



Worcestershire County Council

Transport Asset Management Plan

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Team: Highways, Economy and Infrastructure Directorate

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Terms

The following terms are used in this Plan:

- Asset Management - A strategic approach that identifies the optimal allocation of resources for the management, operation, preservation, and enhancement of the highway infrastructure to meet the needs of current and future customers.
- Asset Valuation - The calculation of the current monetary value of an authority's assets. It excludes therefore any consideration of the value to the community in terms of the economic and social benefits of providing a means for people to travel in order to work, socialise and live.
- Levels of Service - A statement of the performance of the asset in terms that the customer can understand. Levels of service typically cover condition, availability, capacity, amenity, safety, environmental impact, and social equity. They cover the condition of the asset and non-condition related demand aspirations, i.e. a representation of how the asset is performing in terms of both delivering a service to customers and maintaining its physical integrity at an appropriate level.
- Risk Management - The formal assessment of risks with the potential to affect delivery of the service via a process of identification, assessment, ranking and control planning.
- Gross Replacement - A strategic approach that identifies the optimal cost allocation of resources for the management, operation, preservation, and enhancement of the highway infrastructure to meet the needs of current and future customers.
- Deterioration - The change in physical condition of an asset resulting from use or ageing.
- Depreciation - The consumption of economic benefits embodied in an asset over its service life arising from use, ageing, deterioration, damage, or obsolescence.
- Depreciated - The current value of the asset, normally Replacement Cost calculated as the Gross Replacement Cost minus accumulated depreciation and impairment.
- Service Options - Options available for an asset or groups of assets in terms of alternative levels of service.

Abbreviations

- *AIS – Asset Information Strategy*
- *AV – Asset Valuation*
- *BOAT – Byway Open to All Traffic*
- *BPM – Business Process Maps*
- *BVPI – Best Value Performance Indicator*
- *CAMP – Corporate Asset Management Plan*
- *CPS – Corporate Property Strategy*
- *ADEPT – Association of Directors of Environment, Economy, Planning and Transport (Formerly the County Surveyors Society)*
- *CVI – Coarse Visual Inspection*
- *DfT – Department for Transport*
- *DRC – Depreciated Replacement Cost*
- *DVI – Detailed Visual Inspection*
- *GAAP – Generally Accepted Accounting Principals*
- *GIS – Geographic Information Systems*
- *GRC – Gross Replacement Cost*
- *KPI – Key Performance Indicators*
- *KSI – Killed and Seriously Injured*
- *ITS – Intelligent Transport Systems*
- *LoS – Level of Service*
- *LTP(4) – Local Transport Plan (2018-2030)*
- *RAB – Resource Accounting and Budgeting*
- *TAG – Local Government Technical Advisory Group*
- *SCANNER – Surface Condition Assessment of the National Network of Roads*
- *UKPMS – United Kingdom Pavement Management System*
- *WGA – Whole of Government Accounts*

1. Executive Summary

The Transportation Asset Management Plan (TAMP) has been developed by Worcestershire County Council in response to several major initiatives that have been introduced in recent years.

These include:

- *The realisation by many local authorities that they must have systematic procedures in place to allow decisions to be made regarding the best way to invest in Council-owned assets over the long term,*
- *The introduction of initiatives by the Department for Transport to make local authorities more accountable for their investment decisions for road assets, such as through Performance Indicators,*
- *The implementation of measures in UK to tie road funding to asset management performance.*
- *New Codes of Practice such as the Well Managed Highway Infrastructure to guide the development of rational systems to support highway asset management.*

The highway network is one of the County Council's most valuable assets and is important to support Worcestershire County Council's core priorities and objectives to help achieve desired outcomes across many areas of its community responsibility. In this regard, and under the constraints of finite budgets over the long-term, the highway asset must be protected, but at optimum cost in relation to the level of service required.

The TAMP covers Worcestershire County Council's entire highway network, including the primary asset types of carriageway, footway, street lighting, bridges and traffic signals, and the secondary asset types such as signs and drainage.

Asset management practices are undertaken by the various Service Areas within Worcestershire County Council that have responsibility for the highway assets. The TAMP formally sets out the scope of these practices and the methods used.

Worcestershire County Council's published strategies and objectives indicate public aspirations supported by an effective highway network. In particular, the Local Transport Plan (LTP) directs this TAMP to outcomes expected of the network. The ways in which the TAMP support the LTP in delivering these outcomes are set out within this document.

It is anticipated that the review and updating cycles for each part of the plan are as follows:

The **Highways Infrastructure Asset Management Policy and Plan** will be reviewed and updated every two years to reflect ongoing improvements in practice and procedure.

The **Appendices**: will be “living” documents. They will be updated as their contents demand them to be changed; this will typically be either annually, quarterly, or monthly. Updating will be linked to the management processes introduced to manage the implementation of the plan.

Implementation of the TAMP: There are several operational plans that will be reviewed as a minimum, every two years which provide for the effective delivery of key items detailed in the TAMP, including the following:

- Highways Infrastructure Asset Management Policy and Plan
- Highways Funded Information Strategy
- Highways Asset Communications Strategy
- Highways Asset Lifecycle Plan
- Highways Maintenance Policy and Plan
- Highways Emergency and Resilience Network Plan
- Highways Inspection Manual

2. Introduction

Definition of Transport Asset Management

Worcestershire County Council recognises the vital role played by the County's local highway network in achieving its core purpose, vision and objectives to the corporate vision by:

- *Maintaining a safe, reliable, and resilient network to enable residents, business users, tourists and those passing through Worcestershire to undertake their necessary journeys.*
- *Providing a well maintained highway infrastructure to enable communities to access all key local services including education, training, healthcare, employment, and leisure facilities.*
- *Ensuring that the County's transport infrastructure is efficiently managed and maintained within the available budgets by balancing competing needs and priorities.*
- *Using asset management principals to maintain a highway service that operates at optimal cost and utilises future investment in an efficient and effective manner in the medium and long term, thus maximising value for taxpayers.*
- *Developing risk management strategies to identify and address proportionate and affordable asset availability for the transport infrastructure.*

Worcestershire County Council is constantly seeking to enhance the current approach to transport asset management, thereby becoming more effective and improving our ability to meet national and local objectives and customer needs. The TAMP has the following objectives to:

- *Achieve corporate objectives.*
- *Include all highway and transportation assets.*
- *Monitor the condition and performance of assets.*
- *Prioritise greatest need.*
- *Use optimisation tools to develop options for current and future service delivery, forward financial planning and investment and asset renewal programmes.*
- *Provide value for money by optimising the long-term life cycle costs of assets and through improved system and practices.*
- *Enable Worcestershire County Council to meet the Government's future requirements for financial planning for transport.*
- *Demonstrate effective management of assets on behalf of customers and stakeholders.*

- *Planning for future asset requirements based on projected demand and service levels.*
- *Seek the views of asset group users on appropriate service levels.*
- *Increase the horizon and confidence in future planning and programmes.*
- *Adopt best practice.*

Highway Asset Management is a strategic approach identifying the optimal investment for the management, operation, preservation, and enhancement of the highway transport network to meet the present and future needs of all transport users.

Worcestershire County Council is committed to an asset management approach encompassing the outcome based benefits of a whole cost lifecycle approach, ensuring the most efficient and effective use of the available highway budget and demonstrating the case for additional funding where this is appropriate. The continued use of innovative treatments alongside tried and tested maintenance materials will ensure the appropriate treatment is utilised at the right time to maintain highways assets in Worcestershire.

The key aspects of asset management are:

- A Strategic Approach - Taking a longer-term view of how the authority manages its assets. Such a systematic approach will transcend annual budget cycles and are essential if Worcestershire County Council is to maximise the long-term benefits of the assets and resources available.
- Optimal Allocation of Resources - Local authorities have a statutory duty to pursue best value. Expenditure must be prioritised to ensure corporate objectives can be effectively delivered within budgetary constraints. Asset management assists this process by enabling the allocation of resources based upon an objective assessment of the asset, its condition, lifecycle, and subsequent options for its management.
- The use of lifecycle planning, the minimisation of whole life costs and decision making informed by an appreciation of risk and benefit, are key asset management components that will help Worcestershire County Council allocate resources to where they are likely to provide the best long-term benefits.
- The Needs of Customers - The development of levels of service for each of the highway assets means that it is possible to consider the needs and aspirations of service users and incorporate these where appropriate and practicable in the management and delivery of the asset.

Drivers for Highways Asset Management

There are many drivers for the implementation of a TAMP, which include:

- Evidence of strategic thinking and long term planning with regard to maintenance and management of the highway infrastructure
- Satisfactory explanation to stakeholders of a fair and reasonable way of allocating limited operational, maintenance and improvement resources
- Whole of Government Accounts (WGA) and Resource Accounting and Budgeting (RAB), whereby local authorities are required to provide financial forecasting and valuation information to central government in order to meet both national and local outcomes as specified within the single outcome agreement
- Legislation requires Local Authorities to produce a Local Transport Plan (LTP) that includes a Transportation Asset Management Plan and an Asset Valuation to account for the accumulated depreciation and impairment of the highway network in line with accounting standards used on other assets under local authority control.

Worcestershire County Council's Initial Infrastructure Asset Management Plan

The strategic goals and objectives are broad statements that describe the long term vision and direction of Worcestershire County Council. These statements are provided in the Highways Asset Management Policy and Strategy and demonstrates how the highway network supports the Corporate priorities. The Corporate Plan and the Local Transport Plan establish the relationship between asset management and the other goals and objectives of Worcestershire County Council and translate the strategic goals and objectives into quantifiable Levels of Service and Performance Targets for asset management purposes.

The TAMP focusses on several key critical areas, including the following:

- *Evidence-based validation of investment levels to maintain the local highway network using asset management and lifecycle principles.*
- *Effective processes for investment decision-making.*
- *Effective processes for Inventory and Asset Management of existing assets.*
- *Effective processes for Inventory and Asset Management of new construction and improvement schemes that are improving the average condition but are adding to the inventory for maintenance.*

Worcestershire County Council has developed an asset management based approach to deliver highway maintenance through its Highway Maintenance Policy and Plan.

Asset inventory

The asset inventory and data that is collected regularly relating to condition and performance enables the County Council to understand and manage the relationship between performance and cost and therefore aid decision-making. The asset inventory and

condition data also helps the County Council to meet statutory requirements, make efficient use of limited resources and deliver improved levels of service over time as part of its focus for continuous improvement.

The Transport Asset Management Plan pulls together the relevant policies, operational plans, and methods in effectively managing highway and transportation assets across Worcestershire. This plan sets out how the asset management approach in Worcestershire has been structured to be delivered in a 3 year rolling programme; the first year of which is detailed in the form of a Contractor's Plan and the remaining two year's work being more indicative.

To allow for an effective decision-making process in managing the highway asset, the following steps are used:

- *Establish the highway network assets*
- *Collect the asset inventory*
- *Rate the condition of the assets*
- *Set standards and goals*
- *Identify deficiencies from actual to standard*
- *Prioritise works (including valuation and budgeting)*
- *Monitor and review*

The Worcestershire Transport Asset Management Plan is a 'living document' and, therefore, is regularly reviewed to ensure that it remains current in order to deliver sustained customer satisfaction, surety of funding requirements and alignment with the corporate priorities of the County Council.

Benefits of Transport Asset Management Plans

Asset management facilitates informed decision-making by supplementing engineering judgement with analysis (financial, economic, and engineering). It thereby enables an authority to better understand and manage the relationship between cost and performance. This assists in delivering best value and the most cost effective maintenance regimes for the resources available, For example:

- *The same or better level of service at a reduced cost.*
- *A better level of service at the same or marginally increased cost,*
- *Or where, owing to budgetary constraints, it is not possible to maintain the level of service, the impacts of the reduced level of service are clearly identified and its effects over time are understood as part of the decision making process.*

Specific benefits of an assessment management approach are:

- *Reduced life-cycle costs*
- *Defined levels of service*
- *The ability to track performance*
- *Improved transparency in decision making*
- *The ability to predict the consequences of funding decisions*
- *Decreased financial, operational and legal risk*
- *Ability to discharge statutory valuation and financial reporting responsibilities*

In particular, the Transport Asset Management Plan provides the following benefits to:

- *Include all highway and transport assets owned and operated by Worcestershire County Council*
- *Enable continuous monitoring of the condition and performance of the asset*
- *The ability to combine maintenance programmes with capital programmes, to achieve greater efficiency, through developing packaged schemes including both revenue and capital funding streams.*
- *Continue to identify improvements in the information and systems necessary to refine this process*
- *Reduce life-cycle costs through increased efficiency, leading to better value for money*
- *Decrease financial, operational and legal risk*
- *Achieve corporate and national objectives*
- *Enable forward planning to take place with confidence, based on projected demand and defined service levels, leading to better management of expectations*

Lifecycle Planning

Lifecycle planning is a technique which enables us to monitor and anticipate the future condition of assets and to know when we need to repair or replace it. Through detailed knowledge of the size, safety, condition and value of our highway's asset, this enables us to take into consideration whole life costs when managing our assets.

Worcestershire County Council uses lifecycle planning to develop investment strategies to deliver an agreed level of performance or, where funding becomes constrained, a prediction of the effect of particular funding scenarios on the levels of service that can be delivered. This approach enables service delivery to be as effective as possible, allowing a cogent allocation of resources providing a balance between focussed asset management and contributing to the objectives and priorities of the Council and allow an assessment to be made of any residual risk.

This lifecycle approach allows Worcestershire County Council to demonstrate what level of investment is required to achieve any performance targets and where this investment is not available, the likely shortfall to aid effective decision-making. As part of its Lifecycle planning approach and methodologies, the Asset Management team have developed a Financial Impact Modelling Tool (FIMT) for carriageways which is used in conjunction with the HMEP Lifecycle Planning Toolkit. The FIMT enables the future condition of any class of road to be predicted given a particular level of funding and helps the council to understand and manage risk in terms of asset deterioration in relation to required funding.

This is a fundamental approach that is used for decision-making in relation to the budget setting cycle, identifying performance targets and monitoring achievement of targets as part of WCC's Performance Management Framework. It aids decision-making when discussing future funding and investment requirements with Senior County Councillors and Senior WCC managers, as it helps to clarify the risks involved around funding levels and methods of management and repair. The FIMT is being further developed to include a similar approach for footways.

Aims of Worcestershire's Transport Asset Management Plan

Worcestershire County Council continues to enhance the current approach to transport asset management, thereby becoming more effective and improving our ability to meet national and local objectives and address customer needs where appropriate.

To ensure effective network management and co-ordination, our works programmes are planned up to 3 years in advance in a rolling programme. Our annual programme of works is managed and implemented via the HMSC in the form of a Contractors' Plan. This Plan provides for an integrated approach, bringing together all areas of work and delivery. This ensures that works programming, co-ordination and management is more effective and joined-up to increase efficient use of resources across the board.

Implementing the TAMP fulfils the following aims to:

- *identify improvements in the information and systems necessary to refine this process.*
- *Include all highway and transportation assets.*
- *Adopt best practice.*
- *Monitor the condition and performance of assets.*
- *Prioritise greatest need.*
- *Use optimisation tools to develop options for current and future service delivery, forward financial planning and investment and asset renewal programmes.*

- *Provide value for money by optimising the long-term life cycle costs of assets and through effective system and practices.*
- *Achieve corporate objectives.*
- *Enable Worcestershire County Council to meet the government's future requirements for financial planning for transport.*
- *Demonstrate effective management of assets on behalf of customers and stakeholders.*
- *Planning for future asset requirements based on projected demand and service levels.*
- *Increase the horizon and confidence in future planning and programmes.*

The TAMP process begins with the identification of the expectations of stakeholders and works through logically to outputs on the road asset which will deliver these expectations.

Improvements to practice occur if the expectations are described qualitatively in Levels of Service (LOS), and quantitatively through Performance Targets, so that the process of decision-making for investment of funds is made in a rational series of steps linking back to the needs of the users and funders of the road network asset.

In addition, there are functions carried out on the highway network which do not fit directly into the TAMP, but which support and inform it, and are designed to meet service and performance requirements:

- *Network Management is carried out to co-ordinate the operations of the many different parties which work within the road corridor, in order that optimal traffic flow is maintained on a daily basis. This is managed by Worcestershire County Council through co-ordination of lane closures with utility companies and through the approving of works by private developers within the road.*
- *The County Council operates the West and Shires Permitting (WaSP) Scheme that was introduced in 2016 to co-ordinate all programmed maintenance on the highway network by 'statutory undertakers'.*

Data from these operations help inform the asset management process in regard to locations and individual asset items that have an excessive maintenance history.

3. Highway Maintenance Powers, Strategy and Service Delivery

Worcestershire County Council's Legal Network and Asset Responsibilities

Worcestershire County Council has a legal responsibility for the highway network in terms of keeping the routes available and safe for passage for the travelling public. It undertakes this duty in its role as the Highway Authority. Much of the highway network has evolved through being historic routes and networks. Over time the network has been augmented through new routes either via new developments (housing, commercial, industrial) or through changes to the original network to facilitate traffic and economic growth (by-passes etc).

Worcestershire County Council is the Highway Authority for all non-trunk roads which are maintainable at public expense within Worcestershire. As such, Worcestershire County Council has to fulfil a number of statutory duties.

It is the duty of all Highway Authorities to reasonably maintain and repair the highway, and to keep the surface of the road free from that, which might otherwise obstruct it.

Highway Maintenance Strategy

Principles

The principles of the highway maintenance strategy which are supported by the Highways Asset Management Strategy and Policy are to:

- *Deliver the statutory obligations of the authority.*
- *Be responsive to the needs of users' and the community.*
- *Contribute to effective highway asset management and maintain the asset value.*
- *Support effective delivery of the statutory network management duty.*
- *Support and add value to local transport objectives.*
- *Support and add value to wider corporate policy objectives*

Main Components

The Highway Maintenance Strategy is built around three main components.

- *A defined hierarchy for all elements of the network*
- *A framework of policies and objectives for the service*
- *An Inventory of all relevant components of the asset.*

To be effective, these key components are supplemented by the following:

- *a comprehensive management system for inspecting, recording, analysing, prioritising, and programming maintenance works to optimise their asset management contribution.*
- *arrangements to finance, procure and deliver maintenance works, in accordance with the principles best value and Worcestershire County Council's procurement policies.*
- *a risk management strategy clearly identifying and evaluating the risks and consequences of investment decisions and measures to mitigate them.*
- *arrangements to monitor, review and update as necessary, each component of the strategy and the performance of the strategy*

Detailed Strategy for Highway Maintenance

The overall strategy for highways maintenance is to ensure the protection of the overall capital asset and the provision of specified levels of service, appropriate to the type and functional importance of each individual route. This is taken forward through the development of the TAMP.

Our priority in recent years has been to ensure that funding has been allocated on a "needs" basis and ensuring that the appropriate National Indicators have improved where possible.

The detailed elements of the strategy are to:

- *Utilise asset management practices to ensure protection of the highway infrastructure and improve these through the implementation of the Improvement Plan of the Transport Asset Management Plan.*
- *Identify needs against the National Codes of Practice and survey data.*
- *Allocate resources based upon assessed needs basis, to minimise the risk of assets deteriorating.*
- *Carry out repairs to the most appropriate standards and methods, based on whole-life costing, to ensure value for money.*
- *Continue to identify improvements in the information and systems necessary to refine this process.*
- *Improve the condition of footways to enhance their safety and availability for all users.*
- *Seek the required funding by demonstrating the maintenance needs for maximum Government support, through the Local Transport Plan and the Highways Funded Information Strategy.*
- *Seek additional funding through Worcestershire County Council's strategic planning and budget cycle.*

- *Seek to optimise the benefits of maintenance works by incorporating any appropriate safety, availability or accessibility improvement works at the same time.*
- *Co-ordinate works to reduce disruption.*
- *Treat as a priority those hazards that could lead to personal injury or damage to vehicles.*

Network Hierarchy

As well as the national classification (A/B/C/U) the highway network in Worcestershire is classified according to a route hierarchy, which distinguishes roads on the basis of their function and level of use.

All trunk roads and Motorways are the responsibility of the National Highways and are not included within the County's network. Therefore, they are not included in this TAMP.

The hierarchy classifications used by Worcestershire are detailed within the County's Highway Maintenance Plan which also states how the day-to-day safety aspects of the network are managed.

Arrangements for Service Delivery

The highway asset groups are managed and delivered through a number of different contractual models depending upon the asset group, with WCC Client teams in place in relation to each key contract delivery area:

Highway maintenance, design and construction services are delivered through our Highways Maintenance Service Contract (HMSC) with Ringway. The current HMSC was an evolution of the County's previous Term Highways Maintenance Contract and was procured using an NEC Term Service Contract after a thorough commissioning process. This is a strategic partnership to achieve measurable outcomes and is monitored and reviewed through 12 Key Performance Indicators as part of a Performance Management Framework.

- ***Bridges and Structures*** - *the strategic Management of the County's structures are delivered through a Term Service Contract (TSC) with Jacobs.*
- ***Street lighting*** *is delivered through a Term Service Contract (TSC) with Prysmian.*
- ***Traffic Signals*** - *delivered through a Term Contract with Telent*
- ***Other services*** *are delivered internally.*

The principle role of the County Council and the contractors are as follows:

Worcestershire County Council:

- Lifecycle planning of the assets
- Identify works and set priorities
- Long term programming of work
- Manage funding issues
- Manage public enquiries and act as a customer interface
- Monitor and manage the performance of the service
- Appoint and manage consultants and contractors
- Audit
- Review performance

Contractors:

- Undertake programmes of highway works
- Ensure work quality and satisfy defect liability requirements
- Compliance with legislation and response timeframes

4. Levels of Service

Levels of Service Introduction

Adopting a risk based approach in line with the Well Managed Highway Infrastructure Code of Practice that underpins the Levels of service as to what is necessary to ensure that a proper maintenance regime is in place for the authority to meet statutory requirements and customer satisfaction.

The Council's core priorities, objectives and policies together with available funding also play a vital role in defining levels of service. Four dimensions for levels of service are used:

1. **Safety** describes the risk to the customer in using the asset and will in all cases be required to meet very high standards. This dimension does not initially cover road safety in the wider sense, which depends substantially on the behaviour of road users. To illustrate the difference, a worn road which has a slippery surface is not meeting the required level of service, but a bend with perfectly good surface which has a record of accidents because drivers drive too fast, is meeting it in terms of asset management.
2. **Availability** is largely self-explanatory and will vary according to the asset and location. A single street light not working is unavailable and may cause minor nuisance to road users and residents, but a bridge on an 'A' road closed because of structural weakness would have a significant impact upon availability on the network and as such would demand a higher priority for resolution.
3. **Serviceability** describes whether the asset actually delivers what service users and the Council require of it. As just one example, a road surface may be perfectly safe, available

for use at all times and in good condition, but the fact that it is of concrete construction could be causing noise nuisance to people living nearby.

The serviceability dimension also has the potential to bring into play much wider attributes of the asset, for example is the road congested, is the footway surface appropriate for the local environment, is the street lighting provided to adequate standards for local needs? These and other considerations would link to the Council's proposed improvements programme, detailed in the Local Transport Plan.

4. **Condition** is judged relative to minimising the long-term cost of maintaining the asset and not relative to customer requirements. For example, a rusting steel lamp column may be safe, working and acceptable in appearance to customers. The fact that it is in rusty condition is, in these circumstances, only of concern if the optimum maintenance regime to minimise whole-life costs would have had it repainted before rust appeared. Such an optimum maintenance regime will, for many assets, include periodic preventative maintenance before more extensive maintenance, or full replacement, is undertaken. A maintenance regime which involves little investment over many years followed by major renewals may be more expensive overall than a 'little and often' regime which applies regular preventative maintenance; hence the emphasis given to minimising whole life cost.

Environmental sustainability is growing rapidly in importance and Worcestershire County Council has already taken steps to minimise the environmental impact with managing its highway assets. It is likely that this may be added as a specific additional dimension of levels of service in future editions of the County's TAMP.

Use of Levels of Service

Levels of service are a way in which a highway authority can determine whether or not it is meeting customer expectations and its statutory obligations in the delivery of its highway service. They enable the Highway Authority to:

- *Document and measure the service provided*
- *Rationally evaluate service versus cost trade-off's*
- *Determine if adequate consideration is given to what important to the customer*
- *Establish if operational activities support the achievement of strategic goals*

The Condition of the Asset

The physical condition of the asset has two elements:

- *The 'perceived' condition of the asset as "measured" by public and road user's perception*
- *The condition of the asset as determined by measurement and analysis of road condition data.*

This is particularly important as whilst this framework promotes a focus on the customer's needs there may be instances (particularly in relation to the structural condition of the asset) when the customer is not in a position to hold an informed opinion.

Demand Aspirations

This is a term used to describe the non-condition related performance requirements of the asset. These can relate to safety, availability, accessibility etc. Such measures recognise that the asset provides a service to customers by enabling them to travel.

The development of measures that reflect performance against these aspects and in particular the development of a relationship between the resources allocated to tasks that support them is critical if the principles of asset management are to be applied fully across all aspects of the highways service.

Once a suite of levels of service and performance measures are put in place to support them, it will then be possible to obtain some understanding of the relationship between the cost and the level of performance against each level of service. This information can then ultimately be used to inform decisions on the allocation of resources between competing demands.

The ability to rationally assess competing demands is at the core of an asset management approach. The information collected against levels of service is the base data that can be used for optimisation.

Requirements

Legislative Requirements

There is a statutory duty (The Highways Act 1980) for the Highway Authority to maintain the Public Highways it is responsible for. Common law also imposes a general duty of care on Worcestershire County Council in the way it carries out its statutory functions.

Often when a statutory duty applies it is not an absolute duty but set against a statutory defence. For example:

- *Highway Inspections – Section 58 Defence*
- *Precautionary Gritting and Snow Clearing - 'Reasonableness'*
- *Snow Clearing - 'Importance of route and Resources'*

Customer Expectations

Worcestershire County Council participates in the annual National Highways and Transport (NHT) Public Satisfaction survey carried out by Ipsos MORI to ascertain levels of public satisfaction associated with all aspects of highways and transport services within

Worcestershire. The County Council also carries out an annual survey to a sample of residents across the county called ViewPoint that includes a section related to highways and transport.

The information from these surveys assist the County Council to identify service improvements in aspects of highways and transport by ascertaining:

- 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?

5. Asset Valuation

Valuing roads, bridges and other transport assets must be to some extent a theoretical exercise, given the nature of the assets, but it is an essential part of the asset management process and will be required under 'whole of government accounting' rules.

Calculating asset values can be a complex exercise. An initial 'gross replacement cost' approach has been used for the highway assets in work co-ordinated through the Midlands Service Improvement Group, this being what it would cost to provide a modern equivalent of the asset if it did not exist.

The amount of service life of an asset that has been consumed is the depreciation and can be evaluated financially. This figure will be the expenditure required to return an asset to "as new" condition if it can be repaired. Alternatively, it is the sum that should be set aside for the replacement of any asset that cannot be repaired. The current or net value of an asset is its **Gross Replacement Cost** minus the financial depreciation.

Calculation – Gross Replacement Cost

Since 2011, in line with HM Treasury's requirements in terms of Whole of Government Accounts (WGA), the County Council has annually reported both the Gross Replacement Cost and the Depreciated Replacement Cost of the Highway Asset. Recently this has not been possible as the indecis required to do so have not been published.

The following calculations of **Gross Replacement Cost (GRC)** for the Road Asset are derived from unit rates provided by the **Highway Asset Management Financial Information Group (HAMFIG)**. The component parts making up these unit rates incorporates the cost to replace the various items included in the Carriageway and Footway Asset Classes as defined in Section 4.2 of The Transport Infrastructure Assets Code published by CIPFA.

The features included in this valuation are as follows:

- Pavement,
- Attached Footway,
- Central Islands,
- Central Reserves,
- Road Markings,
- Road Studs,
- Kerbs,
- Verges,
- Drainage,
- Safety Fences,
- Boundary Fences.
- Structures
- Lighting and Traffic Signals
- Road signs and other Transportation assets

Calculation – Depreciated Replacement Cost

In order to calculate the **Depreciated Replacement Cost (DRC)** it is necessary to deduct from the benchmark valuation the accumulated depreciation for the items included in the road asset group. For example:

- ***Gross Replacement Cost – Depreciation = Depreciated Replacement Cost***
- *The DRC figure would then need to be factored annually to arrive at the current value of the asset.*

6. Life Cycle Planning

Worcestershire County Council has a Lifecycle Plan for its highway asset groups. It documents the lifecycle planning process that has been undertaken for each asset grouping in order to manage each phase of an asset's life is managed (For example from creation to disposal). The Lifecycle Plan includes:

- *The levels of service we wish the asset to meet*
- *Evidence on the extent of the asset and its characteristics*
- *Evidence on its present condition, and how that is measured*

- *The present valuation of the asset*
- *The options available for treatment of the asset*

This provides the basis for the analysis:

- *Analysis of the best management strategy for minimising the whole-life cost of the asset whilst meeting service level aspirations*
- *Identifying options within this strategy, which deliver different levels of service, with different targets, depending on budget availability*
- *Setting out the action plan necessary to ensure the effective delivery of the lifecycle plan*
- *Identifying the specific risks which may affect the successful implementation of the lifecycle plan*

The lifecycle plans cannot be freestanding because the level of resource provided for one asset will affect the funding available for others.

All of Worcestershire's life cycle plans are constantly reviewed based on the latest data available and to reflect the current methods of collecting the same.

Lifecycle Cost Analysis

Lifecycle Cost Analysis is a process of comparing different cost streams over the same extended period of time, to determine the most appropriate maintenance strategy. With different strategies for managing (elements of) the asset, will come different levels of service, different cost streams and different residual risk options.

It is necessary that sufficient funds exist to carry out the inspection regimes, any emergency and high priority works identified across our asset types.

Certain types of demand can be weather related. The severity of winter and the extent of rainfall can vary considerably year to year. If necessary, additional funding from other routine heads can be drawn upon depending upon need. The Met office provides weather warning related to rainfall, the Environment Agency regarding flood risk and various sources provide winter weather forecasting.

Service Levels

For carriageways, a number of formal 'service levels' have been established and incorporated within the Highway Maintenance Service Contract in the form of Key Performance Indicators (KPIs) which are outcome based. The KPIs include and relate to defect repairs, effective cost management, key people and positive local impact. We focus on the effective delivery of our design and build of highways works through the use of a

target price system, and Contractors' Plan approach for efficient coordination and delivery of value for money.

Agreed service levels are in place with its Term Service Contractors for street lighting and structures.

7. Highways Infrastructure Asset Management Plan (HIAMP)

The HIAMP is a separate document that demonstrates:

- *The way we will budget expenditure so as to provide the best overall maintenance of all our assets, judged against desirable levels of service, and*
- *The techniques we use to ensure that we manage the different assets in the most cost-effective way, and how we will improve those.*

The HIAMP is in place to ensure:

- *The optimum allocation of the capital budgets available between the asset categories. This is intended to provide the background for decisions on future spending which will need to be made once the implications of the government's comprehensive spending review are clear.*
- *The main areas for further investigation and analysis in taking forward our techniques for managing the individual assets.*

Strategy to Optimise Performance against Levels of Service Aspirations

The analyses in the lifecycle plan show how far we are able at present to meet our aspirations for levels of service. Taking the four dimensions in turn:

- *Safety – The County has been shown excellent results in reducing the number of deaths and serious injuries on the County's network in recent years, to considerably below Government targets*
- *Availability - From April 1st, 2016, the County has been operating the West and Shires Permitting Scheme and meet our responsibilities under the Traffic Management Act 2004. Tackling congestion is one of the key priorities with targeted investment from the Council.*
- *Serviceability – we believe that we are meeting most customer aspirations for serviceability. Worcestershire County Council's continued participation in Public Satisfaction Surveys will improve this knowledge and help identify further improvements.*
- *Condition – The Condition Indicator targets for carriageways and Footways have been achieved. The best balance of preventative and structural maintenance is the key to using the available funding to the best effect.*

Asset Management Approach to Inventory and Condition Data

The value of the highway asset, which will form the largest part of the authority's total asset portfolio, will change due to growth, as its condition varies, and by unplanned external influences such as extreme weather events. This will be countered by investment into the asset in the form of both maintenance and improvements.

In this section, we identify the information about the asset that is currently available, the management systems used, and the processes used to assess the information and determine how the asset will be managed.

As well as providing a location based listing of the component elements of the network, the highway inventory is needed in order to record the current value for each of its highway assets. Since the valuation requires knowledge of its replacement value, current condition and rate of deterioration, we need to be aware of the state of the inventory and condition data in order to complete the valuation.

Data collection, storage, retrieval, integration and analysis of data are fundamental requirements of asset management.

The highways inventory is a distinct data set and is used to define the asset, For example its location and attributes of each item. The physical state of each element of the asset is assessed through inspections and surveys and held as condition data.

Auxiliary datasets are defined as providing supporting data including accident statistics, traffic flows, Traffic Regulation Orders, route status (such as gritting route, traffic sensitive street etc), which is useful information maintained in an easily accessible form against the general highway referencing system. Data held in this way can provide comprehensive information about all sections of the asset.

Some Auxiliary datasets are already available; others are being developed to enable them to be presented in a consistent form.

Asset Data

Asset Data – Inventory

The highway inventory has been collected over a number of years and covers the whole county.

The Inventory is held in asset groupings and is used in different ways by a wide variety of users. These users can be divided into two principal types, whose requirements from the Inventory and the level of detail needed, can be quite different:

- *Operational Users – requiring access to data of varying accuracy, on an almost daily basis and for whom the Inventory is an essential tool. For example, Area staff, Urban Traffic Control, street lighting etc.*
- *Strategic Users – needing summary information on a less frequent basis, such as providing answers to technical queries, analysis, or preparing annual budgets and maintenance programmes. This use also includes the preparation of the annual valuation report and carrying out the necessary annual adjustments relative to the changing condition of the asset.*

The level of detail required for different users will dictate the level of detail that an inventory needs to hold, and thus the level of maintenance it will need to sustain its accuracy and quality.

The value of the inventory data is dependent on its quality, in other words, being complete, accurate, up to date and accessible. Whilst the inventory for the "main" assets such as Carriageways, Footways, Structures, VRS, Gullies, Lighting and Signals is fully up-to-date and comprehensive, certain minor assets require reviewing. A programme of works is in place to address this and the TAMP will evolve further as this data is secured.

The inventory is subject to ongoing review and all the necessary data is being collected and maintained to enable the plan to function efficiently. Careful consideration will be given to ensure that the collection of any new data is cost effective, i.e. that it is worth collecting and is collected in the most efficient way. Since the original data attributes were established, demand for different information has brought the need for some additional attributes, whilst some other attributes may now be superfluous.

A system of periodic re-collection of the network or attributes may need to be considered where confidence levels are unacceptably low. A detailed cost/benefit analysis for various options will be necessary before any action taken. For this reason, the current valuation guidelines recognise that there may be gaps in the asset inventory and allows assumptions to be made, for example surface water drainage pipelines.

There are, however, several opportunities for ad hoc inventory collection or validation to be carried out whilst a site is being visited for other purposes. These opportunities will be developed wherever possible.

Asset Data – Condition

Condition data has been collected through programmed Coarse and Detailed Visual Inspections (CVI's and DVI's) and through machine based surveys:

- *SCRIM survey is undertaken annually on the whole 'A' road network and strategic "B" roads and local distributors in both directions.*

- *SCANNER based inspections are carried as set out in the lifecycle plan for carriageways*
- *CVI surveys remain the prescribed inspection for assessing condition on the 'U' road network.*

Asset Data – Principal and General Inspections of Structures

Condition assessment is covered in more detail in Sections 8.

The frequency of Highway Safety and serviceability Inspection are given in the County's Highway Maintenance Plan

Asset Data – Auxiliary Datasets

Many items are held that provide additional useful information and condition data. These support the basic inventory and condition data, although are primarily used for other purposes. These can also be linked to the inventory data, and be therefore easily accessible, enabling a comprehensive picture of the asset obtained through one point of access, and direct links to the data.

Items that could be included as Auxiliary Datasets include:

- *Traffic counts and surveys*
- *Manual classified*
- *Pedestrian Counts (O&D)*
- *Pedestrian counts (crossing)*
- *Pedestrian count (school crossing)*
- *Pedestrian count (footway)*
- *Radar Gun speed survey*
- *Laser gun speed survey*
- *Vehicle occupancy*
- *Bus passenger counts*
- *Accident data (in summary form, to indicate need for referral to Casualty Reduction Team)*
- *Images of sign faces, especially ADSs*
- *Traffic Regulation Orders, possibly linked to a future Legal Services database*
- *Network Management*
- *Traffic sensitivity*

- Engineering difficulty
- Permits and Licenses
- TMA requirements as they develop

Asset Management Systems

Highway Management Systems (HMS)

Comprehensive Highway Management Systems (HMS's) are fundamental for a successful Asset Management Strategy. The following section sets out the functionality of the systems and issues relating to its management in Worcestershire.

Functions and their supporting systems

Implementation of an integrated asset management system is an ongoing and developing process. Worcestershire County Council uses an EXOR highways management system, which manages the majority of the County's Asset Inventory and other datasets. There are various other specialised HMS's relating to Street Lighting and structures for instance. Table 6.1 below shows some of the functions and the systems on which they are held.

Table 6.1 – Systems, Functions and Types

| | Exor | AMX | Mayrise | In-house/legal team/IBS | Other |
|------------------|--|--|--|--|--|
| Inventory | <ul style="list-style-type: none"> • C/W, F/W etc. • Customer care | <ul style="list-style-type: none"> • Structures | <ul style="list-style-type: none"> • Streetlights | | |
| Condition | <ul style="list-style-type: none"> • UKPMS • Safety Inspections | <ul style="list-style-type: none"> • Structures | | | |
| Auxiliary | <ul style="list-style-type: none"> • | | | <ul style="list-style-type: none"> • Permits/Licences • TRO's • GIS | <ul style="list-style-type: none"> • Street works / TMA • Network Attributes • WaSP Permitting scheme |

Risk Management

Risk based approach

Under the Well Managed Highway Infrastructure Code of Practice, Highway Authorities are allowed to develop their own levels of service in accordance with individual local needs, priorities, and affordability. This devolvement of power, allows Local Authorities to set their own level of service, including investment, levels of service, operations (including safety and condition inspections), and repair priorities.

Adopting a risk-based approach to reactive maintenance means that the prioritisation of the defect will depend on the level of risk that it poses for the highway user.

The key to selecting the appropriate action for a reported actionable defect is the risk assessment process. All reported defects that reach the investigatory level should be evaluated for their significance and the likelihood of injury or damage to a highway user.

Response times for remedial action on reported defects will depend on the severity of the defect and where it is located on the highway network. The response time is linked to the need to prioritise, through the asset management policy and strategy, maintenance towards a Strategic Network.

The risk-based approach that has been adopted is documented in the Highways Maintenance Policy and Highways Maintenance Plan.

The Council has a corporate risk policy designed to manage and mitigate risks in a structured manner. Risk management is an integral part of corporate management. It is a process about asking the following questions:

- *What can go wrong?*
- *What are the consequences of something going wrong?*
- *What can we do about it?*

The benefits of using risk management are as follows:

- *It supports strategic and business planning*
- *It supports effective use of resources*
- *It may mean fewer shocks and unwelcome surprises*
- *It enhances staff accountability*
- *It creates opportunities through informed decision making processes*
- *It enhances communication between Departments*
- *It helps deliver innovative projects*

- *It helps focus an internal audit programme.*
- *Protection of reputation.*

Types of Risk

The categories of risk that can be associated with the TAMP are as follows:

- *Professional/Operational: those associated with the particular nature of each profession*
- *Financial/Commercial: those associated with financial planning and control and the adequacy of risk financing policy. Those affecting the ability of the council to meet its financial commitments.*
- *Health, Safety and Welfare/Human Resources: those related to possible breaches of legislation and to the wellbeing of both employees and the public including clients.*
- *Information/Project Management: those associated with managing information including issues of data protection and freedom to information. Those related to IT/communications systems. Those related to management of projects.*
- *Contractual: those associated with the failure of contractors/partners to deliver services or products to the agreed cost and specification. Those related to services provided by the council to external organisations.*
- *Physical: those related to fire, security, and accident protection (for example hazards/risks associated with buildings, vehicles, plant, and equipment).*
- *Business Continuity: those associated with the inability to continue delivering the services to the public to an acceptable level following the occurrence of an incident*
- *Public Relations: those associated with the image of the council and the perception that the public has of the services it provides.*
- *Political: those associated with failure to deliver either local or central government policy, or to meet the local administration's targets.*
- *Legal/St*
- *statutory: those associated with failure to meet legal requirements*

Risks and the Worcestershire Transport Asset Management Plan

It is possible to apply our corporate risk matrix to many planned activities, including:

- *Planned Highway maintenance arrangements*
- *Performance indicators and associated targets*
- *Frequency based operations*

- *Flooding and other extreme weather events*
- *Finance*
- *Structures*

Day-to-day third party risk associated with permitted use of the County's Highways is dealt with by the Highway Maintenance Plan in consideration of the Well Managed Highway Infrastructure Code of Practice.

They will commonly be described as being categorised as either Financial/Commercial or Professional/Operational within the corporate guidance.

Risk Score

The risk score (demonstrating its significance) is calculated using a series of matrices described in the Worcestershire County Council Corporate Guidance 'tool kit'. These closely follow the PRINCE 2 approach to project management.

Performance Management and Monitoring

Introduction

The Directorate has a robust and comprehensive system for performance monitoring, much of which applies to asset management practices.

These Performance Indicators are constantly reviewed for relevance, appropriateness, and correct setting of the target figure.

Worcestershire County Council operates a Performance Management Framework that supports the Highways Asset Management Strategy and is used to measure its performance and continuous improvement in general. The Performance Management framework provides:

- *The link between the corporate vision, asset management strategy, levels of service and maintenance operations.*
- *A systematic approach to measure progress in the implementation of asset management.*
- *Set levels of service and performance targets to enable auditing and monitoring of the delivery of the asset management strategy.*
- *The mechanism for demonstrating how funding is being used effectively to meet the levels of service and performance targets, and any shortfalls.*
- *Effective communications with key stakeholders by demonstrating performance against their requirements.*
- *Aids decision making to deliver value for money.*

Reporting and Managing

Performance indicators vary in type from the monitoring of processes, to time linked surveys. As such the reporting frequency varies considerably from daily (e.g. defect repairs, Public enquiry performance) to biennial (e.g. user satisfaction surveys).

Data is collected and reported on a time scale that is considered best suited to the individual P.I. In all cases the most recent data available is used allowing responsible officers to compare results against targets and take appropriate action as the year progresses.

Monthly departmental performance reports are issued and are discussed at Departmental Management Team meetings. The performance of contractors is managed on a Contract-by-Contract basis. This management system includes concise but effective suites of KPIs, regular Contract Management Team meetings and Strategic Quarterly reviews with Heads of Service and Directors. All significant improvement projects within the department are managed under 'PRINCE2' project management principles, meaning that performance in delivering the many improvements set out in service plans is fully assessed. Improvements defined in this TAMP will be delivered on the same basis.

Additionally, a range of key measures within our Corporate Improvement Plan are reported monthly to the Chief Officer Group and quarterly to Scrutiny Panels and Cabinet.

Improving performance relies not only on the setting and monitoring of individual PI targets but also on managing the inter-relationships between potentially conflicting demands. For example, improving the condition and accessibility of the asset by carrying out a junction improvement on a traffic sensitive street will have an impact on its availability and financial performance depending upon the manner in which this is managed.

The Directorate of Economy and Infrastructure has developed a "dashboard" type performance monitoring system for each Unit which enables the Unit Managers to monitor the most important Performance Indicators they are responsible for. These are updated daily, weekly, or monthly as appropriate and allow "at a glance" monitoring in addition to Unit Business Plans that are produced annually.

Funding

Financial Statements, Projections and Sources

Capital funding for transport schemes is largely provided through the Local Transport Plan (LTP) process by government. This is provided in two blocks: The Structural Maintenance block which is determined through the Government formula and the Integrated Transport block.

Worcestershire County Council raises funds through the Council Tax mechanism and receives revenue funding from Government as part of the Formula Grant, including for

routine and structural maintenance schemes. Private sector funding is also available from developer contributions under Section 106 agreements.

The allocation of resources to the Directorate of Economy and Infrastructure is determined annually by Members whereby the County Council has an excellent track record in augmenting DfT funding investing heavily in the County's Highways Infrastructure.

The Directorate has the responsibility to allocate the overall highways budget to achieve best value and optimise the condition of the asset.

Funding (General Allocation)

Local Transport Plan Capital Funding

Local Transport Plan capital funding is used for maintenance and improvement of the transport asset. The following types of maintenance schemes are funded through this mechanism:

- A, B, C and Unclassified Carriageway maintenance
- Footway maintenance
- Bridge maintenance works
- Lighting column replacement
- Vehicle restraint system renewal and maintenance

The allocation of this funding between the various asset sets will be based upon the recommended levels in the latest round of DfT funding notes.

Capital funding is also made available for transport improvements. These improvements improve the serviceability and safety of transport assets, for example junction improvements, capacity enhancements, and sustainable transport infrastructure.

It is essential that both maintenance and improvement programmes are as integrated as possible to ensure the limited funding is maximised.

Revenue Funding

Revenue funding is utilised in a variety of ways including:

- Verges, hedges, trees – programmed and ad hoc cutting in response to complaints
- Aids to movement – refurbishment of carriageway markings, cleaning, and replacement of non-illuminated signs (including PROW)
- Drainage cleaning – cutting of grips and cleaning of pipework
- Gully emptying – programmed and ad hoc gully emptying

- Grass cutting – programmed cutting of verges and PROW surfaces by contractors and Parish Councils
- Weed control – control of grass and weed growth on hard surfaces
- Safety fences – repairs to safety fences
- Street lighting - cyclic maintenance, repairs, structural testing of columns, replacements, energy costs
- Illuminated Signs - maintenance and energy costs
- Traffic signals maintenance – daily fault rectification, replacement of old difficult to repair equipment and energy costs
- Highway condition surveys (including PROW) – undertaking surveys to provide information to calculate National Indicator's as required by Government and to assist in both asset management and programme development.

Nationally, there have been substantial pressures on revenue budgets in and, despite inflation allowances; the service revenue budget has been under continuing pressure. The allocation of budgets to different activity areas has been carried out based on supporting the overall lifecycle planning described in the lifecycle plans, as well as essential reactive maintenance work.

Prudential Capital Borrowing

This form of investment is funded by the Council's borrowing. Prudential borrowing is potentially available to support specific investments, for example, it recently funded two major £15m investment programme improving the County's B, C and Unclassified Road network and an additional £9.0m to address footway maintenance requirements on busy rural and urban footways supporting the highways service. Recently, the Council also invested a further £12m for the "Driving home" initiative enhancing the network used by Worcestershire residents.

The Council has approved a further £18m investment in carriageways and £12m in F/W between 2022/23 and 2024/5.

External Funding

The pressure on council budgets underlines the importance of exploring external funding. Examples include:

- Sponsorship income
- Developer 'commuted sum' contributions to cover the extra future maintenance costs of unusual surfacing, lighting or other features of new development which will be adopted by Worcestershire County Council.

- Section 106 monies contributing to early maintenance of existing asset subject to increased traffic

The role of the TAMP in Determining Future Funding Levels

Future total funding seems likely still to be heavily constrained, both for the highways service and for the Council as a whole. Within that constraint, the TAMP has two specific functions:

- *To provide strong evidence base to help inform decisions on the allocation of funds to this service compared to others*
- *To provide similar evidence for deciding the best split of funds within the service to maximise the fit with levels of service*

Budget Optimisation

Funding allocation between asset sets

In general, funding is allocated against the various asset sets on a County wide basis and on a "needs" requirement as assessed using condition and Defect data. In addition to this, the County's Improvement programme will be taken into account to ensure best value is achieved from both sets of funding.

Routine Maintenance

The majority of the County's routine Highway maintenance is carried out under the HMSC. This is a NEC3 Term Service Contract. The County has adopted "Outcome Specifications" for all these Core Services based on required service levels.

Doing so has ensured clarity of budget requirements and has assisted in long term planning and integration of various operations within the Contractors Plan to ensure maximum efficiencies are obtained.

A good asset inventory allows accurate Service Information to be provided and thus accurate and sustainable Pricing by the term Contractor.

As the TAMP continues to develop, improvements to the quality of inventory data and development of service levels with stakeholders will enable the Service Information to be reviewed and amended with greater knowledge of the impacts on Service, Condition, Price and potential risks to the Council.

Structural Maintenance

WCC have excellent performance data from previously used materials and processes. This information is used in conjunction with a highly developed spatial analysis system that employs relevant data sources which include:

- SCANNER
- CVI Surveys
- Safety Defect locations and proliferation
- SCRIM

As part of a three year rolling plan, criticality scores are identified for sections of the highway that most need attention as part of a desk top analysis exercise using an asset management approach. The identified sections are then reviewed to go forward with an onsite engineering assessment. Following the engineering assessments and Senior Officer agreement, a detailed annual forward works programme is compiled in the form of the Contractor's Plan.

Integrated Transport

The Local Transport Plan sets out Worcestershire's short, medium, and long-term transport strategy with the associated programme of desired schemes.

The programme is developed to make adequate progress towards Best Value Performance Indicators, national core performance indicators and the local LTP Performance Indicators. The detailed programme at scheme level is, where possible, linked to the Maintenance Programme to achieve better use of funds and minimise the impacts on the network.

Scheme Development

Schemes are developed through the feasibility, preliminary, outline and detailed design stages. Through these stages the optimum scheme is developed by consideration of the items listed below. The extent to which these items are considered varies from scheme to scheme depending on their complexity, cost, timescales, extent of public consultation, for example.

An assessment methodology has been created to select the most appropriate schemes to progress within the Improvement Programme. The Scheme Assessment Framework (SAF) has been developed to compare and prioritise potential local transport schemes. The schemes are to be judged against their contribution towards locally agreed policy objectives and priorities. In establishing such a framework, the debate over the relative importance of objective priorities is settled prior to assessment of how closely these are met by potential transport schemes.

The County Council can expect to see the following benefits from application of the SAF:

- *A renewed focus on outcomes and objectives in scheme development and decision making.*

- *A common approach for presentation and comparison of schemes.*
- *Improved transparency in, and traceability of, decision making.*
- *Increased objectivity with less reliance on subjective decision making.*
- *Improved understanding within the County Council of the process for progressing schemes.*
- *An opportunity to broadly assess areas how schemes could be improved at an early stage in their development, and how they compare against competing schemes.*
- *A mechanism which can be applied with relative ease to schemes to the value of £5million, and which can also be used, with caution, in early stage review for schemes of £5million and above.*
- *Improved access to, and understanding of, the range of desired outcomes and performance*
- *Indicators that schemes will be benchmarked against (including a proportion of those required for Major Scheme Funding Bids).*
- *Enhanced knowledge of the particular issues associated with certain types of projects, in terms of both delivery, and performance after implementation; and*
- *Improvements in efficiency associated with a clearly defined process that will promote interrogation of a scheme at the earliest stages of development.*

Asset Deterioration

Protecting the Asset

The following applies to Maintenance and Improvement schemes. The Traffic Management Act will enable better protection of roads and footways and hence extending their life, this will be achieved by:

- *More opportunities to protect a road following works, including surface dressing, with greater flexibility over the period it can be protected for again leading to more joint schemes.*
- *Tighter restriction on types of works, which negate the protection, order for a street.*
- *Powers to prevent entry to a road under certain circumstances*
- *If a “patchwork quilt” effect has been caused by aggregated openings powers to insist on full or half width reinstatement with the cost to be jointly born by those having undertaken work in the street*
- *powers to insist on half width or full carriageway reinstatement*

Asset Deterioration Models

Asset Deterioration Models illustrate the change in condition of an asset over time based on historical performance data coupled with an understanding of the deterioration mechanisms. Models should have the capacity to assess the effect on condition associated with different treatment scenarios and hence inform the process of identifying the most appropriate treatment, and the relevant timing of these, to maintain or improve the serviceability and value of the asset and model associated costs.

Programme and Organisational Development

The ability to maintain and improve the assets depends to great extent on the level of funding available, the proportion allocated to the asset groups and the effectiveness of the targeting of the resources based on condition or any other policies or priorities. Funding may vary from year to year therefore the Asset Management Plan must be flexible to respond to these changes. Also, it must but also be able to inform the Members of their decisions by illustrating the effects of possible budget options.

To this end the Infrastructure Asset Management Team have developed a Financial Impact Modelling Tool (FIMT) which by using the extensive and detailed scheme data from all planned works over the past 15 years or so, can predict the effect of investing different amounts (on separate classes of road) on the various condition indicators used.

This has proved very useful in demonstrating to Senior Management and Members the predicted condition of the County's roads for any given level of investment. It was very instrumental in obtaining the significant additional Capital County Council funding by way of prudential borrowing to augment that provided by the Government.

Worcestershire County Council has entered various long-term N.E.C. Contracts with specialist suppliers. This Partnership intends to improve the Service, and hence the ability to maintain and improve the asset by:

- *Building on the success of Joint Teams, set up under the previous partnerships, by integrating across a wider range of staff, in various offices.*
- *Developing a culture of scheme ownership that fosters accountability*
- *Continuing advancements in technology and e-service to improve communication and service delivery.*
- *Developing funding sources for schemes, considering both conventional routes and innovative options.*
- *Fostering a culture of excellence as part of developing the staff into a motivated workforce.*

The Traffic Management Act (TMA) requires us to change from our traditional role of asset providers and maintainers to one of network operator. As network operator we are required to minimise disruption for network users through better planning and coordination of all works, whether by utility companies or our own. Though this restriction could have implications on the cost of works, if contractors are unable to start works earlier than notified if resources are available, it ensures that those who live close to the works site or use the network are informed of our intentions and we consider their needs alongside our asset management needs. We are responding to the TMA by doing more detailed advanced planning to give earlier certainty of programming and will also make it easier for us to consider, understand and explain the consequences of programme changes to our network users and stakeholders.

8. Service Delivery

Introduction

The Director responsible for delivering the service is the Director of Infrastructure and Economy. The Directorate is split up into a number of Units, each of which has a distinct responsibility area.

Contractual Arrangements

Worcestershire County Council procures the majority of its Highway related services through a series on long term Contracts based around the N.E.C suite of Contracts. The Contracts comprise of:

- *Highway Maintenance Service Contract (HMSC)– (Winter Maintenance, Reactive safety related repairs, Gully Emptying and drainage system maintenance, Planned strategic Maintenance [carriageways, footways, structures etc])*
- *Infrastructure Engineering Term Contract (IETC)– (Improvements to the Highway and Structures maintenance)*
- *Street Lighting Maintenance Term Contract – (Lighting and Illuminated sign Maintenance)*
- *Traffic Signals Maintenance and Renewals Contract – (Traffic signal maintenance and installations)*
- *Professional Services Contract – (Provision of engineering consultancy services)*

Delivery Arrangements

Highway Maintenance

The Highway Maintenance service is delivered essentially through two main operational depots (there are two other principal depots and a further winter maintenance depot) and is the County has been divided into North and South service delivery areas.

A key requirement to extract maximum efficiency from the HMSC has been the establishment of LEAN delivery principles and a co-located integrated delivery team. Worcestershire County Council staff work together with our Contractors staff in teams to ensure maximum efficiencies are gained and schemes are carried out at minimum costs.

The work streams are separated into:

- *Reactive/cyclic*
- *Planned works.*

Reactive and Cyclic Highway Works

The County's reactive and cyclic works are administered by the Highways Operations Manager

All are procured through the HMSC. The following services are delivered by the team:

- *Highway Safety Inspections*
- *Highway Serviceability Inspections*
- *Defect repairs*
- *Gully emptying*
- *Jetting Services*
- *Verge Mowing*

Safety and Serviceability Inspections and Defect repairs are carried out in accordance with the County's Highway Maintenance Plan which is based closely on the Government Code of Practice "Well Maintained Highways".

This ensures that Inspections and repairs are carried out to an approved schedule according to the hierarchy of the asset. This provides the County with a robust defence against any third party claims.

Defects are repaired by the County's Term Maintenance Contractor, Ringway, as a Core Service within the HMSC.

Gully Emptying and Jetting services are also a Core Service. The outcome specification requires all drainage points to be kept in working condition. PS location of each of the 103,000 or so drainage points being established along with details of its type, condition, and level of silt. Collection of this data is being used to develop an emptying regime based on actual need rather than simply a "once a year" programme. This will ensure areas prone to silting and therefore at risk from poor drainage are attended to on a more frequent basis than those that have little detritus build up.

The County has also established a "flood plan" which is put into operation when excessively heavy rain is predicted. Flooding "hot spots" have been established from the data collection mentioned above and historical records. When weather forecasts predict flooding issues may occur the plan is put into operation which results in the "hotspot" drainage systems being assessed and cleaned in a priority order.

As more data is collected the flood plan and operational procedures will be refined drive down costs but maintain or increase the level of service.

Verge mowing is a very important service during the growing season to ensure the safety of the travelling public. Traditionally the County have let a number of individual Contracts to local contractors using tractors and flail mowers in the rural sectors and in urban areas to District and Parish Councils.

With increased levels and speed of traffic in evidence on our rural road network, it has been considered prudent to include Verge Maintenance as a Core Service in the HMSC.

Planned Highway Works

The County's planned maintenance works are administered by Highways Operations Manager

The vast majority of works are delivered through the HMSC from two main Depots (Lydiat Ash in the north and Newland in the south). There are two teams in each Depot that deal with Major Capital works and Minor Local works including Footway maintenance.

The following services are delivered by the teams:

- *Major Works (Design and Build):*
- *Carriageway resurfacing*
- *Carriageway reconstruction*
- *Surface Dressing*
- *Major patching works*
- *Minor Local Works:*

- *Footway resurfacing*
- *Footway reconstruction*
- *Minor carriageway patching*

Minor general maintenance works

- *Minor drainage works*
- *Non safety sign maintenance*
- *Non safety road marking maintenance*
- *Safety fencing maintenance*
- *Highway tree maintenance*

Structures Maintenance

Worcestershire County Council's structures are managed by our partner professional services provider (Jacobs) under the direction of the Infrastructure Asset Manager.

Much of the more minor works are carried out by the HMSC, Ringway, by two dedicated structures works teams.

Major maintenance is undertaken by the most suitable Term Contractor under the HMSC or TCEC. Specialist treatments such as mechanical joint maintenance and waterproofing are carried out on an individual scheme basis by other specialist Sub-Contractors as and when required.

Network Improvements

Major Network Improvements are administered by Infrastructure Asset Manager. Most schemes are procured using the TCEC. This is a modern N.E.C. contract designed to allow early Contractor involvement to maximise buildability and minimise costs to the County whilst maintaining quality requirements.

Street Lighting

Lighting maintenance and Improvements are administered through a dedicated Lighting team lead by a Senior Engineer, again under the direction of the Infrastructure Asset Manager.

Maintenance and new works are procured through a long term NEC contract with Prysmian.

Traffic Signals

Traffic signal maintenance is administered through the Intelligent Traffic Systems Manager under the direction of the Network Control Manager. Traffic Signals are maintained under a term maintenance contract with Peek Traffic Signals.

Professional Services

For the technical management of the County's structures and design work for improvements, and other Professional Services Worcestershire currently employs Jacobs as consulting engineers under an NEC Term Service Contract

The Structures management team is under the direction of the WCC Infrastructure Asset Manager with the Jacobs Structures Lead dealing with day to day management of the team, this being a 'Core Service' under the Contract.

Other services are procured on an individual basis by a limited number of WCC commissioners.

Co-ordination and Scheme Control

With the various Units and teams procuring work through the Contracts outlined above, it would be very easy for schemes to adversely affect each other directly or for one scheme to be carried out and completed only for a different Unit to implement their scheme and disturb the newly completed works.

To avoid this situation and to explore opportunities of combining works where possible to gain scheme efficiencies the Economy and Infrastructure Directorate operate a Programme Board and a Package Panel. These two groups have an overarching view of all the Divisions proposed schemes and will ensure that best value and good scheme co-ordination is obtained.

9. Management and Control of the Plan

Introduction

Throughout this TAMP, issues and corresponding improvement actions have been established. These actions will need to be prioritised, programmed, resourced, and implemented in order for an asset management approach to be fully introduced.

Ownership of the TAMP

The Infrastructure Asset manager is the officer responsible for the Transportation Asset Management Plan.