

Highway Infrastructure Asset Management Plan

Coventry City Council

June 2019



Notice

Document history

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Executive summary

Coventry City Council Highway Infrastructure Asset Management Plan (HIAMP)

The Council's vision is to be Globally connected and locally committed, this means focusing on attracting businesses and jobs to the city so local people can take up new opportunities. Also investing in our roads and transport connections so we make the most of our location at the heart of the country. We want to ensure that we are digitally connected.

Coventry is the UK City of Culture 2021 and will be working with communities and talking to businesses in planning our programme. It was stated that awarding Coventry the title would have the biggest impact on the rest of the UK. Coventry is a young, diverse, modern city which is re-imagining the role culture can play in bringing people together. In addition to this Coventry is the European City of Sport 2019 and will be a host city for the Commonwealth Games in 2022. The highway infrastructure is central to the successful delivery of these major events. Working with residents and partners, the Council will make the most of these opportunities so they help improve people's lives, especially the most vulnerable

Coventry's highway network is estimated to have a construction value of £1.3 billion. The operation and maintenance of this vital asset must support the city by delivering the required service to road users and by using public money wisely.

The citizens and visitors of Coventry expect safe and reliable journeys. The Council welcomes this, and in response the Council is actively engaging with road users and other interested parties to understand their views about the service they expect from the highway network.

Over the last 10 years the Council's funding from government has been halved, meaning the Council has to change what is done and how it is delivered. A key function of this HIAMP is to set out what the Council will do to deliver the best possible service with the resources available. The HIAMP covers a wide range of activities, from inspections, to routine and cyclic maintenance, to structural maintenance and more substantial refurbishments and improvements.

This Council is committed to continually improving asset management practices and these will be reflected in future periodic updates of the HIAMP.

1. Introduction

1.1. Coventry's Transport Network

Coventry's roads carry a high volume of both commercial and private vehicle traffic and this asset is vitally important to the local community and the wider economy. The City's transport network is predominantly urban which means that the road network is in constant operation and has to accommodate all types of road users. In order for the highway network to fulfil its potential, it is vital that it is appropriately maintained.

The highway asset in Coventry is over 880 km in length, and consists of Principal (A) roads, non-principal (B&C) roads, unclassified estate and rural roads, and footways. Other assets include, bridges, traffic signs, traffic signals, and street lighting. The Coventry elevated 'Ring Road' is critical to the movement of people and goods around the city, therefore particular attention will be given to the maintenance of this asset. Strategic routes such as the A46, that run throughout Coventry form part of both the West Midlands Key Route Network (KRN) and the National Major Route Network (MRN).

1.2. West Midlands Combined Authority

The West Midlands Combined Authority (WMCA) consists of 18 local authorities and four Local Enterprise Partnerships (LEPs) working together with devolved powers from Whitehall to the West Midlands and its locally elected politicians. Devolution is the handing down of powers and money from central government (Whitehall) to local authorities, so they are able to decide for themselves on how best to spend that money for the overall benefit of the region. On the 17 November 2015 the Chancellor of the Exchequer agreed and signed a devolution deal with the members of the WMCA.

A combined authority means that Coventry is part of the largest combined authority in the country, providing:

- Better transport links across the whole region
- A regional fund to boost building on brownfield sites
- Funding for skills and training to get people jobs in the region
- More business support and foreign investment

A Key WMCA project that will benefit Coventry will be the City Centre South development.

1.3. Legal Framework

1.3.1. Duty of Care for Highway Maintenance

Coventry City Council is the Highway Authority for all highways in the City except for motorways and trunk roads for which Highways England is the Highway Authority.

Much of highway maintenance activity is based upon statutory powers and duties contained in legislation and precedents developed over time as a result of case law. It is crucially important that all those involved in highway maintenance, including elected members, have a clear understanding of their powers and duties, and the implications of these. Even in the absence of specific powers and duties, highway authorities have a general duty of care to users and the community to maintain the highway in a condition fit for purpose, as far as is reasonably practicable.

In addition to the duty of care there are several pieces of legislation which provide the basis for powers and duties relating to highway maintenance that are worthy of specific reference:

Highways Act 1980

- Section 41 – imposes a duty to maintain a highway which is maintainable at public expense.
- Section 41 (1A) – imposes a duty to ensure, so far as is reasonably practicable, that safe passage along a highway is not endangered by snow or ice.
- Section 56 – any person may apply to the Courts for an order requiring the Highway Authority to take remedial action within a reasonable period, specified by the Court.
- Section 58 – provides for a defence against action relating to alleged failure to maintain on grounds that the authority has taken such care as in all the circumstances was reasonably required to secure that the part of the highway in question was not dangerous for traffic.

The New Road and Street Works Act 1991

- Section 53 – highway authorities shall keep a street works register for each street for which they are responsible showing information about current or proposed works.
- Section 56 – highway authorities have the power to give directions as to the timing of undertakers' work that are likely to cause serious disruption to traffic.
- Section 59 – highway authorities have a duty to co-ordinate works to minimise inconvenience and disruption, protect the structure of the street and integrity of apparatus and ensure safety for all users.
- Section 74 – as amended by the Transport Act 2000 requires an undertaker executing works in a maintainable highway to pay a charge where the work is unreasonably prolonged.

Road Traffic Act 1988

- Imposes a duty on highway authorities to promote road safety, including accident studies, and to take such measures to reduce the possibilities of accidents when new roads come into use.

The Traffic Management Act 2004

- Imposes a duty of network management, principally securing the expeditious movement of traffic including avoiding, eliminating or reducing disruption.

1.4. Coventry's Highways Infrastructure Asset Management Plan (HIAMP)

What is a Highways Infrastructure Asset Management Plan?

The Highways Infrastructure Asset Management Plan is designed to aid the implementation of improvement actions. These will enable this Council to build on existing practices and procedures to form a continuous improvement framework. These in turn will help the Council to meet strategic goals in the most effective manner having regard to statutory requirements, customer expectations and funding limitations. Asset management is the link between the Council's strategic objectives and operational activities. This HIAMP has been developed by drawing together the knowledge, experience, and expertise of the Council's senior officers, the authority's teams and departments, and support from an external consultancy.

Why develop an Asset Management Plan?

This Council has an aspiration to manage its physical assets to a level that ensures the desired standards of service are achieved and maintained over time in an efficient and cost-effective manner. The HIAMP is the vehicle by which the Council can provide an acceptable long-term management framework. The HIAMP clearly and logically links the benefits of long term infrastructure investment to the Council's strategic goals and day to-day levels of service.

This HIAMP demonstrates continuing improvement in the Council's asset management planning. Key to this on-going process is the development of detailed life cycle plans for the key physical assets of the highway infrastructure, by adopting the corresponding financial planning and spending priorities.

By adopting long-term programming and whole life costing principles The Council will ensure that the best whole life cost options are identified and used to inform programming and funding decisions. Key elements of the infrastructure asset management approach include:

- Taking a life-cycle approach to the management of assets
- Developing cost-effective management strategies for the long-term
- Providing defined levels of service and monitoring performance
- Managing risks associated with asset failures
- Sustaining use of physical resources
- Establishing continuous improvement in asset management practices

This document's purpose is to outline the procedures and processes used for the management of the highway asset. By regular review and the adapting to changes in both national guidance and corporate objectives, this plan will continue to seek ways to improve the current practices.

1.5. Development of HIAMP

The HIAMP is based on Highways Infrastructure Asset Management Guidance (HIAMG) which is the industry adopted best practice guidance published by Department for Transport's Highways Maintenance Efficiency Programme (HMEP) and supported by UK Roads Liaison Group. The guidance makes 14 recommendations along with an asset management framework (see figure 1) presented as a minimum requirement to achieve a reasonable level of benefit from asset management.

1.6. Asset Management Framework

In developing the Council's asset management framework, the Council have utilised the suggested framework within the 2013 HIAMG. The framework summarises all activities and processes that are necessary to develop, document, implement and continually improve the approach to asset management. The framework is shown in Figure 1 and is summarised below.

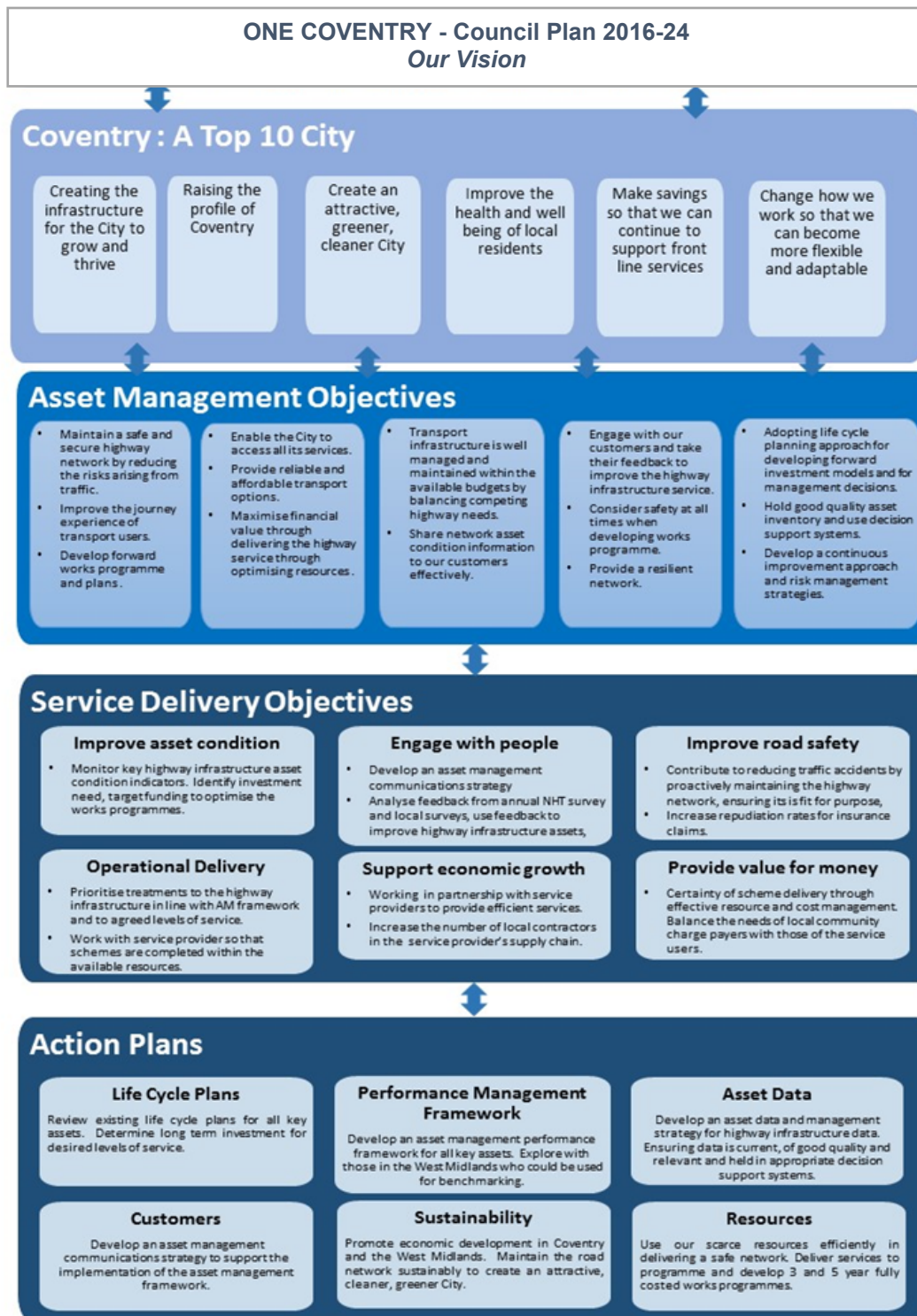


Figure 1- Asset Management Framework- Coventry Asset Management Strategy

1.7. Asset Management Context

The asset management context encapsulates a variety of relevant and influencing factors that need to be taken into consideration when determining the expectations for the asset management service. These factors include: National transport policy, the Council Plan, West Midlands transport policies, expectations of stakeholders, and legal and financial constraints.

1.8. Asset Management Planning

This sets out the key activities that are undertaken as part of the asset management planning process. The activities include:

- Asset Management Policy – The Councils published commitment to highway infrastructure asset management.
- Asset Management Strategy – The Councils published statement on: how the asset management policy will be implemented through the asset management framework, and includes the strategy for each key asset, and its commitment to continuous improvement.
- Asset Performance – The Councils agreed levels of service to be delivered by Coventry's Transportation and Highways Division and how its performance will be measured and reported.
- Data – The strategy for data management and collection, without which informed decisions could not be made.
- Lifecycle Planning – The lifecycle plans for key assets which when combined with investment levels and stakeholders desired levels of service, decision makers are able to make informed choices about optimum investment and levels of service.
- Works Programmes – The Councils programme of works for each highway infrastructure key asset.

1.9. Asset Management Enablers

Asset management enablers are the series of supporting activities that facilitate the implementation of the asset management framework. They include:

- Using asset management to develop and maintain a clear line of sight from the Council's leadership – Councillors and Senior Officers – to policy and strategy and operational delivery to ensure alignment with strategic priorities.
- The development of an asset management culture including planned investments and reduced whole life costs;
- Effective asset management communications through an agreed strategy.
- Collaborating with all stakeholders to deliver an effective asset management-based service
- Developing asset management-based competencies and skills for all staff within the service.
- Effective asset-based risk management
- A strategy for the use of asset management decision support systems
- A means of measuring the performance of the asset management framework

- A means of benchmarking asset management progress with neighbouring councils in the West Midlands and best in class.
- Collaborating with other highway authorities within the Combined Authority and the West Midlands Highways Alliance area.
- Fostering a culture of continuous improvement and innovation in asset management and works delivery.

1.10. Drivers

The demand for a more efficient approach to the management of highway infrastructure assets has come to prominence in the light of the economic challenges faced by both central and local government as well as the devolved administrations. Asset management is a means to deliver a more efficient and effective approach to management of highway infrastructure assets through longer term planning, ensuring that standards are defined and achievable for available budgets.

More locally, the drivers for the implementation of this HIAMP are:

- Coventry City Councils commitment to ensuring the highway network is maintained in a manner that supports its vision, aims and objectives.
- To provide a clear statement of highway policies which deliver the statutory obligations of the Authority.
- To support and add value to wider corporate Council Plan objectives.
- To meet the DfT's requirement for LA's to implement highways asset management (Self-assessment funding)
- To support and provide information for Whole of Government Accounting

1.11. Relationship to other documents

This document provides the linkage between the strategic goals of the Council and the detailed operational and business plans. Other relevant key documents are as follows:

- Coventry City Council Highway Asset Management Policy and Strategy
- The West Midlands Local Transport Plan 3.
- The Coventry Council Plan.
- Coventry Local Plan
- Coventry City Council Sustainable Urban Extensions
- Coventry City Centre Action Plan
- Highways Infrastructure Asset Management Guidance (HMEP) 2013
- Well-Managed Highway Infrastructure - A Code of Practice October 2016
- Coventry City Council Local Flood Risk Management Strategy

1.12. Key Stakeholders

The highway network as a whole is the Council's largest and most valuable asset, the proper management of this asset impacts directly on a broad range of stakeholders and users of the network.

The information generated by a HIAMP is designed to enable greater involvement by all stakeholders in the management of the transport infrastructure. To successfully deliver asset management message it is essential that the council communicate and engage effectively by having in place clear channels of communicating with all stakeholders.

1.13. **Continual Development**

The Council is committed to implement and continually develop effective asset management practices in order to maintain the highways network. To achieve this, the highway asset management engineer will ensure that the HIAMP is monitored and delivered effectively. This will include incorporating the HIAMP's requirements into the Council's current activities and for the subsequent monitoring and improvement of the processes set out in the HIAMP. The successful implementation of an asset management approach will require the organisation to embrace the HIAMP and its provisions, and will be subject to continuing change and development year on year.

1.14. **Improvement Action Plan**

The manner in which the Council's highway assets are managed will change and evolve over time. It is necessary that the asset management approach is adaptive to these changes and creates or employs best practice from across the highway sector. The Council will develop and manage an asset management improvement plan which will act as a driver for enhancing its asset management approach and deliver associated efficiencies through the way that highway maintenance activities are undertaken.

However, some immediate actions will be necessary to maximise the asset management approach others will take considerable time to implement before the benefits can be suitably evidenced and realised. This HIAMP has identified some key issues for which improvement actions have been established.

Table 1.0 Key Issues

Key Issue	Action
Limited amount asset inventory in some areas.	Utilising new technologies develop a plan and programme to collect asset inventory data as required.
Year on year budget reductions make it challenging to deliver the asset management approach.	Treatment strategy, priorities, and service standards will be revised to affordable levels.
Assets deteriorate more rapidly than has been predicted resulting in insufficient levels of investment.	Monitor network condition and where required revise levels of planned and reactive maintenance accordingly.
Not all asset owners adopt an asset management approach leading to lost benefits and efficiencies of co-ordination.	Strong leadership, improved co-ordination, appropriate training and systems alignment.
The increase in assets are not matched by sufficient additional highway maintenance funding.	Committed sums obtained where appropriate. Budgets and predictions will be revised, and the annual plan will be updated.
Public is not well informed about the highway service, communication between Highway Stakeholders requires improvement.	Highways to work with corporate communication to promote and raise the profile of the highway service.

2. Asset Management Policy and Strategy

2.1. Background

The asset management policy and strategy represent Coventry's interpretation as to how the local highways maintenance service should be provided to both accord with the Council's statutory duties and be aligned to the current strategic objectives of the Council, and philosophy of the Code of Practice 'Well Managed Highway Infrastructure'. Although standalone documents the Council's policy and strategy should be read in conjunction with several other publications including the Council Plan, West Midlands LTP, this HIAMP, and other relevant current legislation.

2.2. Asset Management Policy

The Asset Management Policy is a high-level document which establishes this Council's commitment to highway infrastructure asset management and demonstrates how the asset management approach aligns with the City's corporate vision and objectives. As a result, all asset management stakeholders have a line of sight between asset management and the high-level direction of the Council.

The policy states that 'the highway infrastructure is Council's most valuable asset and is a vital element in providing an integrated transport system'. To ensure the asset base is preserved and replenished in a sustainable way without imposing an undue financial burden on future generations, The Council are committed to making the best use of the Council's budgets and will employ an asset management approach for the maintenance of the Council's transport infrastructure and assets.

2.3. Asset Management Strategy

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

The Strategy seeks to deliver a highway network that is fit for purpose and supports a transport system that:

- Promotes the growth of a sustainable Coventry economy
- Improves the quality of life for Coventry people
- Makes the most of the Council's assets

2.4. Network Hierarchy

The network hierarchy is the foundation of a coherent, consistent, and auditable maintenance strategy. The network hierarchy is effectively utilised in network condition reporting, scheme identification, setting levels of service, inspection regimes, and response times. The Council currently manage the carriageway and footway assets according to hierarchies based on 2005 Well Maintained Highways Code of Practice and detailed in the tables below. However, in light of the 2016 Code of Practice, which recommends that local authorities adopt a risk-based approach to managing their networks, the current network hierarchy has been reviewed and will inform the implementation of the new code.

Road Hierarchy

Category	Hierarchy Type	Example	Type of Road
1	Motorway	N/A	Limited access motorway regulations apply
2	Strategic Routes	A45	Trunk and some Principal 'A' roads between Primary Destinations
3a	Main Distributors	B4109 Aldermans Green Road	Major Urban Network and Inter Primary Links. Short - medium distance traffic
3b	Secondary Distributor	C158 Almond Tree Ave	Classified Road (B and C Class) and unclassified urban bus routes carrying local traffic with frontage access and frequent junctions
4a	Link Road	Abbey road from Ashington grove to London road	Roads linking between the Main and Secondary Distributor Network with frontage access and frequent junctions
4b	Local Access Road	Acacia Avenue from London road to Humber Ave	Roads serving limited numbers of properties carrying only access traffic

Footway Hierarchy

Category	Hierarchy Type	Example	Description
1a	Prestige Walking Zones	Upper Precinct	Very busy areas of towns and cities with high public space and street scene contribution.
1	Primary Walking Routes	Broadgate	Busy urban shopping and business areas and pedestrian routes
2	Secondary Walking Routes	A45, Fletchamstead highway	Medium usage routes through local areas feeding into primary routes, local shopping centres
3	Link Footways	A4114, Holyhead road	Linking local access footways through urban areas and busy rural footways
4	Local Access Footways	Wigston road	Footways associated with low usage, short estate roads to the main roads and cul-de-sacs.

3. Levels of Service

3.1. Introduction

This section describes how levels of service are developed for an asset, categorised under service groupings and used to evaluate and measure performance. Levels of service can be described as “the defined service quality for a particular activity or service area against which performance may be measured. Service levels usually relate to quality, quantity, reliability, responsiveness, environmental acceptability and cost”. Levels of service are developed from both asset condition (existing / desired) and demand aspirations (i.e. what the asset is expected to deliver).

3.2. Why Use Levels of Service?

Levels of service are an integral component of the asset management process. They are used to determine service delivery levels (or service options) of an asset. These are used to prioritise maintenance schemes and to establish suitable performance measures to check on level of service delivered.

The levels of service contained in this asset management plan will be used:

- To develop asset management strategies to deliver the required level of service.
- To identify the costs and benefits of the services offered.
- As a measure of the effectiveness of the plan.

Future developments of this asset management plan will seek to include processes that will inform customers of the proposed type and level of service to be offered.

3.3. The Development of Levels of Service

Levels of service form a key part in the management of all assets. In order to successfully manage these, it is vital to have defined levels of service that clearly balance users and stakeholder's needs and expectations for each asset against the available resources. Levels of service also take account of the statutory duties of the Council as a highway authority and the authority's strategic goals.

The establishment of the levels of service has been based on current practice and will be the subject of continuous monitoring and subsequent development. The Council monitors service levels through a range of performance indicators which are reported on an annual basis.

The table below sets out the current levels of service.

Levels of Service						
Safety	Customer Care	Condition	Resilience	Accessibility	Value for money and Innovation	Sustainability
Reduce the numbers of those killed or seriously injured to meet the National targets and local	Manage the road and footway service in the interest of customers by learning from customer satisfaction surveys and best practice guidance.	Maintain the highway assets in a state of good repair by carrying out annual condition assessment surveys.	Minimise Delays on the road network	Manage and maximise network availability at all times through on-going co-ordination with both internal and external partners	Encourage and promote innovation and collaborative working	To protect the environment by minimising carbon emissions and move towards more sustainable use of resources, protecting biodiversity, and provide resilience to the impacts of climate change
Carry out regular safety inspections to ensure the safety of the network	Respond in an effective and timely manner to customer enquiries within specified timescales	To maintain transport assets to a condition that meets the needs of our users but which is also affordable.	Minimise disruption and inconvenience caused by essential planned maintenance	To provide a network that is accessible to all users, with improved connectivity to ensure that traffic moves freely and quickly across the City	Identify and deliver efficiency savings through smarter working processes and procedures.	Encourage and promote the use of sustainable practices and materials
Repair defects that present an immediate or imminent hazard to road users	Consider customer usage of the network when planning highway maintenance activities.	Programme and carry out preventative maintenance works to maintain the integrity of the highway network	Implement strategies and plans to reduce the risk of unplanned events on the network		To make economic and efficient use of available resources for road maintenance and foster innovation in all aspects of work	Monitor & manage air quality Monitor & manage noise pollution Monitor & manage biodiversity and habitat Monitor & manage litter and debris
Keep the network free from ice, snow, and standing water as far as is reasonably practicable	Consider customer requirements in the forward planning stage of highway maintenance		Respond to emergencies as quickly as possible and within specific maximum timescales.			

4. Measuring Performance

4.1. Measuring Performance at Coventry City Council

The Council currently have a suite of performance indicators (PIs) to measure the Councils progress against the Council Plan objectives. These include 68 headline indicators which comprises of the following split:

- 20 for Globally connected
- 42 for Locally committed
- 8 for Delivering our priorities with fewer resources

Globally connected

Promoting the growth of a sustainable Coventry economy

Supporting businesses to grow

Developing the city centre

Helping local people into jobs

Supply, choice & quality of housing

Creating the infrastructure

Raising the profile of Coventry

Reducing the impact of poverty

Arts, sports & cultural opportunities

Locally committed

Improving the quality of life for Coventry people

Create an attractive, cleaner & greener city

Improving educational outcomes

Protecting our most vulnerable people

Make communities safer

Improve health and wellbeing

Reducing health inequalities

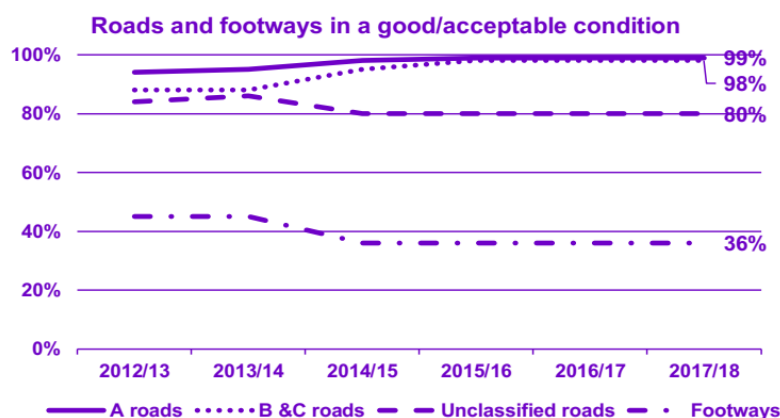
Delivering our priorities

with fewer resources

Making the most of our assets

Active communities & empowered citizens

Highway indicators support these key objectives and are reported annually as shown in the example below which is an extract from the Council Plan End of Year Performance Report.



📍 Roads and footways in a good/acceptable condition

4.2. Performance Management Framework

This section sets out the Councils approach to developing a Performance Management Framework (PMF) to support the implementation of the Councils asset management strategy. The purpose of a PMF is to support the Council in achieving its delivery priorities through a robust, transparent and repeatable process for recording, monitoring, analysing, and reporting performance across a wide range of criteria.

A PMF, that links strategic and operational criteria, is fundamental to a holistic asset management approach. It enables the Council to assess and demonstrate the impact that investment has on the performance of the network and road user satisfaction and engineering/contract measures and targets.

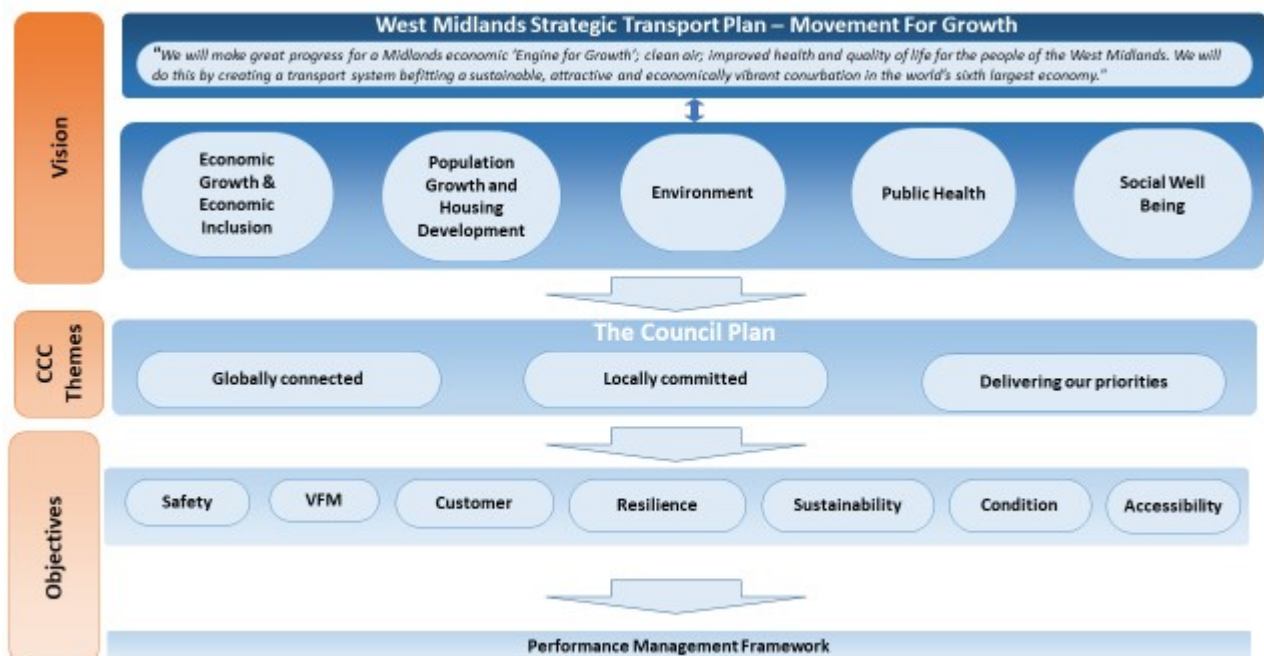
4.3. The importance of performance management

Successful asset management requires the ongoing monitoring of performance in order to ensure that the desired levels of service are being delivered. Performance management is important to the Council as it provides the ability to:

- Identify differences between actual and planned performance;
- Prioritise goals and allocate resources effectively;
- Ensure value for money;
- Learn from past performance to improve future performance;
- Improve other public satisfaction and services for residents.
- Implement action strategies to adapt performance

4.4. Why develop a framework?

The PMF is the mechanism for evaluating and assessing levels of performance in a clear, consistent, and transparent manner. The framework pulls together the objectives, levels of service, measures, and targets.



4.5. Performance Management Framework

Using the UKRLG guidance as a base, a performance management framework has been developed for the highway service. The framework builds upon and formalises the existing performance information and reporting. The extract below (Fig 3) shows the components and layout of the PMF. This simple layout shows the direct link between service targets and strategic objectives.

Council Plan objectives:

1. Globally connected - Promoting the growth of a sustainable Coventry economy
2. Locally committed - Improving the quality of life for Coventry people
3. Delivering the Councils priorities with fewer resources

Level of Service		Performance Measures	Council Plan Objective	2018/19	NHT
Safety	Reduce the numbers of those killed or injured	Public satisfaction with Speed control measures	2	54%	RSBI 02
		Public satisfaction with Safety of walking/cycling	2	57%	RSBI 02
	Carry out regular inspections to ensure the safety of the network	Public satisfaction with Highway condition	2 & 3	38%	HMBI 01
		Public satisfaction with the provision of safe crossing points	2 & 3	57%	WCBI 05
	Monitor and repair defects that present an immediate or imminent hazard to road users	Public satisfaction with speed of repair to damaged roads and pavements	2 & 3	35%	HMBI 07
		Public satisfaction with dealing with potholes and damaged roads	2 & 3	38%	HMBI 13

Figure 3 – Performance Management Framework (extract)

In addition to the performance management framework the highway service monitors operational performance through a series of performance reports which are produced on a monthly basis. These are:

- Pothole and Patching Performance – Enquiries, jobs raised, completed, and outstanding
- Gully Cleansing
- Year on year performance comparison
- Winter Maintenance delivery

5. Customer & Communication

5.1. Introduction

There has been an increasing interest in how local government can improve both its customer focus and customer relations. A key to this is an understanding of what drives customer satisfaction, this would enable the Council to prioritise investment in service improvements based on their likely impact on customer satisfaction. However, this is a difficult task as the improvements the public have experienced in other areas of the private sector has led to rising expectations in the services the Council provides, and therefore there are major challenges in meeting those expectations. Our aim is to provide a positive customer experience.

Public facing communications will primarily be via the Council highways webpages. For some highway functions customers will be able to find programmes of the planned works in their areas. However, it is recognised that current communication of highway activities needs to be improved for the following reasons:

- Engage effectively with all stakeholders
- Gather customer intelligence so that it can be used to improve services
- Improve our relationship with key partners
- To make it easier for people to find out about what we do
- Achieve our overall organisational objectives
- Demonstrate value for money
- Provide up-to-date information about highways activities (when, where, how long)
- Provide understanding of why and how highway works need to be carried out
- Demonstrate the success and value of what we do
- Ensure people understand what we do
- Keep people better informed
- Change any negative perceptions of the highway service

The Council works hard to ensure that local people, businesses, stakeholders and partners are informed about the detail of any work on their doorstep. A range of communication tools are used to ensure people are kept informed about what is happening and when it is happening.

Including:

- Social media
- Public exhibitions to keep people informed
- Advance warning signs for roadworks
- CitiVision – the Council's own magazine
- Regular Elected member and ward member briefings
- Partner newsletters
- Coventry City Council Website

6. Asset Information

6.1. Overview

The availability of data and information are essential for asset management decisions which rely on appropriate and up-to-date information to support them. This requires the collection and maintenance of asset data that can assist managers to assess, analyse and report on performance and progress. The Council recognise that data is expensive to collect and maintain, and therefore continue to undertake regular reviews of the Councils data requirements to ensure that the data continues to support legal requirements and aligns with the requirements of the business. Condition data and information of an asset is the key driver for maintenance and renewals work.

6.2. Asset Data in Coventry

Effective asset management planning requires knowledge of an asset, its condition and its use. Good asset data is the foundation on which asset management processes are built. The availability of appropriate asset data allows all staff involved in the process to obtain an overall view of the assets and apply a consistent management approach. Since the publication of 2008 HAMP there has been a marked improvement in the quantity and quality of data that is held against the various asset groups. However, for some assets, such as pedestrian guardrails and decorative street furniture, the data is not held in a format that is suitable for asset management purposes therefore work will be done to incorporate this data.

A key aspiration of the data management strategy is to have all assets geographically referenced which will allow greater flexibility in the use of the information related to each asset.

Asset information for key assets (carriageways, footways, bridges, and street lighting) is good, however a gap analysis has identified that there are assets, such as pedestrian guard rails and non-illuminated bollards, which contribute to road safety but do not have complete inventory records. The information for these and other such assets will be collected if the asset owner believes it will improve the management of the asset.

6.3. Asset Management Data Requirements

Asset data is required to enable the following processes to be undertaken:

- The effective monitoring of, and reporting on, the condition of the highway network
- Assessment of the expected lives of individual assets or asset components
- The assessment of current and the development of future levels of service
- The assessment of current and the development of associated performance indicators
- The modelling of future maintenance options
- The identification of future investment strategies
- The development of long-term forward works programmes which will then identify future budget requirements
- Valuation assessments for each of the assets and the calculation of depreciation

Once completed, these processes will allow properly informed and cost-effective management decisions to be made.

7. Inventory and Condition Data

7.1. Introduction

Highways will look at each element of highway infrastructure to determine, through formal risk assessment processes where available, whether it is still required. If no longer required, the element of superfluous highway infrastructure will be removed. This will generally be at the end of its useful life, when other work is going on in the area, or earlier if there is an appropriate business case for earlier removal. For example, this will include some road restraint systems (such as vehicle safety fences and pedestrian guardrail) and traffic signs. There is no point in using valuable resources to maintain assets that are of no benefit to the public when that same resource could be more usefully deployed elsewhere to maintain an asset that does provide benefit.

Effective asset management planning requires knowledge of an asset, its condition and its use. This entails the collection and maintenance of asset data that can assist managers to assess, analyse and report on performance and progress.

7.2. Types of Data

The following asset data types are required:

- **Inventory:** comprising details of the number, location, size, type, age and component make up of each asset.
- **Condition:** comprising measurement and observational rating of the condition of elements of the asset derived from either physical testing or visual inspection.
- **Use:** comprising details of the use of assets in the form of data such as traffic counts, heavy vehicle routes, etc.

7.3. Asset Groupings

The highway network comprises many differing and diverse assets. Asset management principles are to be applied to all of these components using the groupings as follows:

Table 2- Asset Groups

Asset Type	Definition	Quantity (2018 data)
Carriageway	Part of the road constructed for use by vehicular traffic. Includes turning lanes, bus lanes, crawler lanes and acceleration/ deceleration lanes, traffic calming features, bus lanes, high friction surfacing, central reserves.	A roads 89km B roads 69km C roads 64km Unclassified roads 655km
Footways & Cycle Facilities	Footway, Footpaths, Cycle ways,	Total of 2161km
Structures	Bridges, sign gantries, culverts, embankments, retaining walls, highway structures.	300 structures, including subways, retaining walls, culverts, gantries and rights of way structures
Road Lighting	Lighting columns, lamps, cabling, ducts, feeder pillars, seasonal illuminations, subway lighting. Illuminated signs,	33,000 street lighting columns, 4,000 lit traffic signs and beacons and 1,500 lit traffic bollards.
Road Markings	Longitudinal lines, hatched lines, transverse lines and special lines and markings.	This asset has yet to be quantified

Asset Type	Definition	Quantity (2018 data)
Technology Equipment	Variable message signs, cabinets, detector loops, emergency telephones and weather stations. Signalised junctions, UTC systems, detection equipment, cabling, ductwork and bollards, rising bollards.	This forms part of the traffic signals asset inventory
Fences & Barriers	Vehicle restraint systems, pedestrian barriers and boundary fencing	This asset has yet to be quantified
Drainage	Gullies & linear drainage channels (road and footpath), highway drains (including pipework, manholes & outfalls), land drainage ditches and watercourses, roadside ditches, swales, etc.	44,500 drainage gullies.
Signs & Signals	Non-illuminated signs, Warning, Regulatory and local direction/information posts, bollards information boards, street name plates.	127 signal controlled junctions, 98 pedestrian crossings, and 115 school patrol flashing lights.
Landscaping	Trees, hedges, grassed areas and verges.	This forms part of the City Parks asset inventory
Street Furniture (Public Art, Fountains, etc.)	Cycle stands, litter bins, benches/seats, public art, fountains, etc.	This asset has yet to be quantified
Winter Maintenance	Gritting plant, salt/grit bins.	This data is held within the winter service plan
Pedestrian Crossings	All pedestrian and cycle crossings (Toucan, Pelican, zebra, etc.), pedestrian refuges.	This forms part of the traffic signals asset inventory.

7.4. Current Asset Data

A recent review of the Councils asset data included an analysis of the extent and reliability of the asset data currently held against each asset type, the review highlighted some data deficiencies. The review identified that the quality and quantity of both inventory and condition data varies from asset group to asset group. However, for the key assets the inventory is a sound, well managed and maintained through recognised and accredited asset management systems.

7.5. Inspections and Condition Assessments

An effective regime of inspection, assessment, and recording is a crucial component of asset management. To maintain their integrity, safety, and serviceability highway assets are inspected and recorded in various ways which include:

- Highway Safety Inspections
- Service Inspections (Bridges and structures)
- Road and Pavement Condition Surveys

All information obtained from inspections and condition assessments, together with the nature of the response, including nil returns, are recorded consistently to facilitate analysis.

7.5.1. Safety Inspections

These inspections are designed to identify all defects likely to pose a hazard or serious inconvenience to users of the network or the wider community. Such defects include those that will require urgent attention, as well as those where the locations and sizes are such that longer periods of response would be acceptable.

7.5.2. Service Inspections

Service inspections are focused on ensuring that the network meets the needs of users. They comprise more detailed specific inspections of particular highway elements, and inspections for regulatory purposes, including

New Roads and Street Works Act (NRSWA). Service inspections are primarily designed to identify deficiencies compromising the reliability, quality, comfort and ease of use of the network, from the users' point of view. Although not intended for identifying defects that could potentially compromise user safety, any such defects observed during service inspections should be recorded and dealt with in the same way as for a safety inspection.

7.5.3. Condition Surveys

Increasing financial scrutiny requires the information provided through asset management to produce a rational decision process for capital investment and maintenance. The most critical information for decision makers is an understanding of the condition of the assets today and how well they are performing in relationship to users' expectations. It is critical to know they are functioning as needed, functioning efficiently, and the costs of maintaining them.

The Council currently hold and manage several different types of asset condition information within the pavement management system; The Council intend to build upon this information by adding the newly collected asset inventory data. This will allow us to view and manage all the asset condition and inventory data on a single platform. The benefits of this are:

- Opportunity to link condition assessment with the decision-making process.
- Evaluate the impact of all maintenance works.
- Improve the modelling of preventative maintenance works
- Define performance measures

7.5.3.1. Carriageway condition assessment

SCANNER (Surface Condition Assessment of the National Network of Roads)

These annual surveys are undertaken by a specialist vehicle at traffic speed. The survey collects data on ride quality, texture, and cracking of the road surface. The information is both reliable and repeatable giving a consistent survey outputs. SCANNER data provides the data for national and local performance indicators.

Detailed Visual Inspections (DVI)

This is a comprehensive walked survey that identifies defects by a number of more detailed classifications. The DVI survey covers both roads and pavements. The information obtained from this survey is used to assess the overall condition of the network and the planning of highway works programme.

Grip Tester

The Grip tester survey used to identify lengths of road with poor skidding resistance. Griptester surveys undertaken by a specialist vehicle at traffic speed.

7.5.3.2. Bridges and structures

Structures include bridges, footbridges, subways, culverts, gantries and retaining walls. Structures inspections exclude all drainage that is defined as a pipe with a diameter or span less than 600mm.

At present all structures on the highway network are routinely inspected on the basis of a duty of care, including those not in the ownership of the Council, such as those owned by Network Rail. Structures not owned by the Council do not receive Principal Inspections but receive General Inspections.

Bridges Risk Based Approach

The current standard - BD63/17 Inspection of Highway Structures, contained within the Design Manual for Roads and Bridges (DMRB) identifies five types of maintenance inspections that should be used for highway structures: -

- A. Safety Inspection;
- B. General Inspection;
- C. Principal Inspection;
- D. Special Inspection;
- E. Inspection for Assessment.

Inspection types A-C should be carried out at regular planned intervals whereas types D & E are carried out as one off inspections where there is a particular requirement to carry out an inspection such as monitoring a known defect, following a flood event, bridge strike or a need to collate information for a structural assessment.

The recommended frequency of planned inspection types is 2 years for General Inspections and 6 years for Principal Inspections. The Safety Inspection is normally covered as part of the 2 yearly General Inspection or as required for example following a vehicular impact.

BD63/17 allows for the 6 yearly Principal Inspection intervals to be increased by way of a risk-based approach up to a maximum of 12 years, with the exception of certain structures considered to be either strategic, high risk or in poor condition. General Inspection intervals must still be undertaken every two years unless a Principal Inspection is due that year. The process may also identify certain structures considered to be at high risk requiring a higher frequency of inspection.

The requirements for carrying out a Principal Inspection can prove to be costly with the need for additional resource along with specific requirements such as access to work at height, traffic management, rail possessions, working in or over water and/or confined space working.

A review of the current inspection programmes for all highway structures and carry out gap analysis of data required for the risk-based approach.

A risk-based approach for the Principal Inspection of Highway Structures using the recommendations contained within the CoP and BD63/17 along with reporting tools contained within bridge management software (BridgeStation) currently used by the City Council.

7.5.3.3. Street Lighting & Illuminated Traffic Signs and Bollards

Since 2010 Coventry City Council have been working in partnership with Balfour Beatty on a multi-million-pound street lighting PFI contract to improve all lighting throughout the city. The 25-year concession involves the design, installation and maintenance of street lights, illuminated signs and illuminated bollards and the ongoing maintenance of all existing and new equipment.

Under the PFI contract the following inspection regime applies:

- Electrical testing carried out every 6 years
- Structural visual inspection every 6 years

7.5.3.4. Non-Illuminated Traffic Signs and Bollards

Primary objective is to keep all signs legible, visible and effective as far as possible. These assets are maintained on a reactive basis resulting from routine inspections, customer reports, and accident damage, however important warning and regulatory signs will be replaced as quickly as possible.

7.5.3.5. Traffic Signals & ITS equipment

The priority objective is to provide and maintain all traffic signals and controlled pedestrian crossings to a high standard to ensure the safety of all road users and to ensure the efficient operation of the highway network. Coventry has a collaborative framework contract with neighbouring local authorities for e.g. Solihull and Warwickshire for maintaining their traffic signals which is currently in year three of a seven years contract with Siemens. The Council has up to date inventory and condition data for traffic signals, pedestrian, pelican and puffin crossings and this is updated annually through annual inventory inspections and condition surveys, undertaken by the service provider and updated in their database.

7.5.3.6. Highway Drainage

The network of highway drainage is efficiently managed using a recognised drainage asset management system. The system is capable of collecting all drainage assets and inspection data, including routine cleansing of gullies, catchpits, soakaways, and any other requirements. These can all be linked to mapped linear drainage features to provide a detailed picture of the network. The drainage management system is focussed on a risk-based approach making key decisions based on accurate data such as blockages, capacity, and silt levels. It also provides Geo-spatial tracking, live daily outputs, current status against schedule, and route optimisation.

In the national context the risk of major scale flooding in Coventry is low. The city area is not low lying however, there are some areas of the City which are more susceptible to flooding from rivers and surface water, following heavy or prolonged rainfall. The Coventry Local Flood Risk Management Strategy is an important new tool to help individuals, communities, businesses and Authorities understand and manage flood risk throughout the City.

A detailed assessment of flood risk within Coventry is contained in the Preliminary Flood Risk Assessment (PFRA). This is the basis of the live hazard mapping document and systems being constructed to be held within the Flood Risk Management and Drainage team.

7.5.3.7. Highway Trees

The council has in place a highway tree policy which sets out how city's roads and streets have been planted with trees, and how the council proposes to maintain them in the future. The aim of the policy is to protect, and to recognise the beneficial contribution that these trees make towards the character and appearance of the City.

All established trees within the highway are visually inspected as part of condition surveys to identify obvious potential hazards. Surface damage to carriageways, footways and cycleways, associated with root growth will be recorded as part of Safety or condition Inspections for those elements. Most of the tree lined streets have trees which are either nearing maturity or have outgrown their location and as such there is a need to plan for their eventual removal and replacement. This needs to be linked to a full tree and condition survey.

8. Data Management

8.1. Current Data Management Practices

The review of the Councils asset data also considered current highway data management practices. Whilst there are a number of procedures in place for the collection and analysis elements of the data, the variety, ownership, and responsibility of the various asset datasets means that a consistent data management regime has not been achieved. The review also recognised that there is a need to put in place measures to ensure the completeness and reliability of the data held, along with formal data validation procedures.

This data management procedure will ensure that, where possible and required, all asset data is kept up to date. Available resources will be allocated to support a new data management regime. Additional attributes may be added to the inventory as continuous updating procedures are implemented. Accuracy of the inventory data will be maintained as degradation of data quality will have a significant and detrimental effect on the validity of the results of management procedures.

The inventory management procedures will include the following:

- Clear ownership/responsibility for each asset data group
- Ongoing data collection
- Updating record for completed works
- Interaction with Highway Inspectors
- Methods for updating the inventory
- Adoption and usage of appropriate software

8.2. Data Use

Data is required to support the following activities:

- Maintaining an inventory; so that the extent of the highway assets is known.
- Routine maintenance management; to enable the Council to demonstrate that inspections and repairs are undertaken in accordance with the Councils policies
- Customer queries and service requests; to enable the Council to track customer queries and be able to demonstrate that The Council have responded efficiently and appropriately to them.
- Performance reporting; to enable progress and performance to be reported to a range of stakeholders including the collation and dissemination of NI's and Local Performance Indicators

Improving the quality of asset data will assist the development of the Councils highway management practices. The planned improvement in asset data management will enable the Council to improve:

- The Councils ability to predict future needs; enabling the Council to create better coordinated and more cost-effective plans.
- The Councils ability to meet future government requirements for asset valuation.
- The Councils understanding of the risks associated with managing the road network and therefore allow the Council to manage them better

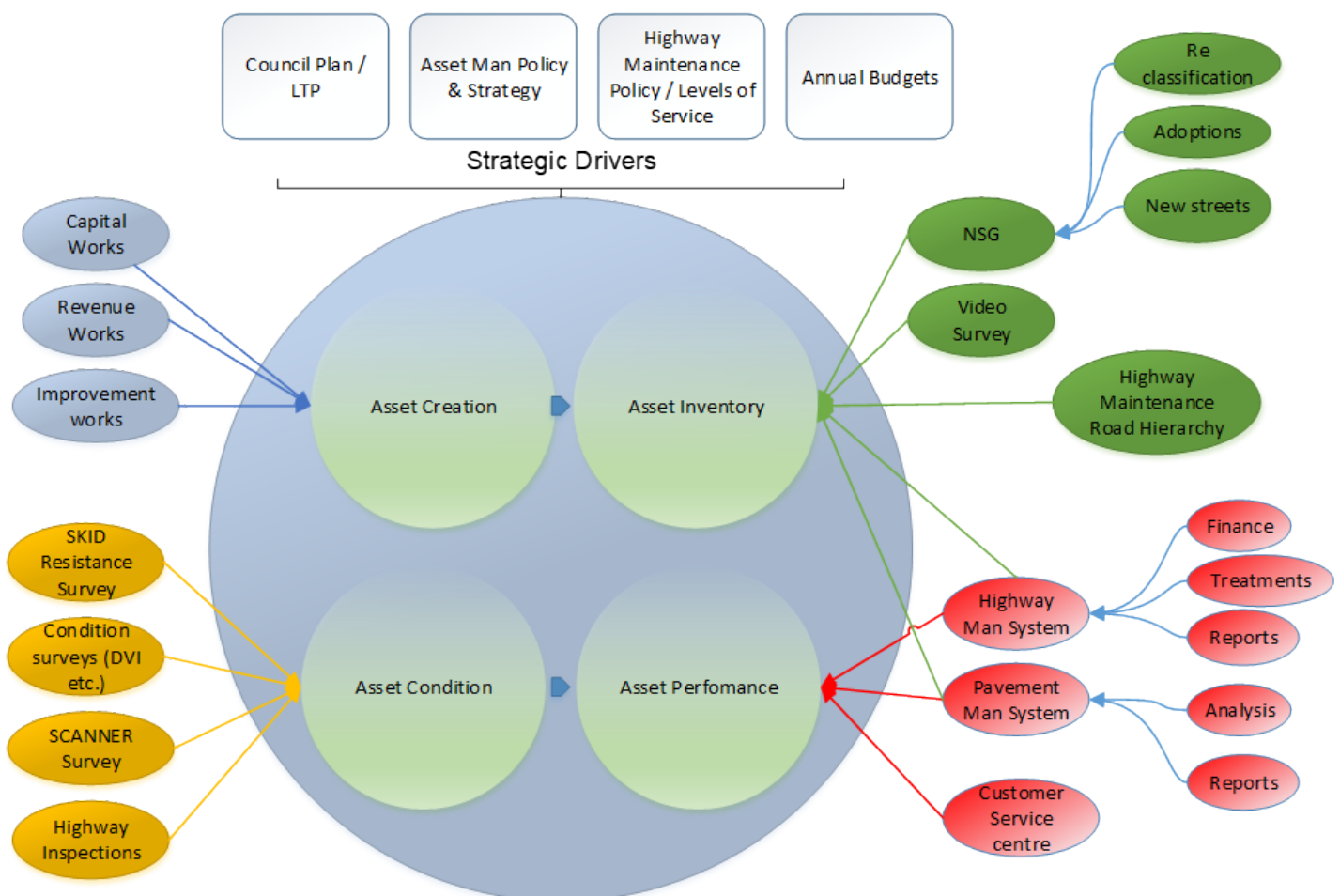
In simple terms better data management will enable the Council to make more informed decisions about the Councils highway network and therefore provide a better value service.

8.3. Highway Asset Management System

In Coventry CONFIRM will be the main highway asset management system. This will provide a robust tool for holding and reporting on asset data. Confirm is a modular piece of software which allows us to develop the system to the Councils requirements.

8.4. Data Management Strategy

The highway network is surveyed routinely using a variety of different methods. Asset data is collected and verified through these methods and new details are identified as part of an on-going process. For new asset sets that have not previously been collated a specific means of surveying is identified and implemented accordingly. This method allows the quality and integrity of the data to be regularly reviewed and any inaccuracies amended ensuring the overall data quality. The diagram below shows how data is used in the asset management process.



9. Lifecycle Planning

9.1. What is Lifecycle Planning?

Lifecycle planning comprises of the approach to the provision and maintenance over the entire life of an asset. It is the prediction of future performance of an asset, or a group of assets and or components, based on investment scenarios and maintenance strategies. The lifecycle plan is the documented output from this process. Lifecycle planning considers a number of investment/treatment scenarios to work out, from a holistic approach, which maintenance strategy is most cost effective over the life of the asset. It should be noted that this does not identify the performance of individual sections of road, for example, but groups similar types of road together.

Development and use of lifecycle plans will demonstrate how the Councils funding and performance requirements are achieved through appropriate intervention and investment strategies, with the objective of minimising expenditure while providing the required performance and maintaining levels of service.

To achieve Band 3 Incentive Funding, also requires authorities to undertake lifecycle planning on all critical assets, which have been categorised as carriageways, footways & cycle ways, structures, street lighting and traffic signals.

9.2. The Benefits of Lifecycle Planning

Lifecycle plans are used to demonstrate how funding and/or performance requirements are achieved through appropriate maintenance strategies with the objective of minimising expenditure, while providing the required performance over a specified period of time.

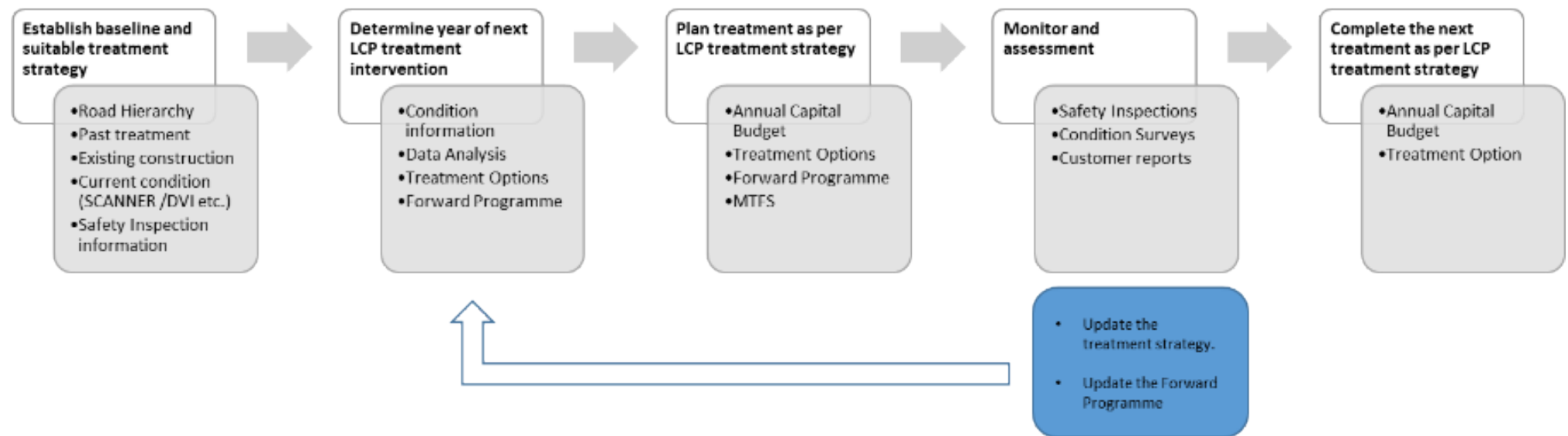
Lifecycle planning can be applied to all highway infrastructure assets. However, its application may be more beneficial to those assets that have the greatest value, require considerable funding, are high risk and/or seen as critical assets. In some cases, such as carriageways, complex approaches may be applied and in these circumstances higher quality data and predictive modelling techniques will often be needed.

The benefits of lifecycle planning include the ability to support decision making through: the identification of long term investment needs for highway infrastructure assets and the development of appropriate maintenance strategies; the determination of the level of investment required to achieve the required levels of service; and the prediction of the future performance of highway infrastructure assets for different levels of investment and different maintenance strategies.

9.3. The Lifecycle Planning Process

Coventry County Council are committed to implementing and maintaining a lifecycle planning approach to the maintenance of all of the Councils major highway assets. The outcomes from this lifecycle planning approach are used to inform investment decisions and to make the case for highway maintenance funding. Life cycle planning follows a simple process as shown in the diagram below. First The Council establish a baseline, this is done through historical treatment information combined with current condition assessment information. Then, depending upon the road hierarchy the next optimum treatment type and year can be determined.

Life Cycle Process



In order to develop a robust and well defined life cycle planning process it is important to have a reliable asset data. The Council have undertaken specific condition surveys which cover the entire carriageway network. These surveys have provided a detailed understanding of the condition and treatment required across the network. It has also been reviewed in conjunction with other data to develop Lifecycle Plans.

To deliver a life cycle planning with substance there are a number of factors which the Council need to consider:

a) Network Hierarchy

The Network Hierarchy is used to establish levels of service. It will also be used for the statutory network management role, developing co-ordination and regulating occupation. The Councils network Hierarchy has been reviewed to reflect functionality and scale of use

b) Condition Surveys

It is essential to record the condition of the highway network in a repeatable and consistent way, this is generally done by using UKPMS Machine and Visual Surveys. These surveys have multiple uses, typically to help produce areas for maintenance, for performance indicators and for budgeting.

c) Treatment Options

To enable lifecycle plans to have any credence and to be useful in any modelling terms there is a requirement to have a standard basket of treatments.

The Council use the following of treatments:

Structural intervention - Where the whole road is structurally unsound and requires a minimum of surface course and binder course material.

Preventative Maintenance Intervention - This is a process that provides added protection to the carriageway surface, sealing it from the ingress of water while also enhancing its skid resistance. This added protection can extend the life of the carriageway surface by up to 10 years

Reactive Maintenance Works – These works are generally associated with defect repairs and emergency works to ensure the road is safe for its users.

Treatment Lives - The treatment lives / maintenance intervention indicated in the tables below.

Expected Life / Intervention in years		
Structural intervention	Preventative Maintenance	Reactive Maintenance Works
Reconstruction	Surface Dressing	Patch repairs
20 years +	7 – 10 years	1 – 5 years

Due to their usage and environment the treatment intervention times for different classifications of roads will vary, therefore the lifecycle process applies these treatment options across the road hierarchy. Using this process, the Council aims to achieve a treatment programme that produces the most cost effective and appropriate treatment for the road network with the available funding.

In determining budget spend the Council need to analyse different treatment strategies to understand which is the best for the asset. To support this approach, the CONFIRM Strategic Asset Management (SAM) tool has been used. The SAM tool works in a simple way, it takes measured condition and predicts annual deterioration based upon a treatment strategy.

10. Work Programming

10.1. Introduction

Highway maintenance programmes, usually a single year detailed programme of work, are prepared with reference to the HIAMP and the funding allocation. Carriageway maintenance projects are prioritised by analysis of various different data sets including condition surveys, inspector observations, and customer reports. Lists of proposed projects are developed for the different asset groups such as roads, pavements, drainage, bridges, and street lighting.

Effective co-ordination of these programmes relies on reviews of work planned for the year, finalised after the Council budget setting process. A delivery programme is developed with reviews and updates completed on a monthly basis. In addition, locally promoted projects can substantially change the anticipated workload in any one year and at any point in the year. The adoption of a longer term programme of, say 5 years, will assist with creating greater efficiency in co-ordinating works on the Highway. In addition, the implementation of a long term programme will enable the identification of more cost effective solutions and support optimisation of delivery resources.

10.2. Development of a Forward Works Programme (FWP)

Implementation of an asset management approach to the operation and maintenance of a highway network entails a change to the programming of work on a whole of life cost basis. This is only possible when longer-term views of the programming process are adopted.

Through the use of this HIAMP, the Council expects to eventually move to a longer term FWP, possibly up to ten years. The FWP will be developed from information derived from the asset data for the various asset groups together with other programmes of network improvements such as safety and integrated/sustainable transport.

The programme will be developed for a particular funding expectation, and must be reviewed if that expectation is not realised. Where there is insufficient budget to deal with all the needs then schemes which are safety critical or have a high level of risk carry the highest priority. Candidate schemes are prioritised to ensure that those that provide the greatest contribution to the asset management strategy at the minimum cost are undertaken. Adopting this approach ensures that value for money is achieved.

The process used in developing the annual forward works programme is shown in Figure 4.

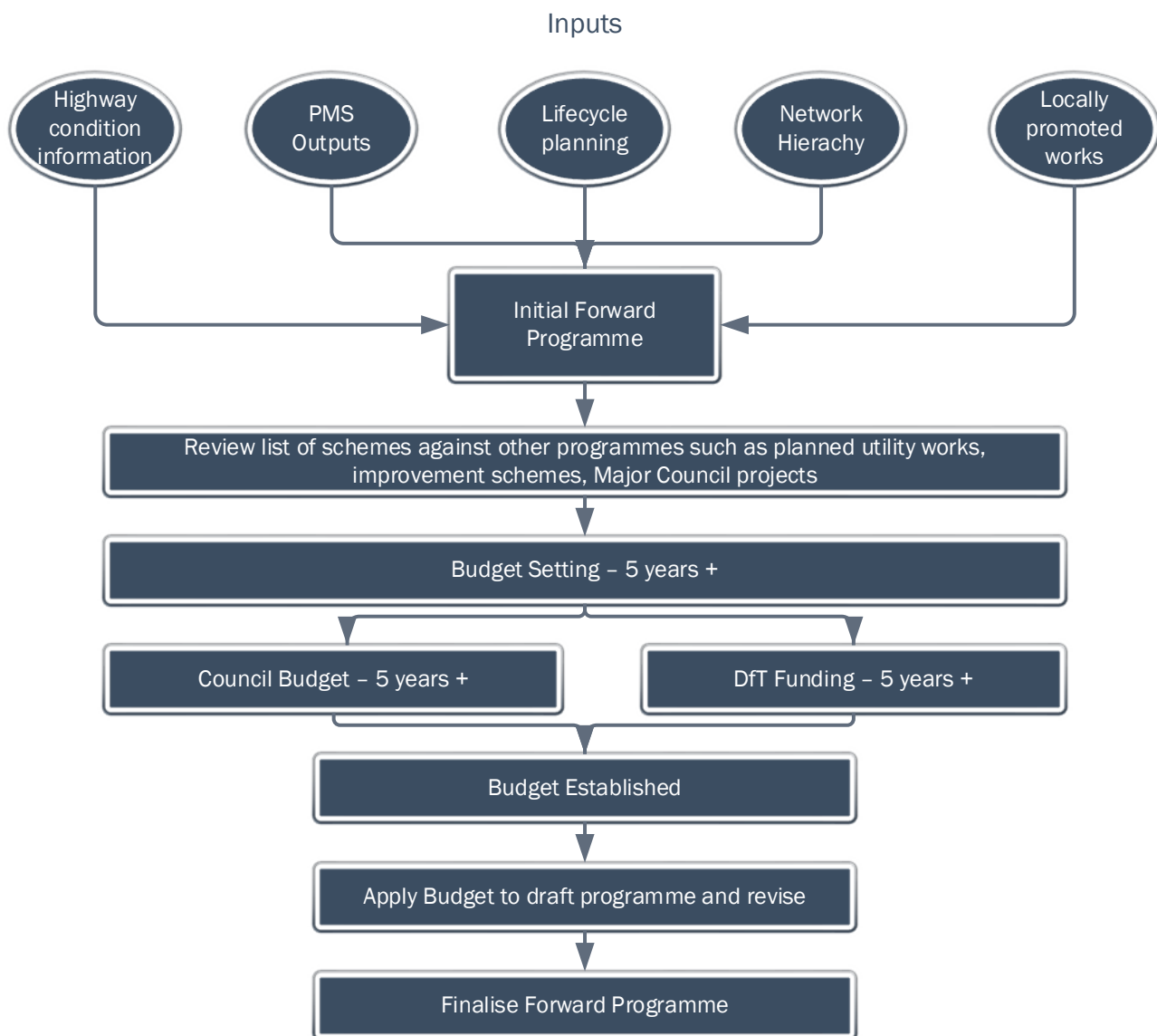


Figure 4. Annual Forward Works Programme Process

10.3. Programme Accuracy

Accuracy of the listing of projects within the FWP will vary, depending on the time period that the list covers;

- Year 1 of the programme will be the current financial year, and represents the work programme already in place.
- Year 2 of the programme represents a firm recommendation of works that will be included in the next funding application. As such these should stand scrutiny for economic viability and a genuine need for actions other than routine work.
- Year 3 to Year 5 projects represent a reasonable assessment of needs, showing some tangible evidence supporting the reason for the treatment, including field inspection for Year 3 projects.
- Year 6 to Year 10 projects are a best assessment based on considerations such as age and expected life. In future, these may be supported by the outputs from deterioration modelling.

The accuracy implications of the above assessment are shown in the following table.

Accuracy of programme items		
Years	Subjective Description	Treatment or Project Definition Level
1	Project will be implemented in year	Actual treatment
2	Firm recommendation	Specific treatment or project
3-5	Reasonable assessment	Treatment or project type
6-10*	An assessment of long term funding need	Generic treatment
* These years must be considered to be highly speculative given the dynamic factors facing highway network use.		

In developing a long term programme, it is accepted that a degree of caution is advisable. It is not reasonable to predict exact projects that will happen at exact locations in the future. It is both possible and desirable to predict the scale and type of treatments and projects likely to be carried out in future years on a network wide basis. Such predictions are necessary in order to identify long term future funding need and as a key input into asset valuation.

10.4. Programme Review

The FWP will be updated throughout each financial year to reflect changes that occur during the execution of the work. The following year's programme is the subject of formal reviews that follow an annual cycle from April to the following February.

The review will be undertaken at the end of the third quarter of the financial year. At that time any incomplete or deferred projects will be designated 'carryover projects' and taken into the new year's programme.

A further review will be carried out during the annual preparation of funding bids. Ideally this would occur after all the annual surface condition surveys have been completed but this is frequently impractical and partial surveys only are carried out in any one year. Results of the review will be presented to the Council Cabinet in the form of the Transportation and Highway Maintenance Capital Programme report as part of the corporate budget setting process. The programme will be considered as a draft until the final review has been approved by Cabinet.

10.5. Current Desired Programme Summarisation Levels

The current programmes schedules work by treatments and asset group. The actual grouping will vary as reporting requirements change as part of the management process. The aim will be to produce a longer term (up to 10 years) FWP programme using known programmes of work affecting or associated with the highway network.

10.6. Current Work Programmes use the following asset grouping

Carriageways & Footways:

Current programmes of work generally cover a 12-month period with indicative schedules for a further 12 months. These programmes are based on the results of the surface condition surveys and engineering inspections. It is anticipated that expected software developments will allow formulation of future programmes. Similar data sets will be used to generate a 10-year programme of works with an increasing input from the PMS.

Bridges & Other Highway Structures:

A 2 year forward works programme has been put in place for all planned maintenance operations. The aim will be to produce a 10 year FWP for bridges and structures using inspection results, estimates of life cycles and the age profiles of critical components. Greater use will be made of bridge condition indicators (BCI) and the information generated from these.

Street Lighting and Illuminated Signs

Street Lighting and illuminated signs maintenance is a significant aspect of network management, both financially and in terms of its perceived importance to users, providing direction and advice for all types of traffic. This plan covers the management of key highway infrastructure assets, however, it does not cover the Street Lighting and illuminated signs both of which are managed outside this plan and are covered by a Private Finance Initiative (PFI) contract. The 25-year PFI concession involves the design, installation and maintenance of street lights, signs and bollards, with a 5-year investment period, and an ongoing maintenance of all existing and new equipment.

Non illuminated Signs and Bollards

The Council's primary objective is to keep all signs legible, visible and effective as far as possible. These assets are maintained on a reactive basis resulting from routine inspections, customer reports, and accident damage, however important warning and regulatory signs will be replaced as quickly as possible. The inspection of non-illuminated signs and bollards is included within the inspections of carriageways and footways, as detailed elsewhere in this HIAMP, additional inspections will be generated by emergency call outs (either during working hours or outside of normal working hours) when it is reported that an issue of safety has occurred.

Safety Fences (vehicle restraint)

The Council currently operates an annual safety fence renewal programme, in addition to this new barrier is installed or renewed as part of highway schemes. The day to day maintenance of this asset is carried out on a purely reactive basis. The inventory data for this asset is not comprehensive so further work is needed to complete the data set.

Traffic Signals & Pedestrian Crossings:

There is an annual programme of renewals and replacements developed by the traffic team. Works are identified for replacement/alterations as part of long a term Capital programme. A future programme for the replacement of increasingly obsolescent equipment and its upgrading to meet demand over a 10-year period needs developing.

Winter Maintenance:

Detail of the Winter Maintenance service is detailed in Section 13 of this document.

Arboriculture:

Currently, works on a year on year cyclical maintenance programme. Reactive maintenance will always be a part of arboriculture where trees may become dangerous due to rapid deterioration through disease, severe weather effects, vehicular collisions, etc. The forward works programme includes tree planting works and landscaping activities.

Drainage

Forward programmes are utilised when working in coordination with other water authorities on flood defence schemes. There are two aspects of drainage for which there are annual programmes. The first is cyclic gully cleansing and associated works, the second is a programme of works developed by the flood risk management team.

Fences, Boundary Markers & Street Furniture:

As most maintenance work undertaken for these assets is ad-hoc reactive maintenance there is no forward work programme currently in place or anticipated.

11. Risk Management

11.1. Overview

Risk management supports the approach adopted for making decisions through the asset management planning process. A risk can be defined as an uncertain event which has an effect on the desired performance of an asset or a series of assets. A risk factor is the product of the severity of an event and the likelihood of its occurrence.

Well-Managed Highway Infrastructure: A Code of Practice advises a risk based approach, this suggests that risk management requires the identification of asset risks, assessing impacts and probabilities of occurrence. Risk Management requires calculating the risk factor, defining the category of risk and timescales to rectify any potential defects to address the risk.

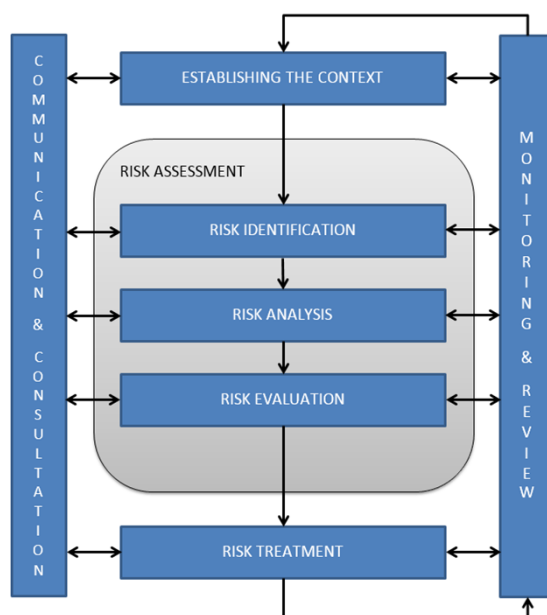
The most commonly understood risks affecting the highway relate to safety. But other risks are a crucial part of the asset management process and may include:

- Reputation;
- Asset loss or damage;
- Service reduction or failure;
- Operational;
- Environmental;
- Financial and contractual.

A key service risk relates to safety and the liability claims arising from accident and injury due to the condition of the highway infrastructure. A statutory defence exists if an authority can prove it has in place adequate policies and procedures to maintain the highway, they are performed and there was no prior knowledge of the defect. The HIAMP sets out the council's planned Safety Inspection regimes for mitigating this risk. This provides for a practicable and reasonably deliverable response given resources available.

11.2. Coventry Corporate Risk Management

Risk management is a key part of the strategic and performance management processes and also the Council's assurance controls and compliance arrangements. The Council has an established risk management process, which is illustrated in the following diagram:



11.3. Risk Identification

Risks and hazards need to be identified methodically in order to control them. In this way, all significant activities are identified, and all the risks they could cause are identified. It is always necessary to consider how the factors can interact since the majority of hazards are generally due to a combination of more factors than one.

11.4. Risk Assessment

Risk assessment means quantifying how likely a risk is to occur (**probability**) and how damaging the effects will be if it does (**impact**). Risk management is about getting the risk/benefit balance broadly right. Combining the probability and impact allows the estimation of the significance of the risk and whether further effort is needed to manage it.

11.5. Calculating the Risk

Once risks have been identified, they must be rated in order to identify those that pose the greatest threat (or opportunity). This is done by looking at both the probability of the risk occurring and its potential impact using a '4 by 4' risk matrix approach, rating the probability and impact of each risk from 1 to 4. These ratings are then multiplied to give a final score for each risk. Scores can be plotted onto a Risk Matrix and banded into three overall ratings - Red, Amber and Green.

11.6. Risk Control

Controlling risk means identifying action(s) to reduce the probability, the impact, or both.

Modifying risks means changing the activity (or the way it is done)

Transferring risk means using an insurer to cover the cost of damage, or arrangements such as joint working, partnerships or contracting out. However, such arrangements always have a cost and need to be used with caution.

Eliminating risk means stopping an activity because modifying it or controlling it would not reduce the risk to an acceptable level or would be unacceptably costly.

11.7. Risk Registers

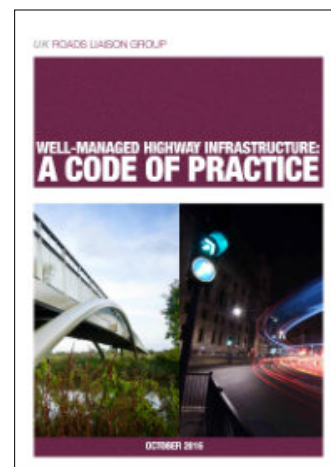
A series of relevant risk registers exist for the Council. However currently, no service wide risk assessment has been carried out for all the highways maintenance service. It is intended that this will be undertaken, in line with the process outlined above, as a significant activity within the Improvement Plan.

12. Risk Based Approach

12.1. Well-Managed Highway Infrastructure: A Code of Practice

The 'old' Code of Practice, Well Maintained Highways (2005), set or encouraged standards to be established for risk mitigation processes. These became very challenging for local highway authorities to maintain and therefore potentially increased the risks and certainly increased the liability.

Therefore, it is better to develop a risk-based approach which considers the balancing of existing resources across the network. This reduces the mitigation processes (inspections, reactive responses to defect repairs) where the risks are lower and facilitates increasing them for those parts of the network where the risks are greater. A risk-based approach should also create an agility in the management of these risks so that the mitigation processes can quickly flex to respond to changing circumstances of reducing or increasing risk, for example change of adjacent land use, new development, or emerging travel patterns. However, we have to be careful that adopting a risk-based approach is not seen as a money saving exercise, with decisions evidenced and suitably approved.



The new risk-based code, Well-Managed Highway Infrastructure: A Code of Practice, represents a significant shift away from the previous more prescriptive approach to highways maintenance. Recommendation 7 of the code states that:

A risk-based approach should be adopted for all aspects of highway infrastructure maintenance, including setting levels of service, inspections, responses, resilience, priorities and programmes

12.2. Risk Based Approach and Highway Liability – Risk Management

Under Section 41 of the Highways Act 1980 the Council has a statutory duty to maintain a highway maintainable at public expense. Neglecting this duty can lead to claims against the Council for damages resulting from a failure to maintain the highway.

Under Section 58 of the 1980 Highways Act, the highway authority can use a "Special Defence" in respect of action against it for damages for non-repair of the highway if it can prove that it has taken such care as could be considered reasonable. The key criteria where the court is required to consider as part of the authority's defence are:

- (a) The character of the highway, and the traffic which was reasonably expected to use it;
- (b) The standard of maintenance appropriate for a highway of that character and used by such traffic;
- (c) The state of repair in which a reasonable person would have expected to find the highway;
- (d) Whether the highway authority knew, or could reasonably have been expected to know, that the condition of the part of the highway to which the action relates was likely to cause danger to users of the highway;
- (e) Where the highway authority could not reasonably have been expected to repair that part of the highway before the cause of action arose, what warning notices of its condition had been displayed;

The Institute of Highway Engineers Well Managed Highway Liability Risk 2017 (WMHLI) provides practical guidance on best practice in the management of highway liability risk exposures. It is designed to inform users how to apply the principles of risk management and risk based approach to highway liability claims exposure.

12.3. Safety Inspections - Coventry approach

Coventry City Council, and for that matter other local authorities, are not statutorily obliged to undertake highway Safety Inspections. However, the Code of Practice– "Well Managed Highway Infrastructure" recommends that local authorities should undertake regular safety inspections to identify all defects likely to create danger or serious inconvenience to users of the network or the wider community.

The council currently undertake safety inspections and they form a key aspect of its strategy for managing liabilities and risks. Through them the Council is not only able to ensure the safety of Coventry's highway network but to support a defence to repudiate third party highway liability claims under Section 58 of the Highways Act 1980.

Section 58 requires highway authorities to demonstrate that they carry out highway safety inspections in accordance with their policies and national guidance. Highway inspection reports are part of the evidence used to show that the highway authority has acted reasonably. Allowing the court to decide 'whether the highway authority knew or could reasonably be expected to know, that the condition of the part of the highway to which the action relates was likely to cause danger to users of the highway'.

A key element of the defence is being able to provide good evidence and/or reasoning on each decision the authority made that lead to the response decision. This requires that a court shall have regard, in accordance with the Code of Practice, as to whether the Council's safety inspections regime is based on an assessment of risk that provides for a practicable and reasonable approach to the risks and potential consequences of the defects identified. The inspections take account of potential risks to all road users and in particular vulnerable users.

To support a risk based approach the current highway safety inspection procedure has been reviewed and amended where needed to reflect Coventry's highway network priorities and the new code of practice recommendations.

12.4. Method of Inspection

Driven Inspections

Carriageway safety Inspections will be undertaken by two people in a slowly moving vehicle (20–25mph) in both directions, one driving and the other inspecting. The driver will not be expected to be actively involved in identifying and recording defects, but will concentrate on ensuring the safe passage of the vehicle. For narrow roads, typically those less than 4m total width, the driven inspection will be carried out in one direction only. The CCC liveried survey vehicle will be equipped with high intensity roof-mounted flashing beacons and high visibility reflective markings. The inspection of any traffic sensitive lengths should be surveyed at off-peak times.

Walked Inspections

All footways must be walked, if there is a footway on both sides of the road the footways are to be inspected by one person on foot in both directions.

Health and Safety

Inspections must be carried out in a safe manner so as not to endanger staff or the public. All operations will have a current risk assessment which must be followed by staff.

Information to be recorded

All inspections shall be properly recorded into the Highway Management System and retained by the Council for future reference. As well as any defects found, the overall condition of the carriageway and footway may be recorded as this information can be used to identify potential preventative maintenance and renewal schemes. Highway inspection data is captured on hand held devices which automatically time and date stamp the inspection.

12.5. Frequency of inspection

The council base frequencies for undertaking safety inspections upon road hierarchy categories as recommended in the Code of Practice. Whilst typical inspection frequencies are recommended within the Code these are only intended to be a starting point as it advocates local authorities should, when establishing frequencies, also take wider consideration of:

- category within the network hierarchy;
- type of asset, e.g. carriageway, footway, embankment, cutting, structure, electrical apparatus, etc;
- critical assets;
- consequence of failure,
- network resilience;

- use, characteristics and trends;
- incident and inspection history;
- characteristics of adjoining networks elements;
- the approach of adjoining Highway Authorities; and
- wider policy or operational considerations

The current safety inspection frequency is shown in the table below and are approved for the period covered by this HIAMP.

Feature	Description	Category	Frequency of Inspection
Roads	Strategic Route	2	1 month
	Main Distributor	3(a)	1 month
	Secondary Distributor	3(b)	1 month
	Link Road	4(a)	3 months
	Local Access	4(b)	1 year
Footways	Prestige Area	1(a)	1 month
	Primary Walking Route	1	1 month
	Secondary Walking Route	2	3 months
	Link Footway	3	6 months
	Local Access Footways	4	1 year
Shopping Areas	Main Shopping Centre roads & footways	Mixed	1 month
Cycle Routes	Part of Carriageway		As for Roads
	Part of Footway		As for Footways

The defined inspection frequencies should be maintained wherever possible; however, some flexibility will enable the effects of weather and resource availability to be managed more effectively. The following flexibilities are acceptable for **one** inspection cycle:

<u>Set Frequency</u>	<u>Flexibility</u>
1 Month	3 Working Days
3 Months	5 Working Days
6 Months	7 Working Days
1 Year	10 Working days

12.6. Degree of Deficiency

During safety inspections, observed defects that provide a risk to users are risk assessed to determine the level of response. The degree of risk is a crucial contributory factor in determining the nature and speed of response. For example, the degree of risk from a pothole depends not merely on its depth but also on its size and location. On site risk assessment will always need to take into account the particular circumstances of individual defects.

A review of the Councils risk based approach for highway safety inspections has been carried out to determine the scale of the risk presented by a highway defect in order to prioritise the appropriate category of response. Whilst the Councils previous inspection and assessment regime provided a very good defect response and treatment service, it did not follow a risk based approach. Therefore, it was considered that the Council's highway safety inspection and assessment regime was in need of updating in order to align with the new guidance, thereby contributing to a robust defence of any highways claims brought against the Council.

12.7. The review process

In developing the proposed risk based approach options officers have taken into consideration revisions being made to highway safety inspection policies by other local highway authorities. In addition to this the proposed options have been reviewed by Legal Services, and Highway Operations.

12.8. Responding to defects

Adopting a 'risk' based approach means taking into account the severity and location of a defect. It is not the case that defects that exceed intervention levels are an imminent hazard. At the time of the inspection the inspector will carry out a dynamic risk assessment which will categorise the defect and determine the appropriate response time. The following categorisation of defects have been defined as part of the review:

Emergency defects - These are those which due to their nature and location represent an immediate hazard or very serious risk to the public.

Priority 1 - Defects which are considered to require immediate attention should be corrected or made safe at the time of the inspection, if reasonably practicable. In this context, making safe may constitute displaying warning notices, coning off or fencing off to protect the public from the defect. If it is not possible to correct or make safe the defect at the time of inspection, repairs of a permanent or temporary nature should be carried out as soon as possible. If temporary repairs have been used, permanent repair should be carried out within a reasonable period.

Priority 1 Lower risk– These are defects which are at or above intervention level (40mm) and have been risk assessed as a lower risk due a combination of location, network hierarchy, and usage. These are not considered to require immediate attention and but repairs of a permanent or temporary nature should be carried out within the required response time (20 days). If temporary repairs have been used, permanent repair should be carried out within a reasonable period.

Priority 2 Higher risk– These are defects which are not at or above intervention level (40mm) but have been risk assessed as a higher risk due a combination of location, network hierarchy, and usage. These defects could represent a hazard although of less significance than those which are considered to require immediate attention. Repairs of a permanent or temporary nature should be carried out within the required response time (20 days). If temporary repairs have been used, permanent repair should be carried out within a reasonable period.

Priority 2 - Defects that do not represent an immediate or imminent hazard or risk of short term structural deterioration may have safety implications, although of far less significance than those which are considered to require urgent attention. They are more likely to have serviceability or sustainability implications. If repairs are to be undertaken these are likely to be within a scheduled programme of repair works with their priority determined by risk assessment. Access requirements, other works on the network, traffic levels, and the desirability of minimising traffic management, should also be considered as part of the response.

With the exception of emergency defects, the Council will endeavour inspect and categorise all defects within 10 working days of the original report to determine the level of response required.

The treatment response times for defects are as follows:

Emergency defects = 2 Hours

Carriageway intervention level for P1 defects	= ≥ 40mm – 5 working day response
Carriageway intervention level for P1 (lower) defects	= ≥ 40mm– 20 working day response
Carriageway intervention level for P2 (higher) defects	= < 40mm - 20 working day response
Carriageway intervention level for P2 defects	= < 40mm - 40 working day response
Footway intervention level for P1 defects	= ≥ 20mm – 5 working day response
Footway intervention level for P1 (lower) defects	= ≥ 20mm– 20 working day response
Footway intervention level for P2 (higher) defects	= < 20mm - 20 working day response
Footway intervention level for P2 defects	= < 20mm - 40 working day response

Defect Category	Response	Action
Emergency	2 Hours	These defects represent an immediate hazard or very serious risk to the public. Defects identified as emergencies will be dealt with expediently and in all cases aim to be made safe within 2 hours of Inspection, subject to risk assessment
P1	5 working days	Defect is at or above intervention level (40mm) - Respond within 5 working days, first time permanent repair or temporary repair.
P1(Lower Risk)	20 working days	Defect is at or above intervention level (40mm), risk assessed as a lower risk. Respond within 20 working days, permanent repair.
P2 (Higher Risk)	20 working days	Defect is at P2 intervention level (less than 40mm or 20mm), risk assessed as a higher risk, respond within 20 working days, permanent repair.
P2	40 working days	Below P1 intervention level (less than 40mm or 20mm), respond within 40 working days, permanent repair

12.9. Defect Risk Assessment

The key to selecting the appropriate action for a defect is the risk assessment process. All defects that reach the intervention level will be evaluated for their impact and the probability of injury or damage to a highway user. Response times for remedial action will depend on where the defect is located on the network. The response time is linked to the need to prioritise, through the asset management policy and strategy.

The Council has used the Highway Infrastructure Asset Management Guidance Document produced by HMEP and the UK Roads Liaison Group provides a method and risk matrix to support the risk based approach to responding to defects. The risk assessment process is as follows:

Impact

The impact of a risk occurring is measured on a scale of 1 – 4 (1 lowest, 4 highest) the following table gives guidance:

Impact rating	Score	Description	Possible Indicators
High	4	The Hazard presented by the defect could result in serious injury or a fatality.	Impact will result in serious damage to persons or property. Highway users will instinctively react to avoid the defect and could place them in a dangerous position. The defect could destabilise a vehicle and could place them in a dangerous position
Medium	3	The Hazard presented by the defect could result in injury or serious claim against the Council.	Impact will result in damage to persons or property, from which they are likely to recover. Highway users will instinctively react to avoid the defect. The defect could destabilise a vehicle

Low	2	<p>The Hazard presented by the defect could result in minor injury or claim against the Council. If untreated the defect will contribute to the deterioration in the overall condition of the Highway Asset.</p> <p>The defect is likely to deteriorate further before the next safety inspection.</p>	<p>Most impacts will not result in any injury.</p> <p>Highway users are unlikely to react to avoid the defect and the impact will not interrupt their passage.</p> <p>The defect will be felt and recognised as a defect by most Highway users, and its presence will be a negative influence on their perception of the Highway Asset.</p> <p>If untreated the defect will accelerate the local deterioration of the Highway Asset.</p>
Very Low	1	<p>The Hazard presented by the defect, is unlikely to result in injury or claim, but the defect will contribute to the deterioration in the overall condition of the Highway asset.</p> <p>The defect is unlikely to deteriorate further before the next scheduled safety inspection.</p>	<p>The defect will be recognised by Highway Inspectors as requiring attention, but is unlikely to be felt and recognised as a defect by most Highway users.</p> <p>The defect is very unlikely to cause injury</p>

The vulnerability of all highway users, including cyclists and pedestrians will be reflected in the risk assessment carried out when deciding the category of the defect. In all other areas the degree of regular use of the network by all users, will be considered in the risk assessment.

Probability

The probability of event occurring is measured on a scale of 1 – 4

Probability Ratings	Score	Description	Possible Indicators
Severe	4	More than a 70% chance of occurrence.	<p>Vehicular, cycle and / or pedestrian flows are high.</p> <p>A high percentage of vulnerable users may pass through the site.</p> <p>The location of the defect and the topography of the site will mean that it is difficult to a highway user to recognise and hence avoid the defect.</p> <p>Forward visibility may be compromised.</p>
High	3	40 – 70% chance of occurrence.	<p>Vehicular, cycle or pedestrian flows may be high, but differing modes are less likely to share the Highway at this location.</p> <p>Responsible Highway users may be able to recognise and take action to mitigate the impact of the defect.</p> <p>Forward visibility is good.</p>
Medium	2	10 – 40% chance of occurrence.	<p>Vehicular, cycle or pedestrian flows may be high, but differing modes are less likely to share the Highway at this location.</p> <p>The majority of responsible Highway users will be able to recognise and take action to mitigate the impact of the defect.</p> <p>Forward visibility is good.</p>

Low	1	0 – 10% chance of occurrence.	<p>Vehicular, cycle or pedestrian flows are moderate or low.</p> <p>Different transport modes are unlikely to share the Highway at this location.</p> <p>The majority of responsible Highway users will be able to recognise and take action to mitigate the impact of the defect.</p>
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Risk factor

The risk factor is the product of the impact and the probability and determines the seriousness of the risk. This best demonstrated by using a risk matrix, this provides a value to the risk factor from the impact and probability assessments. The risk matrix and an example of its use is shown below:

Risk Assessment matrix

Examples using the matrix

			Impact			
			Very Low	Low	Medium	High
			1	2	3	4
Probability	4	70% - 100%	Priority 1 lower Priority 2	Priority 1 lower Priority 2 higher	Priority 1	Priority 1
	3	40% - 70%	Priority 1 lower Priority 2	Priority 1 lower Priority 2 higher	Priority 1	Priority 1
	2	10% - 40%	Priority 1 lower Priority 2	Priority 1 lower Priority 2	Priority 1 lower Priority 2 higher	Priority 1
	1	0% - 10%	Priority 1 lower Priority 2	Priority 1 lower Priority 2	Priority 1 lower Priority 2 higher	Priority 1 lower Priority 2 higher

These timescales commence when the defect has been reported to the Council through the contact centre and a site risk assessment has been undertaken to categorise and prioritise the defect. Where a defect is reported outside the working hours of the contact centre then the Duty Officer will record the report and instruct the duty crew to attend and make safe where required. Timescales are designed to enable highway defects to be, wherever practicable, actioned by a permanent repair.

13. Resilient Network

13.1. Introduction

It is now recognised that climate change is affecting weather patterns. In the UK, this is reflected through greater incidence of prolonged rainfall, strong winds and heatwaves which can combine with other natural events to create adverse conditions for the Councils transport network. Where practical, there is a need to make the Councils transport networks more resilient to such events.

In recent years prolonged and heavy rainfall has caused disruption to the Coventry transport network, this included road closures and train delays. Coventry's University Hospital temporarily closed two flooded car parks, and many properties were flooded. Since 2012 there have been similar severe weather events which have had a significant impact on individual people, communities and infrastructure.

The cost, damage and disruption that extreme weather can cause to homes, businesses and vital services cannot be under estimated.

The increasing frequency, variety, and impact of these extreme weather events prompted the Department for Transport (DfT) to undertake a review of the resilience of the UK transport network to extreme weather events. This review recommended that local highway authorities should identify their resilient network and give it priority consideration in terms of maintenance and availability.

The Council recognise that change is necessary and have already produced key documents that look to address climate change issues, these being the Local Flood Risk Management Strategy, and the Climate Change Strategy for Coventry 2020. Further work is now considered necessary to establish Coventry's Resilient Network.

13.2. What is a Resilient Network?

Resilience in the context of this review can be described as the ability of the transport network to recover from planned or unexpected weather events and return to providing the required level of service for customers. It is about increasing the physical resilience of transport systems to extreme weather, so when extreme weather is experienced the transport network continues to function.

13.3. DfT Transport Resilience Review

In 2014, the Department for Transport (DfT) undertook a review of the resilience of the UK transport network to extreme weather events. A number of recommendations were made as a result, in both the short and longer term. The key recommendation for local roads is;

"that Local Highway Authorities identify a 'resilient network' to which they will give priority, in order to maintain economic activity and access to key services during extreme weather."

This recommendation aligns with this Councils wider strategies, including the Winter Service Plan, Local Flood Risk Management Strategy, and the Climate Change Strategy for Coventry 2020. The latter details the strategy for adaption to the future impacts of climate changes.

13.4. Coventry, Solihull and Warwickshire Resilience Team

Coventry City Council, Solihull Metropolitan Borough Council and Warwickshire County Council have a shared service agreement for Resilience and Emergency Planning. The authorities have committed to working together on resilience matters across the sub-region and have agreed mutual aid arrangements in place. The arrangements and structures outlined in this plan are replicated across the sub-region to support succinct and efficient lateral communication between authorities.

13.5. Coventry's Resilient Network and methodology

In terms of the DfT Transport Resilience review the Council have developed a Resilient Network (RN), based on the requirements for Winter Service and the Local Flood Risk Management Strategy. This provides priority to the two greatest risks to the highway network, snow/ice and flooding. In addition to this Coventry's RN incorporates the requirements of key infrastructure.

13.6. Defining the Resilient Network

13.6.1. Highways Priority Routes

As a starting point the winter service gritting network (map below) has been used as the basis for the resilient network as it includes well established known routes that are important for safety, accessibility, and economy of the area.

13.6.2. Flood Risk Areas

Coventry as a Lead Local Flood Authority produce flood risk maps which identify areas susceptible to surface water flooding.

13.6.3. Critical Local Infrastructure

Routes providing access to the Council's critical infrastructure (which is defined as those facilities, systems, sites, property, information, people, networks and processes, in which the loss or compromise would result in major detrimental impact on the availability, delivery or integrity of essential services, leading to severe economic or social consequences or to loss of life) have been reviewed and incorporated as part of the RN.

13.6.4. Emergency Facilities

The emergency services have a critical role in responding to incidents 24/7 and therefore it is critical that routes providing access to Fire Stations, Police Stations, Ambulance Stations and Hospitals are prioritised to ensure the health, safety and security of the public.

13.6.5. Transport Infrastructure & Facilities

The local highways network is one component of a larger transportation network including; the Highways England Strategic Road Network (SRN), and the West Midlands Key Route Network (KRN). The local roads network can form a key link between other modes of transport and therefore its role in facilitating access to these networks has been considered as part of the development of the 'Resilient Network'.

13.6.6. Economic Significant Sites

The 'One Coventry' initiative highlights the importance that is placed on support and developing business within the local area. The identification of major business centres or significant local employers will be important to capture within the wider considerations of the 'Resilient Network' providing another reason for businesses to operate from Coventry.

13.6.7. Neighbouring Sites

The local roads network supports the wider West Midlands and therefore there is a requirement to consider key sites located close to the border or that are dependent on access through Coventry.

13.6.8. Business Continuity - Local Priorities

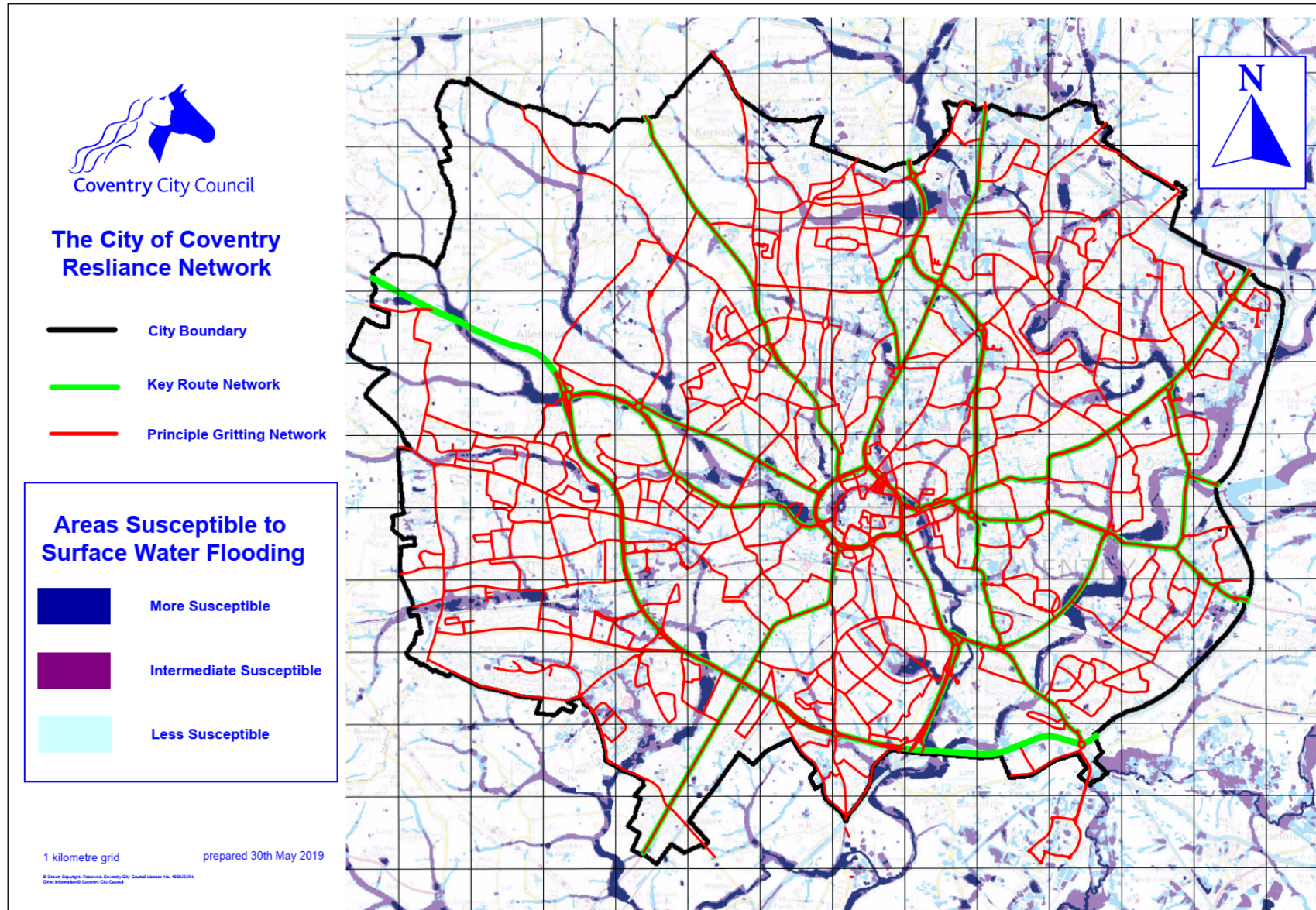
In the event of a business continuity disruption to Coventry, the local authority business continuity arrangements identify the key services that need to remain operational. Service level plans will detail critical functions and the support services (including premises) that are required to continue delivery of critical services.

The Coventry, Solihull and Warwickshire (CSW) Resilience Team is responsible for the development of a range of emergency plans, the team also holds details of historic incidents which identify additional critical locations on the network which have been considered as part of the resilient network.

13.6.9. Climate Change

The further development of the resilient network will directly support the already published Coventry City Council Climate Change Strategy, which sets out how the authority aims to become a resilient, sustainable and low carbon city.

13.6.10. Coventry City Council Resilient Network



14. Winter Maintenance

The Highways Act 1980 places a responsibility to keep the network safe and available for free passage. Coventry, like all Authorities, therefore prioritises maintenance response. The Council uses national forecast providers to provide frequent and detailed forecasts on all potential weather events during the winter maintenance period. These forecasts are analysed carefully and responses are formed.

Depending on the type and scale of the weather event responses could include readying specific maintenance personnel and planning emergency shifts, making ready specific equipment (salt spreaders, snow ploughs etc.) and distributing materials to the areas at greatest risk. In most cases this preparation has been planned and completed in advance however weather events and specifically the damage they cause can be localised and therefore arrangements must be flexible.

14.1. The Winter Service

The Winter Service can be briefly described as precautionary salting or treatment of the highway network based on a pre-established priority system, forecast temperatures, and levels of ice or snow. The purpose of this service is to minimise accidents and disruption caused by the weather and enable the Council to discharge its responsibilities and obligations.

Designated routes are gritted when Officers determine that carriageway conditions require treatment to ensure that Coventry's highway infrastructure is safe for use by the Council's stakeholders and users.

It should be noted that the service does not guarantee that at any given time the highway will be free of ice or snow, even following treatment as rock salt becomes less effective in very heavy snow and also at temperatures below -5 deg. C.

14.1.1. Operating Period

The winter operating period runs from November to March each year, but may be extended if weather conditions determine that this is necessary. The period for 24-hour continual monitoring and priority operating runs from 1st October until 30th April.

The table below highlights the relative risk at the differing points throughout the season.

Risk period	Definition	Time	Weather conditions
High	A period of standby to ensure salting starts within 1 hour of instruction with a possibility of continuous 24 hour operations.	December, January, February	Severe – probable
Medium	A period of standby with low possibility of continuous 24 hour operations	November and March	Severe – may occur
Low	Call out	October, April	Severe – not expected

14.1.2. Service Provision

The service covers both precautionary and reactive salting / gritting and snow clearance on designated routes covering 415km of the highway network across the City.

During the winter operating period Highways Operations will provide the necessary resources (including suitably trained personnel) in order to achieve the required standards. The Council's Street Pride – North East and City Centre team (NE&CC) will also carry out the salting / gritting of certain footways and car parks within the City Centre. Rock Salt is stored at the City Council's Whitley Depot in a Salt Barn that has an operating capacity of 4000T and this is filled to capacity in October each year. During an average winter 2000-2500T of rock salt is used over 40-50 treatments.

The following treatment actions may be instructed as appropriate to the forecast conditions.

Precautionary Salting

Road salting is undertaken on Priority Route Network (PRN) before ice or snow is likely to be present on the road surface.

Post Salting (Inc. snow clearing)

Road salting is undertaken when ice or snow is already present on the road surface.

Snow Clearance

Snow clearance will be carried out to either prevent the accumulation of or to clear snow. Route priority and requirements will be determined by the SDO/DO as outlined within this plan. At times of heavy snowfall, other resources from within the Place Directorate will assist with the hand salting / gritting of footpaths and junctions.

14.1.3. Winter duty officers

The decision making process as to whether or not to carry out some form of winter maintenance action is carried out by nominated Senior Duty Officers (SDO). These officers form a duty rota to cover the complete winter period. This decision will be based largely on predicted road surface temperatures (NOT air temperatures), the amount of moisture on the road and/or the amount of residual salt on the network from previous treatments. All Senior Duty Officers are required to have received advanced weather forecast training prior to commencement of the role.

14.1.4. Weather Forecasting Information

Weather forecasts are provided on a daily basis throughout the winter period to CCC by MetDesk, who will provide a detailed forecast covering an initial 24hr period, and longer 3 day summary. Local weather information is fed into the forecasting process via 3 local weather stations situated on the Tamworth Road, A45 Fletchamptstead Highway and the Ring Road Junction 4.

14.1.5. Winter Service Network (WSN)

Coventry City Council considers this service as essential, it will therefore treat its road network including carriageway and areas of footway according to their importance in the highway hierarchy and the prevailing weather conditions. For this reason, the Winter Service Network (WSN) has been established and the risk determined. Route plans and road lists for the routes are held at the operational depots and at the Highways office. The PRN consists of 8 key routes; each route has a dedicated gritting vehicle plus 1 vehicle is kept at the Depot as back up should there be a breakdown that the on duty fitter cannot repair.

14.1.6. Prioritised Route Network (PRN)

However, when extreme conditions are evident on the network it may not possible to afford the same level of winter service across the whole WSN. For this reason, there is a further level of prioritised routes within the WSN which are of a strategic importance to Coventry.

14.1.7. Mutual aid Arrangements

CCC have contingency arrangements in the form of a Memorandum of Understanding (MOU) through the West Midlands HIMIG Winter maintenance subgroup. The group includes the following maintenance authorities; Solihull Metropolitan Borough Council (SMBC), Warwickshire County Council (WCC), Amey (representing Birmingham City Council), Walsall, Wolverhampton, Coventry and Dudley.

14.1.8. Salt Bins

A highway authority provides salt bins on the highway network. Salt bins are provided for residents to self-help in salting the roads and footways in their areas. In order for the bin to be utilised, it must be provided close to residents who are prepared (but not obliged) to spread the salt. Salt bins will only be provided if the route is not on a precautionary salting route. Any changes to the salt bin locations shall be agreed with the Council.

14.1.9. Annual Winter Service Plan

More detailed information about Coventry's winter service is provided in the annual Winter Service Plan, this describes the purpose, procedures, and operational arrangements for the delivery of the winter service on Coventry City's highway network

15. Performance Monitoring

15.1. Performance Monitoring

The performance monitoring and reporting regime will be used to review the plan and its processes.

The Council currently monitor service levels through a range of performance indicators which are routinely reported to senior management, however this is reliant upon having a repeatable series of data to enable the production of trending reports. The Council's ongoing performance reviews focus on looking at the results, the factors contributing to performance, and options for dealing with poor performance. These are the key sources of performance.

1. Annual Council Plan indicators
2. Performance indicators derived from annual condition surveys
3. NHT Customer survey performance indicators

15.1.1. Council Plan Performance Indicators

The 2018 framework sets out a coordinated approach to performance management that aims to reflect the latest research in public management and delivers improved consistency in reporting. It sets out a core set of performance symbols and vocabulary for use across the organisation, while still enabling service areas to determine what works best for their particular circumstances.

The Council uses a number of indicators agreed with managers to show progress made towards its priorities. This is supported by a wider basket of measures such as equality and perception measures that help explain the trends and story behind the headlines. Indicators are selected from key strategies and aligned to directorate priorities. Each year the Council publishes end of year performance report which shows the performance of the council's services against the objectives of the Council Plan.

15.1.2. Performance indicators derived from annual condition surveys

Increasing financial scrutiny requires the information provided through asset management to produce a rational decision process for capital investment and maintenance. The most critical information for decision makers is an understanding of the condition of the assets and how they are performing in relationship to users' expectations. The Council currently carry out the following asset condition surveys.

SCANNER (Surface Condition Assessment of the National Network of Roads)

SCANNER surveys are mandatory requirement for reporting of:

- Data Topic 130-01 (formerly NI 168/ BVPI 223), Condition of principal roads (A roads) and
- Data Topic 130-02 (formerly NI169/BVPI 224a) Condition of non-principal classified roads (B & C roads).

These surveys are undertaken by a specialist vehicle at traffic speed. The information is both reliable and repeatable giving a consistent survey.

Detailed Visual Inspections (DVI)

This is a comprehensive survey with defects identified by a larger number of more detailed classifications. The DVI is a walked carriageway and footway survey, and supports other sources of information such as enquiries or reactive maintenance records. This survey provides the condition indicator for the unclassified road network, formerly BVPI 224b.

The outputs from both the SCANNER and DVI are included in the Council Plan performance report. The table below shows that for the overall measured condition of our roads has shown a slight improvement.

	2015/16	2016/17	2017/18	2018/19
Principal roads where maintenance should be considered (A roads)	2%	1%	1%	1%
Non-principal classified roads where maintenance should be considered (B & C Roads)	5%	2%	2%	2%
Unclassified roads where maintenance should be considered	20%	20%	20%	19%
Footway Hierarchy 1 1a & 2	64%	69%	69%	64%

National Reporting

The Council's annual submissions of condition data to the DfT gives the Council a clear indication of how The Council are performing relative to other authorities. The Council can use this data to identify key areas for improvement.

15.1.3. National Highways & Transportation Survey (NHT)

The NHT Public Satisfaction Survey collects public perspectives on, and satisfaction with, Highway and Transport Services in Local Authority areas. It is a unique, standardised, collaboration between Highway Authorities across the UK enabling comparison, knowledge sharing, and the potential to improve efficiencies by the sharing of good practice. The NHT Survey helps participating authorities to answer five key questions:

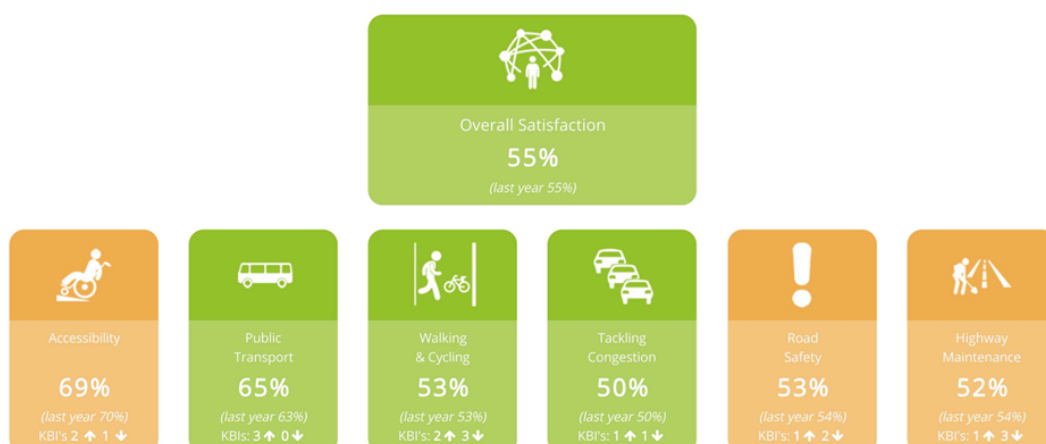
- What service areas need improving most?
- Which service areas have most potential to improve?
- Who should improvements be targeted at?
- Where should improvements be made?
- How can improvements be delivered?

NHT Survey Report – This annual report provides a complete picture of Coventry's results for the Highways Maintenance Theme, it is divided into three sections:

- Overall Theme Results,
- KBI (Key Benchmark Indicator) Results, and
- BI (Benchmark Indicator) Results.

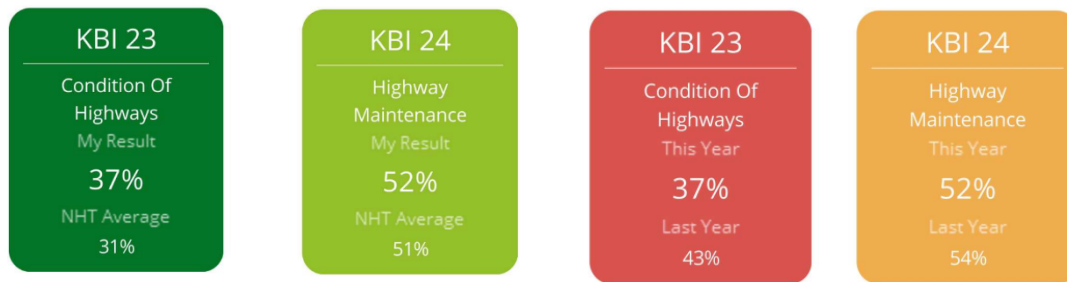
Overall Theme Results

Highway Maintenance – Coventry's 2018 overall satisfaction level **55%**, ranking 22 out of 113 against other authorities.



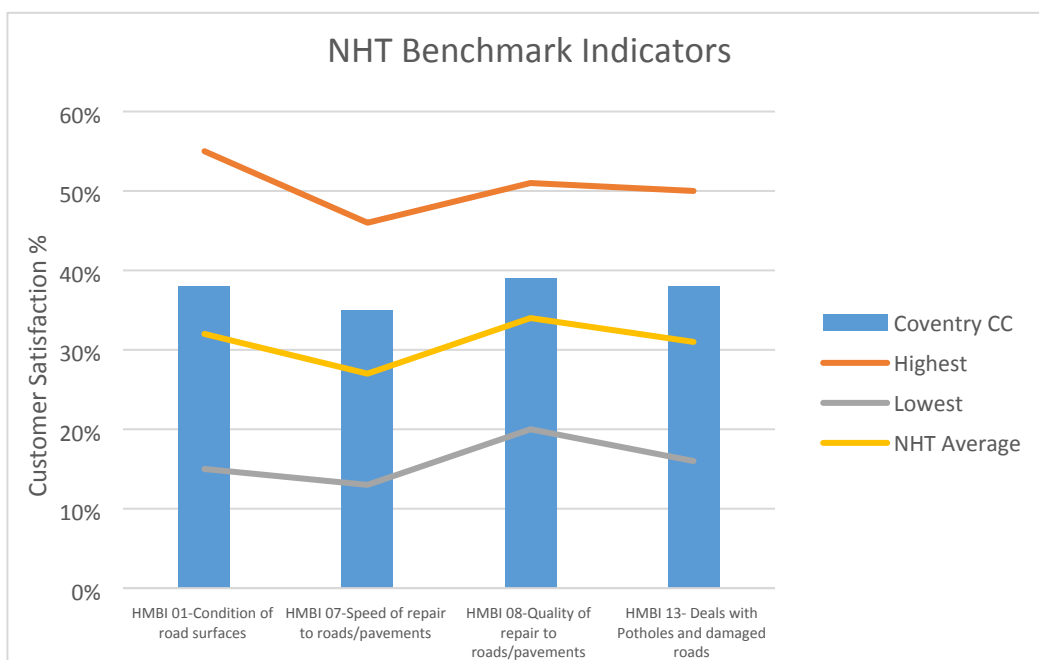
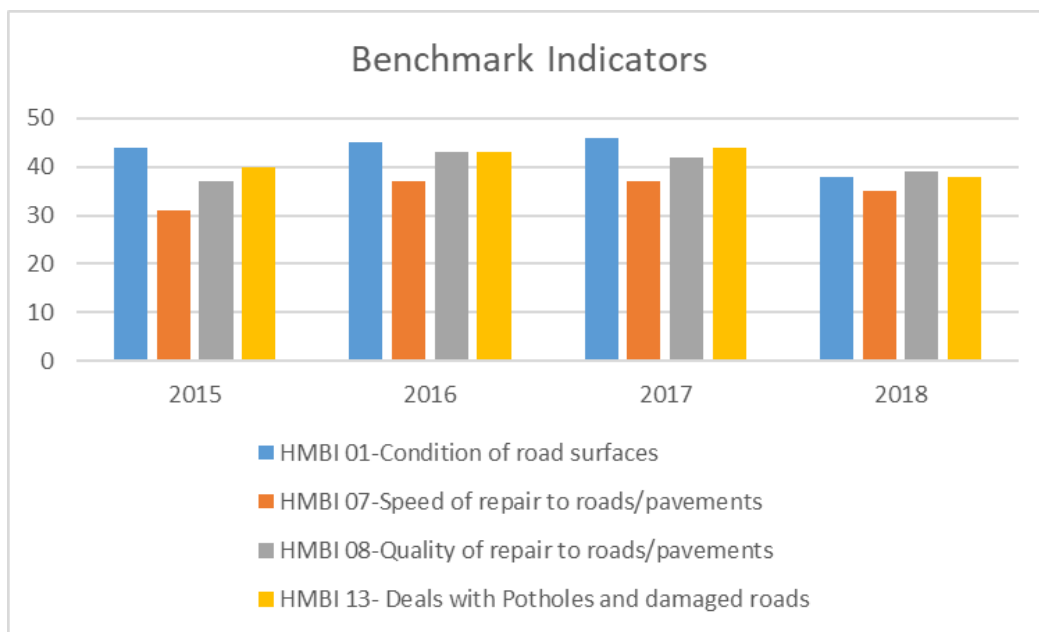
KBI (Key Benchmark Indicator) Results

The figures below show Coventry's individual percentage satisfaction scores for each KBI, ranking against the previous year and the national average.



BI (Benchmark Indicator) Results

The chart below shows the Council's year on year percentage customer satisfaction scores for a highway related BIs.



15.2. Bench Marking

Local and national benchmarking is used to compare the performance of The Council asset management framework and to share information that supports continuous improvement.

West Midlands Combined Authorities

The Council exchange objective and subjective data on all areas of Asset Management from stakeholder satisfaction through to national road condition data.

West Midlands Highways Alliance (WMHA)

The Council membership of the WMHA helps us keep abreast of industry developments and to measure where we are in terms of performance standards compared to The Council peers. It also allows for prudent procurement of goods and services and helps with achieving economies of scale for both of these. The WMHA delivers the regional procurement and implementation of highways maintenance, professional services and capital works through framework agreements.

National Highways & Transportation Survey (NHT)

The Council annually supply data to the NHT which serves to provide details on levels of customer satisfaction with local authority services and practices. This helps us to target and publish information clearly and effectively to ensure members of the public and other highways stakeholders are as fully informed as possible about the current performance of The Council services.

National Reporting

The Council annual submissions of condition data to the DfT gives us a clear indication of how the Council is performing relative to other authorities. The Council can use this data to identify key areas for improvement.

15.3. Continuous Improvement

The Council are driving continual improvement in The Council asset management practices through:

- Regular liaison and sharing of information with other road authorities, both formal and informal, locally and nationally.
- Encouraging both The Council own staff and The Council supply chain to challenge practices on an on-going basis, looking for areas for improvement and efficiencies.
- Keeping abreast of latest issues, sharing information and experiences, reviewing innovations and developing and informing advice on best practice through involvement in appropriate groups and national forums.

15.4. Asset Management Competency

Recognising the importance of competent staff to deliver the Councils asset management aspirations, using the 2019 UKRLG Asset Management Competence Framework, the Council will carry out a review of the skills available within the Council organisation to identify potential gaps and further training.

The highway inspector role has evolved over the last decade due to changes in technology, and increased culture of litigation against highway authorities, government spending constraints and amendments to relevant standards and codes of practice. The new Code of Practice (Well-managed Highway Infrastructure, 2016) recommends highway authorities adopt a risk-based approach to highway inspections, consequently, this highlights a greater need to ensure inspectors are competent in undertaking their duties on local highway networks. The Council Highway Inspectors have received the following training:

- Highway Safety Inspectors Modular Training and Assessment - Lantra accredited
- HMEP - Asset Management E-learning Toolkit - endorsed by the Chartered Institution of Highways & Transportation (CIHT).
- New Roads & Street Works Act (NRSWA) accredited training
- Construction Skills Certificate Scheme (CSCS)
- Highways Sector Scheme 12D – Lantra accredited
- Basic Tree Survey and Inspection - Lantra accredited

Note: Lantra is accredited by the British Standards Institution (BSI) for ISO 9001:2015 and ISMS 27001:2013 for Skills+.

16. Financial Management and Valuation

16.1. Overview

This section describes the financial implications of this asset management plan. It is recognised that while there will never be a strategy which warrants for zero maintenance, there should be sustained funding to maintain at least steady state condition of the asset. This should also be accompanied with an investment plan which prioritises timely intervention at optimal intervals.

16.2. Sources of Funding

Funds for maintaining highway assets are allocated from both the Department for Transport's capital allocations and the Government's revenue grant, supplemented by the Council from its various income sources and reserves as it sees fit. There are financial rules that apply to capital and revenue funds which can restrict which budgets can be used to fund particular works types.

Capital allocations are made by Central Government taking into account factors such as road length, classification, traffic figures and road condition data derived from the condition indicators.

Revenue allocations are generally funded from a combination of local council tax, business rates, Central Government revenue support and other grants.

The Local Transport settlement is apportioned to both principal and non-principal roads. The non-principal road funds are granted as a block settlement to reduce the maintenance backlog under the Governments 10 Year Transport Plan and are supplemented by revenue funds.

Other sources of funding include Government Grants such as Emergency Capital Funding from Council Reserves and other ad hoc sources.

16.3. Highways Maintenance Expenditure

The highway maintenance budget until recently has been based principally on historical budgets amended to take account of inflation and other influences on the network. Over recent years a significant increase in investment has been allocated to highways, both from central government and the council, to provide a stimulus to network asset improvement.

16.3.1. How funding need is assessed - Current Practice

Funding needs in most assets are considered using a combination of maintenance history, lifecycle position, and condition assessment information. This mainly relates to roads, pavements, bridges, safety barriers, trees and street lighting, but there remains some assets where this information is limited. Further work is required to ensure that this process identifies, in greater detail, the overall funding needed in the medium and long-term.

The current asset management approach for future improvement include;

- Extending condition information to cover all assets and to support in decision making
- A greater consideration of whole life costing with the consequence that the works programmes are able to demonstrate that they are meeting best value principles.
- A requirement for new funding to be increased year on year in line with demands generated by, amongst other factors;
 - New adoptions and improvement schemes,
 - Increasing pressures from traffic growth,
 - Effects of major development projects,

16.3.2. How Funding is Distributed – Option Appraisal

The identification of costed options with related levels of service allows better informed choices to be made. This enables the Council to accurately assess the value of treatments to maintain assets.

Before undertaking this process, it is important to identify those options that are unacceptable for some reason, be it social, environmental or economic, and to ensure that robust and fully inclusive levels of service are clearly defined so that the results of the process can be utilised to best effect.

16.4. Department for Transport (DfT) & Local Government Spending Plans

Since 2006 the DfT used a formula based approach to deliver both the Highways Maintenance Capital Block and the Integrated Transport Block funding to local highway authorities. However, from the financial year 2015/16 the DfT introduced a new approach to the allocation of the Highways Maintenance Capital Block Grant. The revised model is based upon three elements;

1. Needs based formula
2. Incentive funding
3. Challenge fund

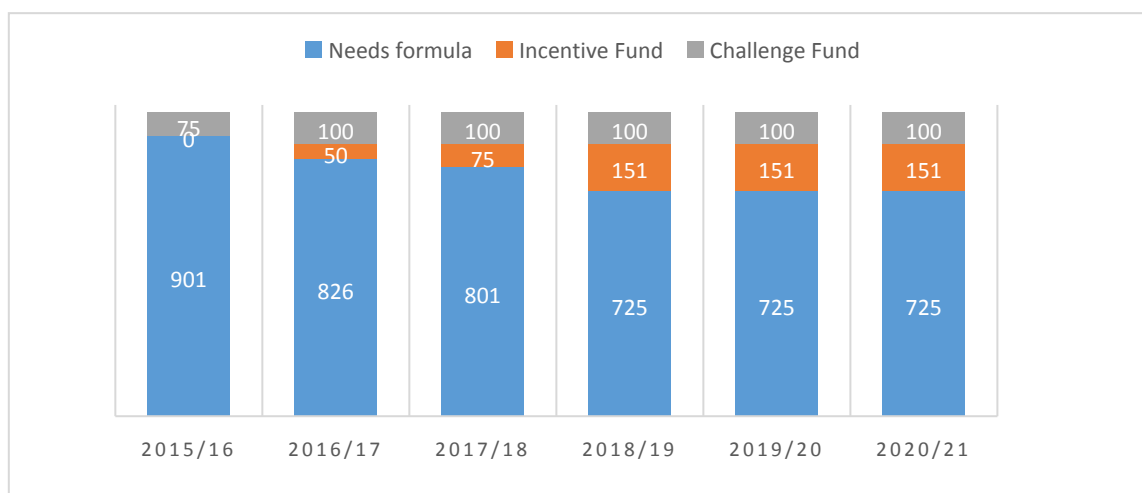


Fig. 6 Local authority highways maintenance funding: 2015/16 - 2020/21

The DfT set aside £578 million for the incentive fund scheme, to access this funding highway authorities were asked to submit an Incentive Fund Self-Assessment Questionnaire (SAQ), highway authorities would then receive a percentage of the incentive fund based upon a self-assessment score.

The Council submitted its Incentive Fund Self-Assessment Questionnaire (SAQ) to the DfT in January 2019 which placed the Council within Band 3 for the 2019/20 incentive fund allocation, this means that The Council received 100% allocation of the incentive funding, should the Council remain in Band 3 then this will ensure that the Council will continue to receive 100% allocation of the incentive funding in each and every year up to 2020/21. The table below details the funding available based upon current banding.

Indicative incentive element by "band" of self-assessment ranking (£)			
	Band 3	Band 2	Band 1
2016/17	£153,421	£153,421	£138,079
2017/18	£230,131	£207,118	£138,079
2018/19	£463,331	£324,332	£138,999
2019/20	£463,331	£231,666	£46,333
2020/21	£463,331	£138,999	£0

16.5. Investment Strategy

To enable informed decisions to be made about what level of funding is required to service level road condition some form of modelling is needed. The CONFIRM Strategic Asset Management (SAM) tool has been used for this. The SAM tool works in a simple way, it takes measured condition and predicts annual deterioration based upon treatment and budget.

16.6. Asset Valuation

During each financial year, Local Authorities are working towards compiling their Whole of Government accounts (WGA) returns as well as their own Statements of Accounts.

Whole of Government Accounts (WGA) is a set of financial statements for the UK public sector that consolidates the audited accounts of over 1,500 organisations to produce a comprehensive, accounts-based picture, of the fiscal position in any one year. Currently local authorities (LAs) record the value of their transport infrastructure assets at historical cost within their accounts. However, CIPFA/LASAAC, the body responsible for the Code of Practice on Local Authority Accounting in the United Kingdom (the Accounting Code), considers Depreciated Replacement Cost (DRC), already being used for WGA purposes, to be a more appropriate measurement base. CIPFA/LASAAC has therefore decided that that transport infrastructure assets will be measured on a DRC basis from 2016/17.

For the purpose of Coventry's asset valuation, the following toolkits are used to determine the DRV values of the key assets. Both of these toolkits are downloaded from the CIPFA website

<http://www.cipfa.org/policy-and-guidance/highways-network-asset-briefing/local-authority-transport-infrastructure-assets-supporting-documents>).

- 1) Structures Toolkit (Small or Large) Version 306
- 2) Valuation Toolkit version 2.6

The toolkits support Coventry CC in the calculation of GRC, DRC, accumulated depreciation and annual depreciation values for their highways assets in full compliance with the 2013 edition of the Transport Code.

17. Future Needs

Demands upon the existing highway network will continue to grow as planned growth areas are redeveloped. Coventry's road network will need to respond to changes due to climate change and increased resilience to adverse weather. The HIAMP, predictive deterioration assessments and future maintenance strategies will need to take these factors into account. Although good progress has been made in recent years in improving overall condition, continued programmes of investment will be required in the future.

18. Review & Update

There are a number of other areas of work to complete before the HIAMP can be considered a fully comprehensive document and these will continue to be developed over the course of this HIAMP. Beyond this inevitable changes in the availability of funding will require further editions of the HIAMP to be produced in later years. The HIAMP will be an evolving document which will be annually reviewed and updated.