td> <td>7.2%</td> </tr> <tr> <td>2019/20</td> <td>61.7%</td> <td>29.1%</td> <td>9.2%</td> </tr> <tr> <td>2020/21</td> <td>59.3%</td> <td>29.2%</td> <td>11.4%</td> </tr> <tr> <td>2021/22</td> <td>57.1%</td> <td>29.0%</td> <td>13.9%</td> </tr> <tr> <td>2022/23</td> <td>55.1%</td> <td>28.4%</td> <td>16.5%</td> </tr> </tbody> </table>		Year	Green (%)	Amber (%)	Red (%)	2014/15	67.0%	27.4%	5.6%	2015/16	67.0%	27.8%	5.2%	2016/17	67.0%	26.1%	6.9%	2017/18	65.7%	27.7%	6.6%	2018/19	64.2%	28.6%	7.2%	2019/20	61.7%	29.1%	9.2%	2020/21	59.3%	29.2%	11.4%	2021/22	57.1%	29.0%	13.9%	2022/23	55.1%	28.4%	16.5%
Year	Green (%)	Amber (%)	Red (%)																																						
2014/15	67.0%	27.4%	5.6%																																						
2015/16	67.0%	27.8%	5.2%																																						
2016/17	67.0%	26.1%	6.9%																																						
2017/18	65.7%	27.7%	6.6%																																						
2018/19	64.2%	28.6%	7.2%																																						
2019/20	61.7%	29.1%	9.2%																																						
2020/21	59.3%	29.2%	11.4%																																						
2021/22	57.1%	29.0%	13.9%																																						
2022/23	55.1%	28.4%	16.5%																																						
<p>The performance indicators for the carriageway assets are provided in “the condition of assets” set under Levels of Service. The chart above indicates the overall condition of the asset group including forecasts of condition based upon life cycle modelling. An excellent grade would be less than 8 percent to be considered for maintenance.</p> <p>Given the limited budgets that will be available in the future, it is expected that the condition of the network overall will decline as shown by the increase in the proportion rated as Red above. The minor road network is predicted to be particularly at risk.</p>																																									
Maintenance Strategy																																									
<p>The County Council has maintained carriageways to a high standard overall and while the minor rural network is showing increased risk of deterioration, the County Council still has a network that is in reasonable shape. An appropriate maintenance treatment will be selected which provides the lowest whole-life costs. Preventative maintenance treatments are advocated where suitable.</p> <p>The minor rural network will be more likely to receive a patching and surface dressing treatment, which will be applied as late as possible, without significantly compromising surface condition. Many of these carriageways have insufficient construction to carry the loads to which</p>																																									

they are subject to and hence could be vulnerable to rapid failure; increased inspection will be considered where necessary following a risk-based approach.

Revenue Investment

The annual forecast of revenue investment is £1.1 million per annum. Revenue investments are made to operate the asset by ensuring that the carriageway is kept in a safe condition and carrying out works that preserve the function of the asset.

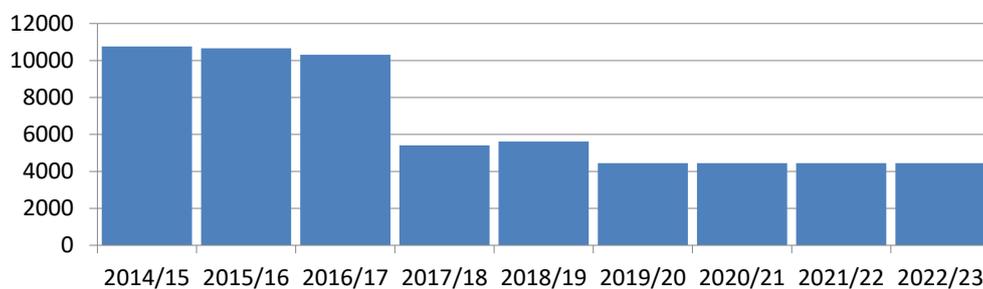
Most of revenue expenditure funds unplanned reactive works which may be needed to restore a minimal level of function. Commonly these are potholes, but many other defects are also remedied.

Revenue investment is also used to restore non-structural parts of the asset such as highway lining.

Routine Maintenance Process

Carriageway defects are identified through routine safety inspections and stakeholder reports. Responses to defects are based on a risk-based approach. A permanent repair is advocated wherever possible.

Structural Investment



Five strategic treatment types have been defined and are:

- Reactive restorative
- Planned restorative
- Preventative
- Improvement
- Renewal

Optimised treatment strategies, based on the strategic treatment types, will be applied to a defined set of carriageway types defined by hierarchy. Each treatment strategy is designed to maximise the serviceable life of assets by intervening as late as possible to minimise whole-life costs.

Structural Maintenance Process

Funding for treatments is prioritised using a multi-criteria approach covering:

- current condition as determined by network condition surveys
- local engineering input
- accident history

- stakeholder needs
- coordination opportunities
- engineering risks

Footways Life Cycle Plan

Inventory

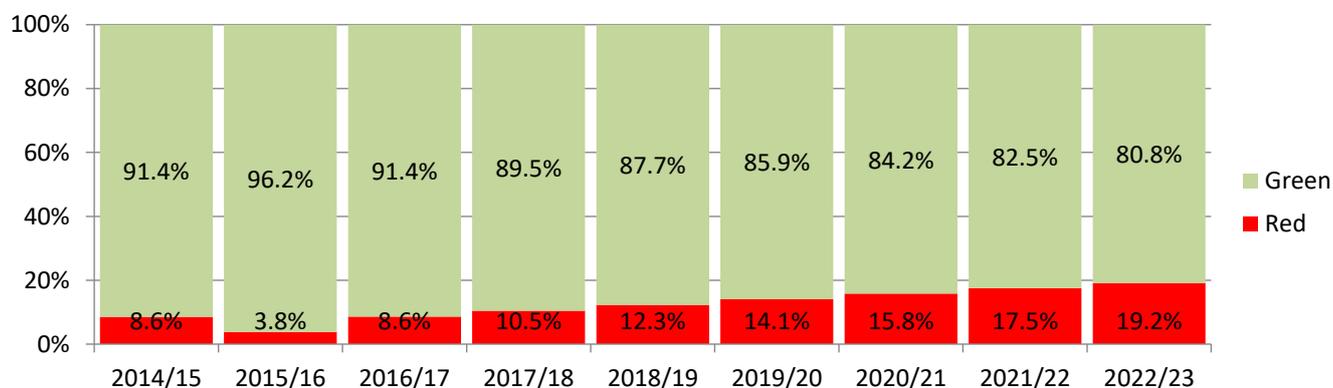
Road class	Length (km)
Primary Walking Routes	67 (42 miles)
Secondary Walking Routes	230 (143 miles)
Link Footways	759 (472 miles)
Local Access Footways	2,719

(1,690 miles)

Performance Requirements

The required function of this asset is defined in the maintenance hierarchy. The long-term aspiration for the footway asset is that it is maintained in a steady state condition.

Asset Performance



The performance indicators for the footway assets are provided within the Levels of Service. The chart above indicated the overall condition of the asset including forecasts of condition based upon life cycle modelling. An excellent grade is less than 10 percent.

The footway asset will continue to require an extensive programme of renewal to maintain a steady-state in the overall condition. The forecast of condition above suggests that steady state cannot be achieved at currently planned levels of funding.

Maintenance Strategy

The County Council has maintained footways in a reasonable overall condition. An appropriate maintenance treatment will be selected which provides the lowest whole-life costs.

Preventative maintenance treatments are advocated where suitable.

Footways with extremely low levels of use are designated as such and assigned maintenance standards comparable with our public rights of way network.

Safety defects will be remedied according to agreed timescales to successfully defend against claims.

Revenue Investment

Revenue funding for footways is accounted for within the revenue funding for carriageways.

Routine interventions are made to operate the asset by ensuring that the footway is kept in a safe condition and carrying out works that preserve the function of the asset.

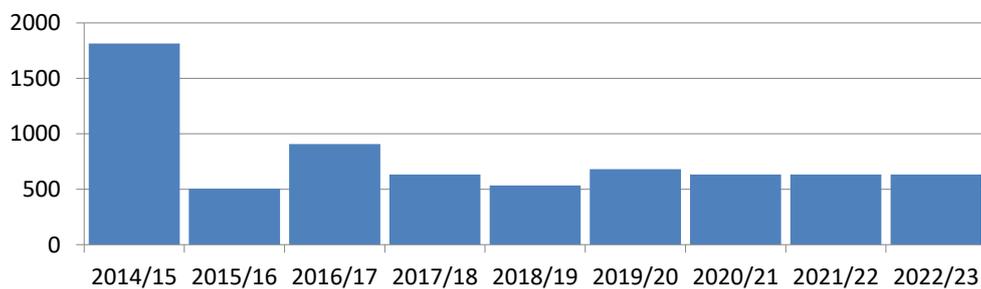
The majority of revenue expenditure funds unplanned reactive works which may be needed to restore a minimal level of function. Commonly these are potholes, but other types of defects are also remedied.

Routine Maintenance Process

Footway defects will be identified through routine safety inspections and stakeholder reports. Responses to defects are based on a risk-based approach.

A permanent repair is advocated where possible.

Structural Investment



Footways treatments can be grouped in to four strategic treatment types which have been defined as:

- Reactive restorative
- Planned restorative
- Preventative
- Renewal

Footway treatments will be selected so that intervention is made as late as possible to minimise whole-life costs.

Structural Maintenance Process

Funding for treatments is prioritised using a multi-criteria approach covering:

- current condition as determined by network condition surveys
- local engineering input
- stakeholder needs
- coordination opportunities
- engineering risks

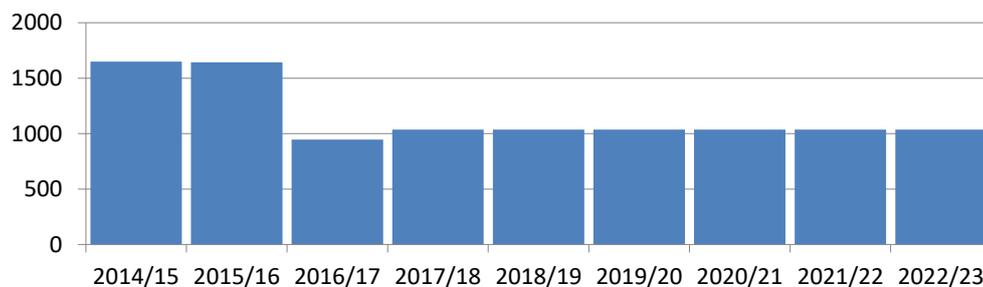
Revenue Investment

Routine interventions are made to preserve the function and appearance of the asset. Revenue funding may be used for unplanned reactive works but are also used to support cyclical maintenance activities such as silt removal, vegetation clearance and graffiti removal.

Routine Maintenance Process

Non-structural defects which are in need of attention are usually identified through the inspection process; but they can also be identified through targeted safety inspections and stakeholder reports. Responses to defects are based on a risk-based approach.

Structural Investment



Bridges are major assets and require significant investment for renewal. There is one significant bridge currently in need of replacement - Zouch Bridge on the A6006 at Hathern which is a priority . Funding for the work is currently being secured and works are planned to start spring 2020. There is an ongoing issue with Cavendish Bridge on the B5010 at Sawley – the largest bridge in the county – which is currently reduced to a single lane and managed by traffic lights. Further investigatory work will be required before this bridge reaches its end-of life.

Structural Maintenance Process

Defects are identified during the programmed cyclical inspection process.

Funding is split between structural strengthening, preventative maintenance and asset management activities (inspections and load carrying re-assessments). Appropriate treatments are identified and prioritised using a risk-based approach.

The structural strengthening programme is prioritised according to each asset's Bridge Condition Indicator score for critical elements (BCI_{crit}). The BCI_{crit} scores reflect the condition of the main load carrying components of the structure.

The programme of preventative maintenance, including re-waterproofing, re-painting and non-structural brickwork repairs, is prioritised according to safety risks (defects which if left untreated will affect other elements of the structure) and financial risks (defects which if left untreated will have a significant cost impact in the future).

Street Lighting Life Cycle Plan

Inventory						
Type\Height	Up to 6m	8m	10m	12m	High Mast	
Painted Steel	18,480	4,101	4,328	1,249	-	
Galvanised Steel	24,530	7,318	3,454	844	-	
Concrete	2,225	2	-	-	-	
Other	1,749	1	1	1	14	

Performance Requirements
The function of this asset is to light designated parts of the highway network to the required standard.

Asset Performance																								
<table border="1"> <caption>Asset Performance Data</caption> <thead> <tr> <th>Year</th> <th>Red</th> <th>Green</th> </tr> </thead> <tbody> <tr> <td>2014/15</td> <td>22.5</td> <td>17.5</td> </tr> <tr> <td>2015/16</td> <td>21.9</td> <td>18.1</td> </tr> <tr> <td>2016/17</td> <td>21.0</td> <td>19.0</td> </tr> <tr> <td>2017/18</td> <td>21.0</td> <td>19.0</td> </tr> <tr> <td>2018/19</td> <td>21.0</td> <td>19.0</td> </tr> <tr> <td>2019/20</td> <td>20.8</td> <td>19.2</td> </tr> <tr> <td>2020/21</td> <td>20.7</td> <td>19.3</td> </tr> </tbody> </table>	Year	Red	Green	2014/15	22.5	17.5	2015/16	21.9	18.1	2016/17	21.0	19.0	2017/18	21.0	19.0	2018/19	21.0	19.0	2019/20	20.8	19.2	2020/21	20.7	19.3
Year	Red	Green																						
2014/15	22.5	17.5																						
2015/16	21.9	18.1																						
2016/17	21.0	19.0																						
2017/18	21.0	19.0																						
2018/19	21.0	19.0																						
2019/20	20.8	19.2																						
2020/21	20.7	19.3																						
<p>The performance indicators for the street lighting assets are provided within the Levels of Service. The chart above indicates the overall condition of the asset including forecasts of condition based upon life cycle modelling.</p> <p>The street lighting asset will continue to require an extensive programme of renewal to maintain a steady-state in the overall condition. The forecast of condition above suggests that a slight deterioration in the average age of the stock is expected at currently planned levels of funding.</p> <p>Street lights increased by 2.7% between November 2014 and October 2018. Further annual increases are expected as new developments are adopted (there are 2,600 developer lights waiting to be adopted).</p>																								

Maintenance Strategy
The County Council maintains an extensive stock of street lighting in a reasonable overall condition.
The maintenance strategy of this asset is largely defined by the choice made when the asset is renewed. Renewal options will be selected that provide the lowest whole-life costs including operating as well as capital costs. At the point of renewal or other appropriate time, the value of each asset can be considered and where appropriate the asset shall be removed leading to

an overall rationalisation of the stock. In addition, a testing regime has been adopted that seeks to extend the useful life of assets without increasing risk.

Safety defects will be remedied according to agreed timescales to successfully defend against claims.

Revenue Investment

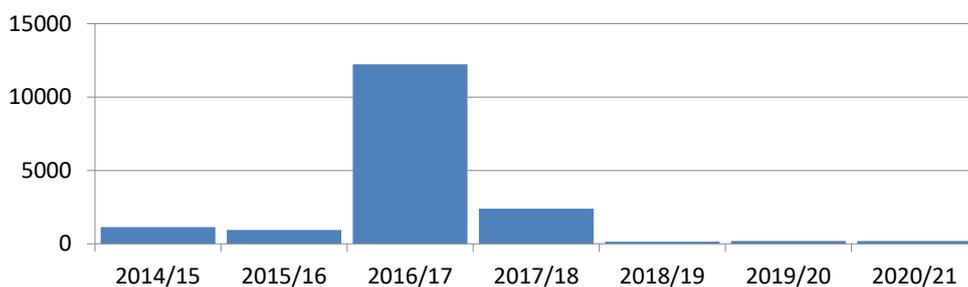
The County Council has completed a three-year programme to upgrade all of its lighting to low-energy LED lanterns. This development will reduce energy consumption and revenue expenditure.

The majority of revenue expenditure is used to fund energy. Other works include cyclical testing and reactive work which may be needed to restore its function.

Routine Maintenance Process

Reactive work is identified through routine safety inspections and stakeholder reports.

Structural Investment



The County Council has completed a major upgrade programme to its street lighting assets, but a number of known risks remain in the stock. Future investment will be targeting at removing lighting which is a risk. We are currently undertaking static load testing to determine the strength of our columns and replacing those that show a weakness.

A programme of testing will be in place which shall determine those columns at risk. A risk-based approach will be taken to scheduling this testing based on the age and type of the asset as well as analysis of failures by age and column type. The extent of the risk will only be known once the testing is significantly underway. The level of funding in future years will need to be reviewed in line with the merging knowledge of risk.

Structural Maintenance Process

Funding for treatments will be prioritised according to the risk of structural failure. Where the outcome of testing reveals an urgent or imminent risk of failure, then a reactive response must be made such as removal or temporarily capping unsafe assets.

Traffic Signals Life Cycle Plan

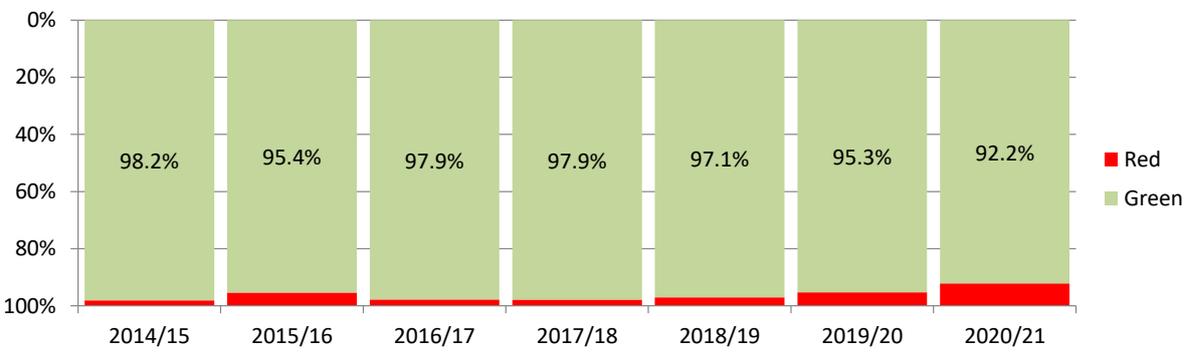
Inventory			
<u>Traffic Signal Type</u>	<u>Number</u>	<u>Traffic Signal Type</u>	<u>Number</u>
Junctions	404	Toucan Crossings	125

Zebra Crossings	112	School Flashing Units	82
Pelican Crossings	372	Vehicle Activated Signs	421
Puffin Crossings	11		

Performance Requirements

The required function of this asset is to control traffic on the highway network to protect the safety of highway users and ensure the expeditious movement of traffic.

Asset Performance



The performance indicators for the traffic signal assets are provided within the Levels of Service. The chart above indicates the overall condition of the asset, indicated by age, including forecasts of condition based upon life cycle modelling.

The traffic signal asset will continue to require an extensive programme of renewal to maintain a steady-state in the overall condition. The forecast of condition above suggests that a deterioration in the percentage of the asset greater than 20 years old at current planned levels of renewal.

Maintenance Strategy

The County Council has a large number of traffic signal installations in a reasonable overall condition. The aspiration is that no more than 4% of the asset should be more than 20 years old.

The maintenance strategy of this type of asset is largely defined by the choice made when the asset is renewed. Renewal options will be selected that provide the lowest whole-life costs including operating as well as capital costs.

Safety defects will be remedied according to agreed timescales to successfully defend against claims.

Revenue Investment

There are three main types of revenue costs

- Energy costs
- Other operating costs

- Reactive work

Upon renewal, we select types of traffic signal installation which meet the operational requirements and minimise whole life costs including energy costs.

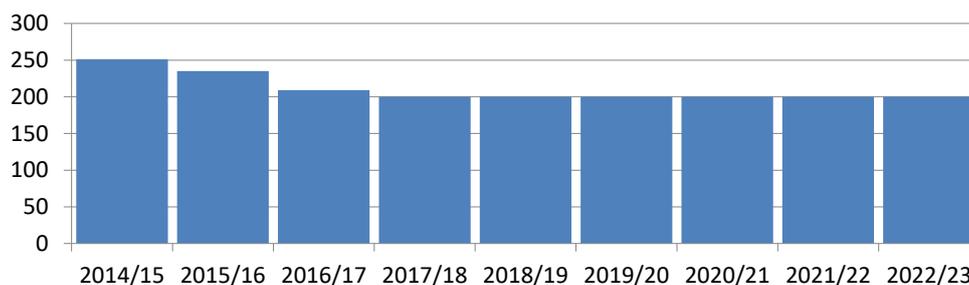
Wherever possible, control of the signal sites is being upgraded to a modern data communication system. This programme will generate annual savings.

The revenue strategy is supported by the structural investment strategy which is based on minimising revenue maintenance costs including reactive work.

Routine Maintenance Process

The routine maintenance of traffic signals is entirely reactive, responding to faults in the operation of the asset.

Structural Investment



The structural investment strategy is based on minimising the risk of maintenance costs by assessing age, type and fault history.

The age of the installation determines the priority for renewal in most cases.

Experience of the performance of certain types of controller has been used to define a risk of future faults.

The fault history supports the overall case for replacement. Where a history of faults is significant or severe, this assessment can define the case for renewal on fault history alone.

Structural Maintenance Process

The financial risk at each traffic signal site is assessed according to the following framework

- Age
- Type of controller
- Total number of faults
- Total number of controlled faults

The risk is assessed regularly and a three-year programme of renewals is in place.

Drainage Life Cycle Plan

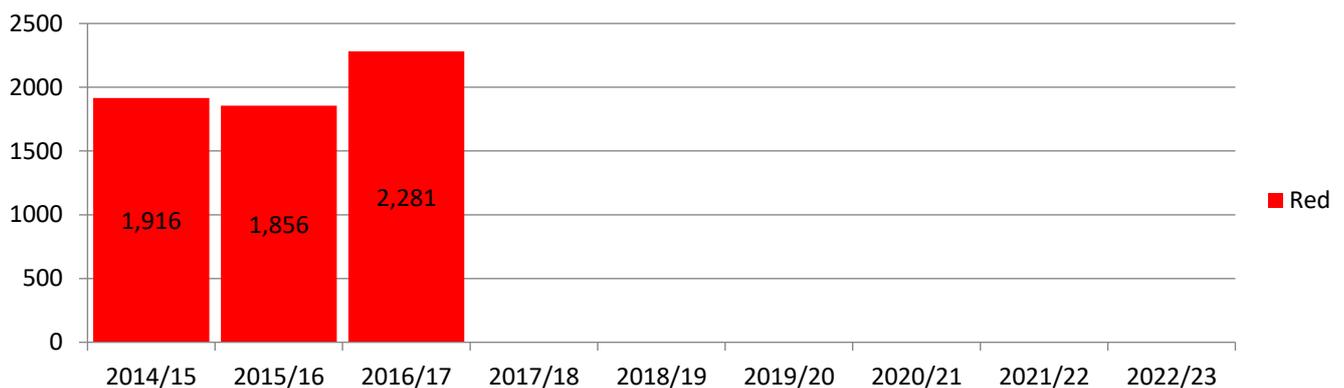
Inventory

<u>Drainage type</u>	<u>Number</u>
Gullies	133,228
Grips	38,060
Linear drainage channels	2,133

Performance Requirements

This asset removes water from the highway so that it does not affect the highway user or the structure of the asset.

Asset Performance



Insufficient performance data is currently available for this asset group. Performance is presented here using the number of customer reports about drainage issues as a proxy for asset condition.

Maintenance Strategy

Stakeholders have indicated that improving the condition of highway drainage is a priority and better management of flooding is an essential part of improving resilience and sustainability of the network.

There is a comprehensive inventory of carriageway gullies and data is being captured about detritus levels. For other drainage assets, there is very limited data about the condition of the drainage asset.

The funding for structural investment is forecast to reduce in the long-term; therefore, increasing in the risk of declining performance

Revenue Investment

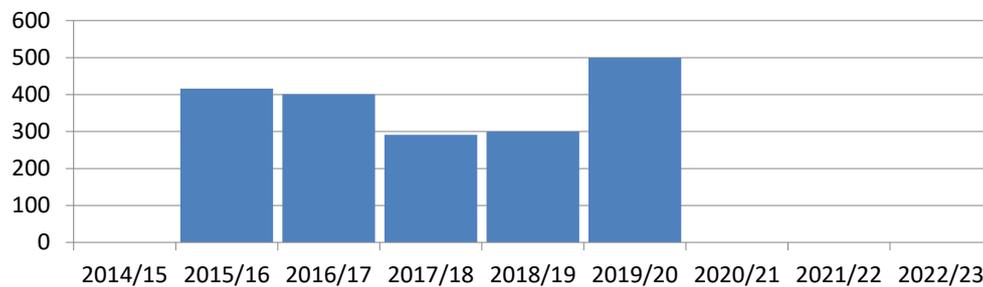
Revenue funding is £1.36 million per annum and is used to undertake cyclical cleansing and reactive repairs.

Routine Maintenance Process

The majority of routine maintenance of drainage is cleansing. A targeted approach to gully cleansing is being implemented, rather than the current prescriptive fixed frequency regardless of risk and will help to improve service levels but is unlikely to provide cost savings in the short term due to the current backlog of this work.

Reactive repairs are identified from stakeholder reports.

Structural Investment



No capital funding has yet been allocated for this asset group from 2020/21 onwards.

Structural Maintenance Process

Structural investment in the drainage asset is targeted at reducing risks and increasing resilience in the network.

3.3 Levels of service and Performance

Levels of service describe the quality of services provided by the asset for the benefit of the stakeholder. The following levels of service have been formed to explain how the County Council is making progress to deliver its asset management goals as presented in section 1.6; these have been grouped into three service sets:

- a) The stakeholder feedback set, this communicates how the County Council is receiving information about the service it is providing.
- b) The operational information set, includes a range of measures that show how the County Council is delivering the highways maintenance service.
- c) The condition of assets set, this provides the current state of the asset which is the output of our asset management planning activity; the performance in this set is formed into grades in order to better communicate the technical measures which are often required to present asset condition. Where possible, the performance grades have been set by benchmarking our performance with other local highway authorities and are defined in Section 2.3.4.

Table 8 – Current service and long-term trend

	Current Service*	Previous Period	Future Trend
Stakeholder feedback			
Customer satisfaction with road condition	45%	45%	↓
Reports of potholes	1,114	2,088	↑
Reports of grass cutting issues	672	919	↔
Reports of flooding issues	581	499	↑
Operational information			
Percentage of requests responded to on time	89%	95%	↑
Percentage of roads maintained	-	8.6%	↓
Percentage of footways maintained	-	-	↓
Choosing preventative maintenance	-	8.1%	↓
Percentage of street lighting replaced	3.0%	0.2%	↔
Percentage of bridges maintained	0.3%	0.6%	↔
Percentage of traffic signals replaced	2%	-	↔
Number of potholes repaired	3,986	3,762	Unknown
Area of grass cut (million square metres)	-	-	↔
Investment in drainage	£0.4m	£0.4 m	↓
Length of roads gritted during winter	-	-	↔
Condition of assets			
Condition of A class roads	Excellent	Excellent	↓
Condition of B and C class roads	Excellent	Excellent	↓
Condition of minor roads	Excellent	Excellent	↓
Condition of footways	Excellent	Excellent	↓
Condition of bridges	Average	Good	TBC
Condition of street lighting	Good	Good	↔
Condition of traffic signals	Good	Good	↔

Trend Key
 ↑ Increasing ↓ Decreasing ↔ Stable

3.4 Funding requirements for steady state

Each of the asset life cycle plans present the future budgets with a forecast of asset condition where available. The asset management approach set out in this plan requires for the demand for funding key assets are considered as a fully-integrated network. This section attempts to present the steady-state funding required as a whole. Considering each of the life cycle plans the following observations can be formed:

- The condition of carriageways is forecast to decline over the period of this plan at the expected levels of funding. The carriageway asset represents the greatest value infrastructure asset as shown in Table 2; therefore, this presents a significant risk for the asset as a whole.
- The condition of other assets such as footways, street lighting and traffic signals are also forecast to decline.

Although it is not an explicit aim of all assets covered by this plan, it is informative to forecast the investment required to reach steady state condition. Furthermore, permitting the asset to degrade before intervening is unlikely to result in minimum whole life costs and hence will not achieve the asset management goal of ensuring the optimal use and direction of County Councils resources. Therefore, the likely impact of funding deficiencies should be highlighted. Figure 6 combines the funding forecasts across each of the asset life cycle plans together with forecast budget needs for maintaining the asset in a steady state condition overall.

Overall the current budget is insufficient to maintain the asset in its current condition. The majority of the deficit is attributable to the carriageway asset.

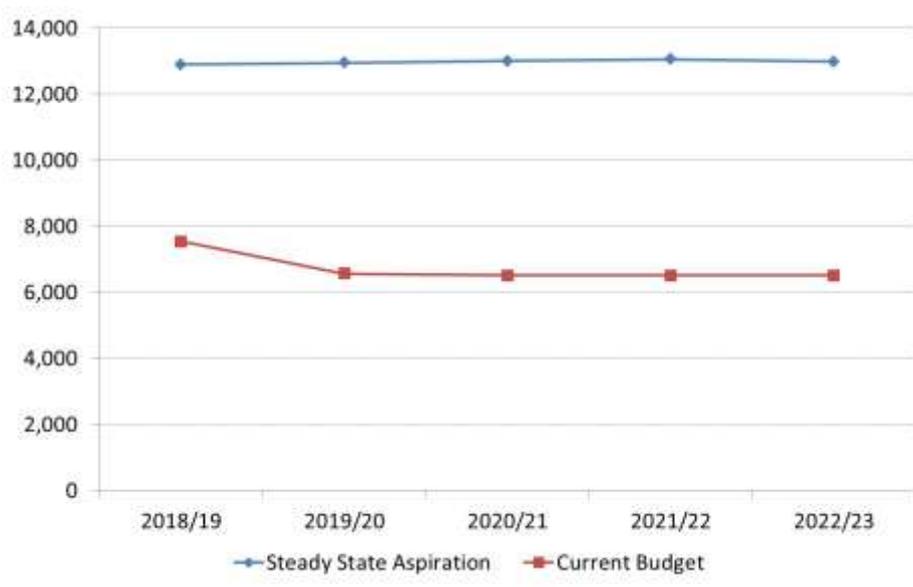


Figure 6. Comparison of current budget forecast and the steady state funding aspiration

4 Delivery of the plan

4.1 Communication

Introduction

There are 4,335 km (2,347 miles) of highway network in Leicestershire that are managed by the County Council, as well as pavements, verges, drainage, and large numbers of street lights, traffic signals and structures such as bridges. Whilst independent surveys show that our road network is still regarded as being one of the best, reductions to our budget mean we need to look at revised ways of working in the future.

We need to ensure that residents, motorists and businesses are informed about work on our highways, our services, and any changes to them. Our communications need to be informative, timely and easily accessible.

We have developed a Communications Strategy to support the HIAMP, the key aspects of which are set out below. Through our communications, we aim to inform the public and stakeholders about road works, highway activities and issues, as well as changes to our asset management and maintenance approach. We will also encourage people to access “self-service” information through information available on our website.

This Communication Strategy consists of a detailed Communications Plan document which is available online and also the key information which is set out below.

Aims

The aim of our communications is to:

- Inform the public about physical road works, operational highways issues (including defect repairs, winter service etc.) and value-for-money highways and transport activities in a timely manner.
- Communicate proposed changes to highways asset management in Leicestershire, encourage public engagement through our communications and raise awareness about changes if these are adopted.
- Encourage people to make the best use of reporting channels – e.g. ‘self-serve’ via our website if possible, thus reducing the number of highways related enquiries to the Customer Service Centre and via Members.
- Ensure the public is aware of funding bids awarded to the council to help maintain and enhance the local highway network.

Key Messages

Our key messages regarding Asset Management that will be communicated are:

- We will prioritise high risk repairs when responding to highway defects. This may mean other repairs could take longer than before, but we will be clear about timescales.
- We will focus on planned maintenance work to help slow down the deterioration of the highway asset if sufficient funds are available

- Preventative work will be carried out on a “risk-based approach” and determined on how roads are “categorised” in a new classification of highways.
- We are exploring new and more efficient ways of working. This includes working with Parish Councils to manage/deliver some aspects of Highways Maintenance (e.g. environmental works) and making use of emerging technology (e.g. for a targeted approach to gully cleansing) to deliver cost savings.
- Keeping winter services, such as gritting, at current service levels.

We will highlight action we are taking to keep the network up and running such as emergency repairs, closures due to extreme weather, any planned maintenance and gritting. We will also provide winter driving advice and let people know how they can find out about services and maintenance work (e.g. grass cutting schedules) online, together with consultations on future schemes.

Key Groups/Stakeholders

We will seek to communicate with a wide range of people and organisations that have a stake in Leicestershire’s road network. This includes, but is not limited to:

- Elected Members
- Road Users (Pedestrians, Cyclists, Horse Riders, Bus Users, Disabled Users, Motorists)
- Businesses
- Representative groups
- Neighbouring Local Authorities
- Leicestershire County Council staff and its partners such as bus operators and other contractors.
- Local residents
- Emergency Services
- District/Borough Councils
- Customer Service Centre Staff

Communication methods used

We have a number of communication methods available, including:

- Social media (Twitter & “Choose How You Move” Facebook page)
- Press releases
- Local radio stations
- Traditional media and digital
- Leicestershire Matters (Council resident’s newsletter)
- Parish Councils’ Highways Newsletter
- Stakeholder Workshops
- Partners’ Channels
- Local TV/News
- Council Website
- Door-to-door letters / leaflets
- Public Meetings / Exhibitions
- Customer Service Centre (reactive)

Monitoring review and evaluation

It's important that we regularly monitor and review the effectiveness of our communications. Key indicators of audience awareness and the effectiveness of our communications will be:

- Media Coverage (Volume, Tone, Positive/Negative)
- Social Media Coverage
- Website Use
- Use of self-serve functions via the LCC website
- Level of response to consultations
- Satisfaction levels from surveys
- Queries/Feedback from members of the public and elected members

We will review and evaluate our communication activities, which will include a review of the indicators above where appropriate, together with service user feedback and management discussions.

4.2 Customer feedback

It is vital that stakeholders can contact the County Council to request service to deal with current issues and to register priorities for future work. Our customer feedback process is set out in Figure 8. Two types of feedback have been identified.

1) – A request is a current or imminent issue or a petition which the customer wishes to be resolved; resolution of this issue may be achieved by carrying out work or providing adequate information to the customer about the result of their request.

2) - A priority is more strategic information. Infrastructure assets must deliver value for the customer and therefore these links are essential to understand customer needs and maintain the relevant knowledge to inform this HIAMP.

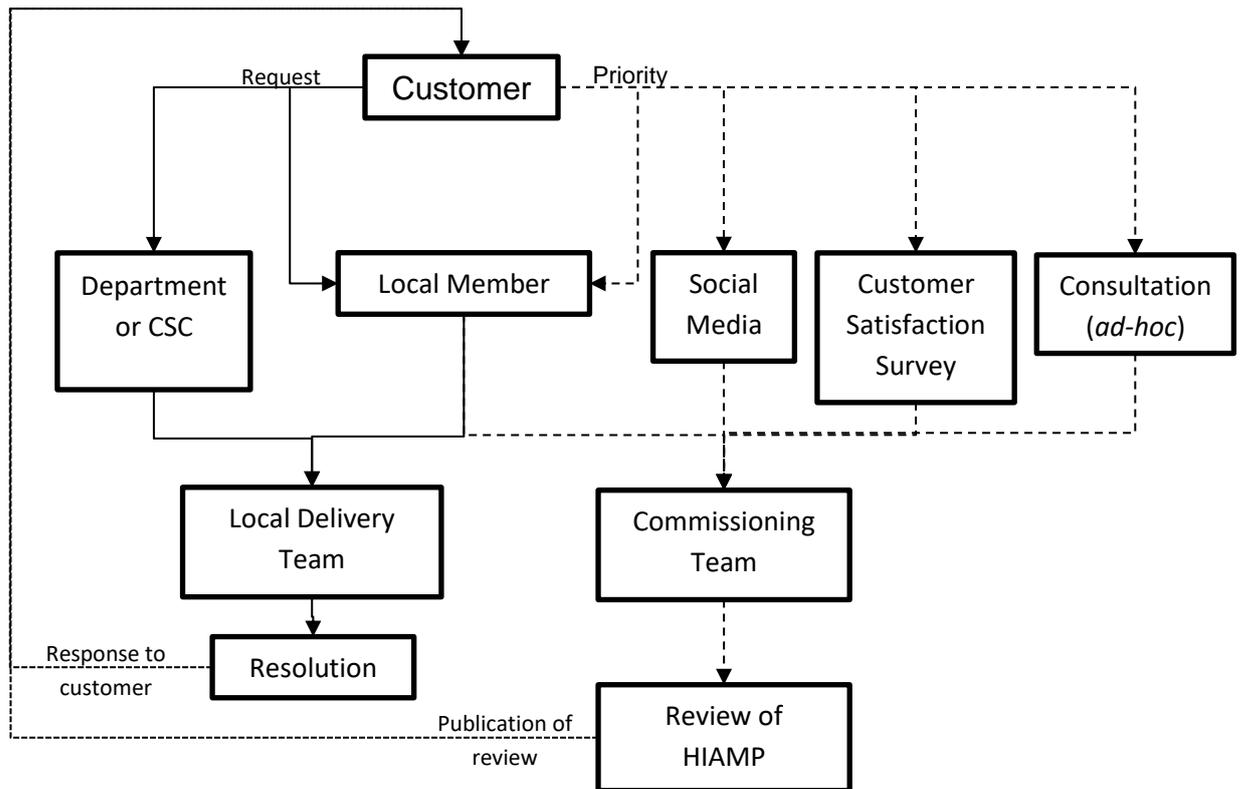


Figure 8: Customer feedback

In figure 8, a customer may be an individual, an organisation or a collective.

4.3 Data management

Highway asset data is managed primarily by the Network Data & Intelligence team and Support Systems team, but certain datasets are also managed elsewhere in the Environment and Transport Department. The asset registers exist in our Integrated Highway Management System, Pavement Management System and Geographical Information System.

The Council has a robust data management regime as defined in the data management plan. The data management plan defines the key aspects of the County Council's asset data.

A data hierarchy has been adopted in the plan which uses three levels:

- Asset Group. e.g. street lighting
- Asset Type. e.g. Heritage column
- Component. e.g. Luminaire

Storage requirements are defined by activity and asset group as well as the team responsible for management of the data.

A high-level gap analysis has been undertaken on the highways asset data and the key improvement actions in the data management plan are to:

- Complete an exhaustive review into the existence, quality, currency and use of data and information relating to highway asset management.
- Define a specification for all datasets relating to highway asset management, including defined protocols for data management, review and retention.
- Review the suitability of the proposed asset groupings, data storage systems and data management roles and responsibilities following the above actions.

4.4 Competences and training

The County Council recognises that competencies and training are critical to the delivery of this plan. A competency framework for all key asset management staff is used to identify the individual competency requirements. All key staff will be assessed against this framework as part of the annual performance review (APR) and staff development requirements are captured at a team and individual level.

In addition, all key staff undergoes asset management training based upon the HMEP Asset Management e-learning toolkit. Regular briefings on the requirements of this document and progress with delivery ensure that the expectations for individuals are clear.

4.5 Principles of a risk-based approach

Risk is an intrinsic element of the management of highway infrastructure assets, it cannot be removed entirely but it must be managed. To optimise the value of the available resources, risk must be understood in order to make the best decisions.

The approach to understanding risk is set out in this plan as it applies to all aspects of how we will manage our assets and includes strategic, tactical and operational risks. The key actions of this risk-based approach are:

- Understanding our statutory duties and ensuring that these are fulfilled.
- Identifying the value and criticality of the County Council's assets and operations to fulfil the asset management objectives and achieve the levels of service.
- Gathering sufficient and appropriate information (evidence) to support risk-based decisions.
- Ensuring staff have sufficient knowledge and competency to make risk-based decisions.
- Identifying and prioritising risks associated with the assets using systems that are consistent with the County Council's corporate approach to risk management.
- Implementing appropriate controls.
- Documenting risk-based decisions ensuring that the whole approach is transparent.
- Applying the risk-based approach equitably for all stakeholders and in all locations.
- Communicating the approach and the outcomes of where it is applied to stakeholders.

“Well-Managed Highway Infrastructure” states that “a risk-based approach should be adopted for all aspects of highway infrastructure maintenance”. This approach should be in accordance with local needs (including safety), priorities and affordability. It is acknowledged that for each aspect of highway infrastructure maintenance, there will be a range of risk types which need to be considered. The County Council will use a framework that considers the following types of risk when adopting a risk-based approach:

- Safety of all highway users
- Fulfilling our legal duties
- Financial loss for the County Council
- Impacts on the economy
- Impacts on, and generated by, the environment
- Accessibility or availability
- Equitability
- Reputation and customer satisfaction

This HIAMP sets in place the over-arching approach which will be deployed for operational procedures that will sit below and ensure delivery of the approach set out in the HIAMP.

Examples are how this approach will be used are:

- Using the resilient network which allows improved decision making to ensure that economic activity and access to key services are maintained. Using this network to better understand the value of our assets.
- Updating the network hierarchy to enable the County Council to undertake inspections at appropriate frequencies and respond to defects within appropriate timescales.
- Defining appropriate cleansing regimes for drainage using improved understanding of the current performance of the asset.

We will continue to develop and maintain our operational procedures throughout the life of this plan.

4.6 Developing a works programme

There are many stages to developing a works programme; this includes identifying work, prioritising the work identified, developing the work into a forward plan and finally the annual works programme shown in Figure 2.

Identifying work for candidate schemes will involve the consideration of current condition of the asset against the required performance and consideration of risk. Local intelligence is an important part of this process, not only to inform about constraints but also to provide engineering solutions which considers locally known risks. Prioritisation of the work ensures that for the resources available the County Council generates the maximum value. The precise process will be tailored to the individual asset groups according to the strategies set out in the life cycle plans, but the resources and delivery are considered together as in integrated programme of work. Operating procedures formally set out the methods for identifying and prioritising work.

Programmes of work are essential to deliver this asset management plan. The benefits of a works programme are:

- Reducing risk by planning, hazards which will affect the delivery work can be identified and actions taken to mitigate risk.
- Increasing efficiency by enabling multiple work types to be scheduled in an optimum fashion and enabling the supply chain to provide the optimum solution.
- Increasing transparency by communicating the programme to stakeholders enabling them to see the process of delivery and improve stakeholder satisfaction.

The County Council aspires to produce a three-year integrated forward programme of work in line with asset maintenance strategies using a risk-based approach that is based on available condition data and intelligence of reactive work history, local concerns and engineering experience. The work is prioritised to achieve asset outcomes as defined in the levels of service.

The forward programme of work is split into an annual works programme and a forward plan of work.

The annual works programme is defined for the forthcoming financial year. Schemes in this list will be fully developed and a schedule for delivery can be accurately defined based on the actual funding available.

The forward plan of work is defined for Years 2, 3 and beyond. This programme is comprised of schemes that are being developed through the design and procurement process. This stage of the programme provides the opportunity to consult with stakeholders and the supply chain. Initially the wider programme will be formed of candidate schemes which are the County Council's earliest intelligence or aspiration for work that is required. The programme will be continually revised and refined until such point that it becomes the annual works programme.

The annual works programme will be published on the County Council's website.

4.7 Investment aspirations

As previously stated in this plan, asset management facilitates the move toward decisions which deliver the greatest value, also our asset management goal is to ensure the optimal use and direction of the County Council's resources. Funding is a key enabler of the asset management framework as shown in Figure 1; therefore, it is appropriate to present the County Council's aspirations for funding which best supports the goals of this plan.

The plan includes forecasts of asset condition using current budget forecast as well as a comparison of funding requirements to achieve the steady-state. With this knowledge it is an aspiration that future decisions about the level of funding for the highways infrastructure asset are made in the clear knowledge of the future risks to the asset.

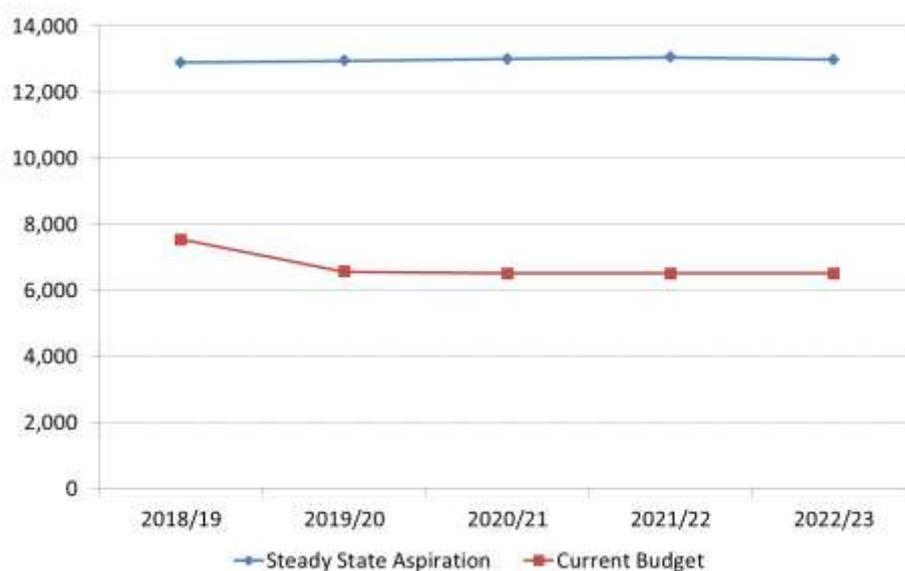
Furthermore, while a future budget has been outlined, the nature of funding is that this can change even within the current financial period. Such changes can be disruptive but can also

lead to an inefficient use of resources due to compensation payments due, an inability to engage with the supply chain at an early stage or going to the market at the wrong time.

In recent years, budget for highways maintenance have been augmented by discretionary additional funding which has been allocated during a financial period. This funding has been essential to enable the authority to sustain the condition of the asset.

To achieve the asset management goals, a more stable investment plan should be identified. This will maximise the opportunities to deliver the greatest value by applying an asset management approach and ensuring that these investments are spent in the right places.

As shown in Table 7, the levels of service provided in the future are at risk for the currently identified future budget levels. The County Council will continue to work to identify additional sources of funding to address any deficiencies or to revise its long-term service aspirations



4.8 Milestones

A number of actions have been set out in the asset management strategy. These actions have been presented as milestones for this plan in Table 7.

Table 7 Actions / Milestones

Action	
New local road hierarchy for carriageway and footway	
New inspection frequencies	
Completion of the gap analysis of asset data	
Critical operating procedures revised to comply with risk-based approach	

Developing treatment strategies for carriageway maintenance groups	
Assessment of specific risks associated with the maintenance of highway assets against an understanding of the strategic importance of the asset or assets concerned	
Development of dynamic life cycle plans for all key assets	
Establish clear criteria for responding to sign damage using a risk-based approach and clarify the timescale for repairing or decommissioning low-risk signs	
Completion of a cycle route inventory	
Preparation of a five-year schedule of works.	
Completing upgrades to traffic signals to improve communications telemetry	
Establish criteria for decluttering of redundant signs and other redundant street furniture	
All highway procedures revised to support the HIAMP	
Completion of culvert inventory	

5 Risks

5.1 Managing risk

To manage risk the County Council maintains and reviews a number of risk registers in a multi-level risk management framework as Shown in Figure 9.

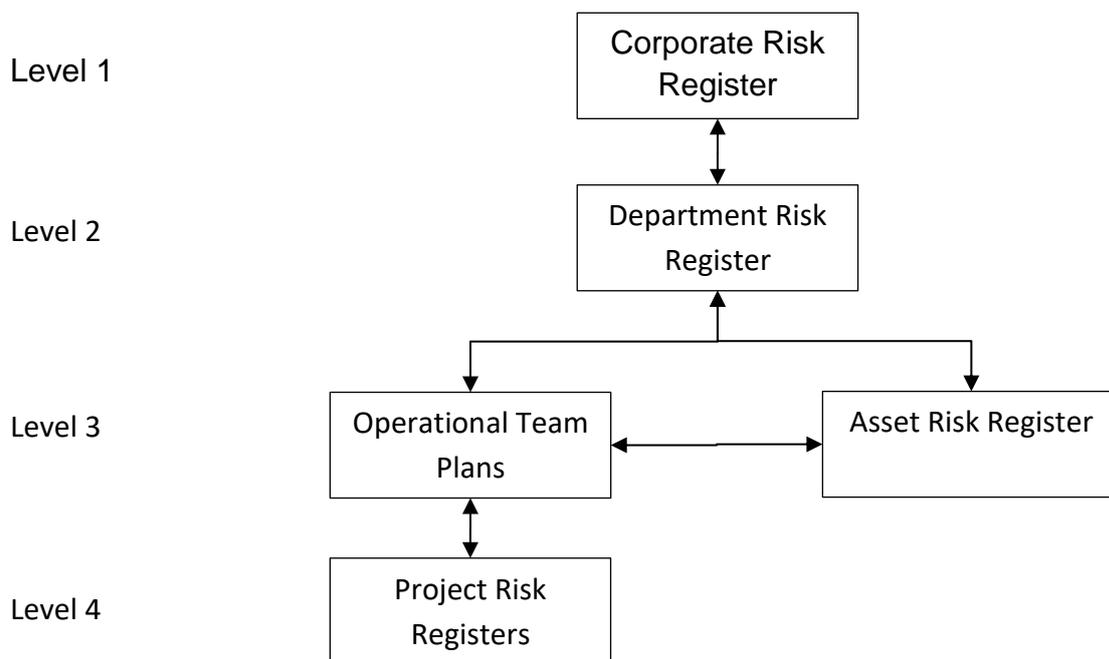


Figure 9. The risk management framework

Risks are captured and managed in Levels 3 and 4. These risks can be escalated to the department risk register and subsequently can be escalated to the corporate risk register as required. Some risks will exist in both the operational team plans and the asset risk register.

The asset risk register facilitates management across all asset groups. It includes assets at risk that will:

- Impact on the overall delivery of the plan.
- Affect the resilience of the highway network.

The register quantifies and assesses the risk together with the proposed action and investment to mitigate the risk. The asset risk register is one of the inputs to the formation of the integrated works programme and it will be reviewed at least annually.

5.2 Protecting the environment and dealing with climate change

In recent years, a number of extreme weather events have had a significant impact on transport infrastructure in the UK. It is accepted that these events are becoming more frequent and this is likely due to climate change. In managing the highway, the County Council needs to adapt its approach to consider climate change in the decisions it make.

Climate change is not a local phenomenon, but the activities of the County Council will make a contribution to this threat. The County Council will take account of the environmental impact of its maintenance treatments and services and where feasible, either reduce or mitigate these

impacts. The County Council will also seek to maximise the serviceable life of assets and therefore reduce the frequency of asset renewals. Considerations shall include:

- Deploying preventative treatment strategies, where viable, to delay deterioration in the asset.
- Using recycled materials or the use of low temperature asphalt to minimise carbon emissions.
- Collaborating with the supply chain to reduce emissions arising from the transport of materials.
- Scheduling work to minimise congestion as a result of maintenance interventions.

5.3 Network resilience

The County Council must also consider the resilience of the highway network. It will do this by:

- Defining a resilient network which focuses resources on sustaining a functioning network during extreme weather, major incidents and other disruptions.
- Taking a risk-based approach to the way the service is delivered which accounts for risk to, and generated by, the environment.
- Recognising the importance of winter service to highway users.

The County Council currently treats 45% of the carriageway network on a precautionary basis in advance of any forecast of ice or snow. Footways are only treated when there is prolonged snow or ice. This service is very highly valued by stakeholders. An annual review of winter service routes will continue but no overall reduction in service level is anticipated.

5.4 Growth in demand

The demand on the highway network is not static. Changes in land use via development and other economic factors alter the amount and composition of traffic over time. Based on national forecasts, overall traffic in Leicestershire could grow by up to 10% between 2017 and 2022.

Due to development, the County Council may choose to adopt additional assets. Recently, the County Council has adopted approximately 14km of road per year. Between 2017 and 2022 this would equate to an increase in 1.6% in network length.

Demand also exists in the supply chain in terms of prices. Inflation in prices will impact on our ability to undertake work with the available funding. Construction price indices from recent years indicate that the average percentage annual change in prices was 1.8% which if sustained over the period 2017 to 2022 would equate to a reduction in funding of 9.3% in real terms.

This analysis concludes that there will be an increase in overall demand on the highway asset in real terms over the next five years which must be considered when making strategic decisions about the asset.

6 Governance

Asset management of highway infrastructure in Leicestershire will continue to develop following publication of this plan. Likewise, the HIAMP document and its supporting information should evolve as further data is gathered and learning increases.

The development of asset management practice at the County Council will be enhanced by benchmarking our data with other similar authorities through the Midlands Highway Alliance, the Midlands Service Improvement Group and the CQC Efficiency Network.

The delivery of this HIAMP will be overseen by the Asset Programme Board comprising asset management specialists as well as the Commissioner and the delivery side of the highways operation. A review will be undertaken at least every three (in line with the Highway Asset Management Policy and the Highway Asset Management Strategy) years with a report on progress with any recommendations for changes to the HIAMP produced.