Solihull Metropolitan Borough Council

Highway Infrastructure Asset Management Plan

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Reviewed By .....

Contents

1 Executive Summary

Highways Infrastructure

Solihull's highways infrastructure is by far the most valuable set of assets for which the Council is responsible. It provides a vital contribution to the prosperity of the borough. The availability of a safe, serviceable highways network is essential to allow ready access around and through the borough, as well as providing access for business and residents. The Borough's economic vitality depends upon highway network that is safe and fit for purpose. Efficient, effective management of this valuable asset is therefore one of the key responsibilities of the Council.

This asset management plan initially sets out a framework for the management of highway assets, the following list does not cover all of the assets, but are deemed to be the 'critical assets', and these are as follows:

- Carriageways
- Footways
- Structures
- Street Lighting and Lit Signs
- Highway Drainage

Solihull's highway network is estimated to have a replacement value of £1.346 billion. The continued use and maintenance of the largest and most valuable asset is important to ensure economic growth within the Borough and to deliver the required service to users of the asset.

In this document life cycle planning is utilised to provide a long term approach to managing our infrastructure. Life cycle planning is used to develop network wide funding scenarios for critical assets over time. Like all authorities, Solihull is facing significant budgetary pressures. This HIAMP enables informed decision making and a framework for establishing the affordable and best value levels of service that can be achieved.

This plan documents the asset management framework that will be used to maintain our assets, it includes medium to long term asset management strategies and details how maintenance programmes will be developed from the condition of the critical assets. Programmes of work to be undertaken are identified and set out in the annual plan and approved by the HMC Board.

2 Introduction

What is Asset Management?

The Highways Maintenance Efficiency Programme produced the document "Highway Infrastructure Asset Management Guidance" document, which has been endorsed by the UK Roads Liaison Group, CIPFA and the Department for Transport. This provides a useful definition of the process as applied to highway networks:

"Asset management is a strategic approach that identifies the optimal allocation of resources for the management, operation, preservation and enhancement of the highway infrastructure to meet the needs of current and future customers."

From this definition key aspects of asset management are:

- **A Strategic Approach over the Long Term**

Taking a longer-term view of how the council manages its assets. Such a systematic approach may transcend annual budget cycles and will be key if we are to maximise the long-term benefits of the resources available to us. It is envisaged that forward works programmes for critical assets will be developed covering a period of between 1 and 5 years, with cost projections for 10 to 15 years to enable long term planning.

- **Optimal Allocation of Resources**

The appropriate allocation on competing demands for limited funding available to maintain all the highway assets. It would not be practicable to have funding to ensure that the asset is maintained to 'an as-new' standard, it is important to ensure that funding is targeted at the most appropriate need. Asset management assists this process by enabling the allocation of resources based upon assessed need for all its highway assets.

The use of lifecycle planning and the optimisation of whole life costs are key asset management components that will help allocate resources to where they are likely to provide the best long-term benefits.

Asset management enables such decisions to be made in the light of the risks and benefits associated with these trade-offs.

- **The Needs of Customers**

The development of affordable levels of service for the critical assets, taking account of the needs and aspirations of the stakeholders and the funding available.

This HIAMP is based on the HMEP Guidance Document for Highway Infrastructure Asset Management. The key elements of this guidance are shown below diagrammatically and illustrate the basic relationships between each element. In simple terms the guidance assists Solihull in considering the linkages between the activities it needs to consider when managing the Borough's highway assets.

Solihull participation in the NHT annual survey, which is an independent national survey which measures that satisfaction by residents on 'the Boroughs' highway service it provides. The results are benchmarked and can be found at: https://www.nhtnetwork.co.uk/home

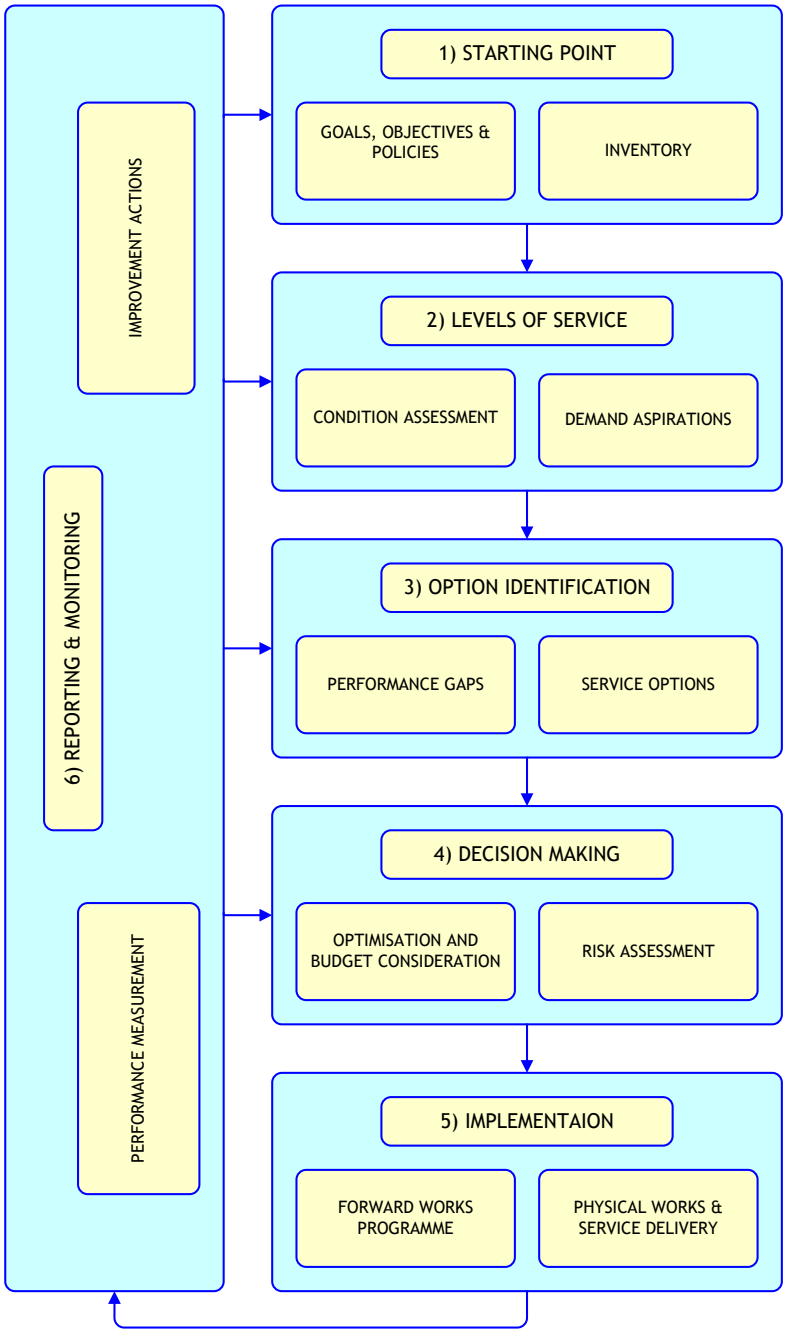


Figure 1-Asset management process

The diagram Figure 1, above outlines the asset management process showing the decisions that need to be considered and the effect they will have on the future of the asset. This is fed back into the process as an aid to future decision making and continuous improvement.

The Drivers for Asset Management

This HIAMP assists in delivering services, by setting appropriate and achievable standards for the on-going condition of the asset over time. The key drivers for the adoption of asset management include:

- ***Improving the Value for Money and Effectiveness in Managing the Highway Network.***

  Knowledge of the quantities and their respective condition of the highway infrastructure, their lifecycles and the agreed levels of service, comparative risks to the Council and the users of the network when considering budget options for each of the assets, ensuring best use can be made of the available resources.

- ***Linkage with the West Midlands Local Transport Plan (LTP).***

  It is a requirement of the LTP that regular reviews of the HIAMP should be undertaken. This enables the HIAMP to steer the highways maintenance strategic LTP objectives.

- ***Grant funding***

  The DfT have changed the way funding is made available for highway authorities. A greater emphasis is placed on quality asset management plans and practices that can be evidenced.

- ***Whole of Government Accounts and Asset Valuation***

  The introduction of Whole Government Accounts places an obligation upon local authorities to value their transport assets. The HMEP has produced the guidance to help deliver this valuation. Asset management will help produce the key inputs to enable valuation in accordance with this guidance.

Plan Development & Implementation

Asset management planning is a continuum and needs to be considered as part of the day to day management of the Council. It is anticipated that over time this HIAMP will be further refined to accommodate changes in policy and legislation and to meet developing Council objectives.

HIAMP structure

Section 1: Executive Summary

Section 2: Introduction

Section 3: Asset Management Policy, Strategy and Levels of service

Section 4: Performance management

Section 5: Asset information and Data

Section 6: Lifecycle Planning

Section 7: Investment Strategies

Section 8: Work programming

Section 9: Overall risk implications of the plan

Section 10: Performance Monitoring

Appendices

3 Asset Management Policy, Strategy and Levels of Service

Specific Policies and Objectives:

Highway Asset Management Policy – This is the Councils approved commitment to delivering highway infrastructure asset management

a. Recognises the vital role played by Solihull's highway network in supporting the objectives and priorities set out in the Council's Plan 2014 to 2020, and the wider regional economy.

b. To make best use of the available funding to support an asset management led approach for the maintenance of the Borough's highway network and associated assets.

c. Support the objectives set out in the West Midlands Local Transport Plan (LTP3) submission, we will seek to:

- Managed Growth:

  Help facilitate a higher quality of life, meeting the needs of individuals, but being responsive to the changing needs of businesses, the local economy and support future development in the borough.

- Improve Health and Wellbeing

  Ensure that people have access to local services and supports vulnerable people within their own communities. In addition, we will reduce road safety risks.

- Building Stronger Communities

  Plan highway maintenance to allow the effective coordination of works, to reduce delay and congestion on the highway network. Also provide forward visibility of planned maintenance works so that road users may plan accordingly.

- Deliver Value

  Through the associated Asset Management Strategy this will set out the delivery programme and action plans that maximises cost over time, value to the community and supporting lower

carbon transport choices. This also promotes the use of innovative and sustainable solutions and treatments, which minimise waste and landfill during highway maintenance works.

Asset Management Strategy

Solihull Council recognises the importance of its highway infrastructure and how an effectively maintained and managed network contributes to the achievement of its corporate goals. It understands that effective Asset Management is a platform to deliver clarity around standards and levels of service, and to make best use of its available resources.

The Highway Asset Management Strategy sets out how the Council will deliver the AM policy, therefore best manage the Highway critical assets, taking into consideration economic development, strategic routes, customer needs, local priorities, asset condition and best use of available resources.

This document presents the Council's Strategy for the management of the Council's highway assets as at June 2020 and allows planning for the longer term.

It has been produced following the assessment of customer needs, local priorities and asset condition. It also ensures that both short and long term needs are appropriately considered, whilst delivering an optimal whole life cost approach to our Highway Assets.

This Strategy will be used to inform the highway maintenance schemes that are to be implemented within the Councils Delivery Plan. The selection of these schemes will be driven predominantly by condition data and supported by local members.

This Strategy covers all highway maintenance activities funded by revenue and capital streams. The Strategy does not directly relate to capital improvements but where linkages exist these are identified.

The Asset Management Strategy will be used to inform priorities in the Business Planning Process and will support the continuous improvement of highway asset management.

This strategy looks to further reduce carbon emissions resulting from highway works, either from recycling or through the use of low carbon producing products. The largest contributor to carbon emission is from electricity for street lighting and illuminated signs; the new LED replacement programme will see substantial reductions in the electricity consumed.

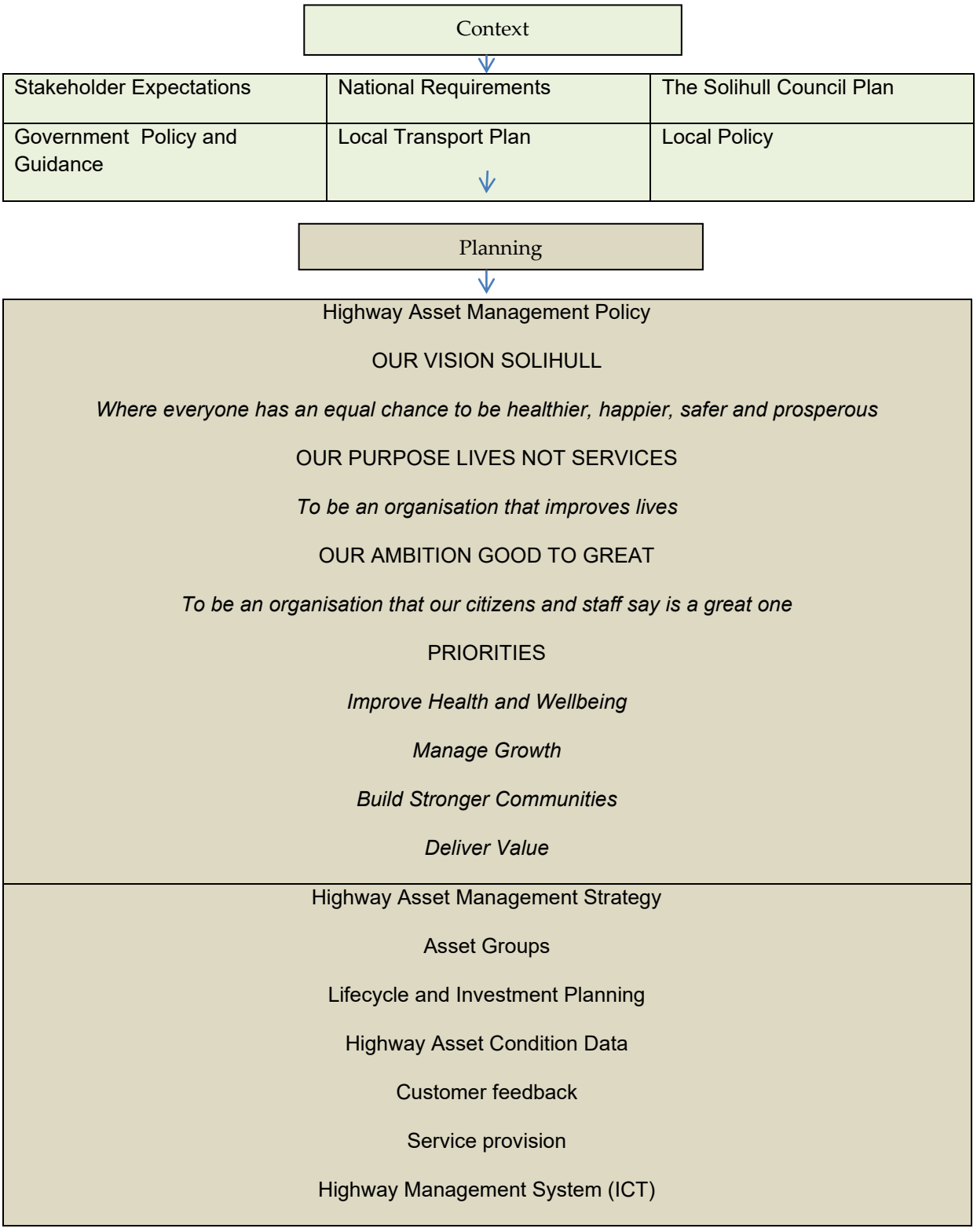
Asset Management Policy and Framework

The Asset Management Strategy sets out how the Asset Management Policy will be delivered. The Policy is a high level document that confirms the Council's commitment to Highway Asset Management and demonstrates how an Asset Management approach aligns with the authority's corporate vision and strategic/LTP objectives.

The Asset Management Strategy is one of the key strategic documents relating to the Council's

Highway Services. The Asset Management Framework below encompasses these key documents and illustrates the local and national influences and dependencies that are in place to deliver these services.

The Highway Asset Management Framework



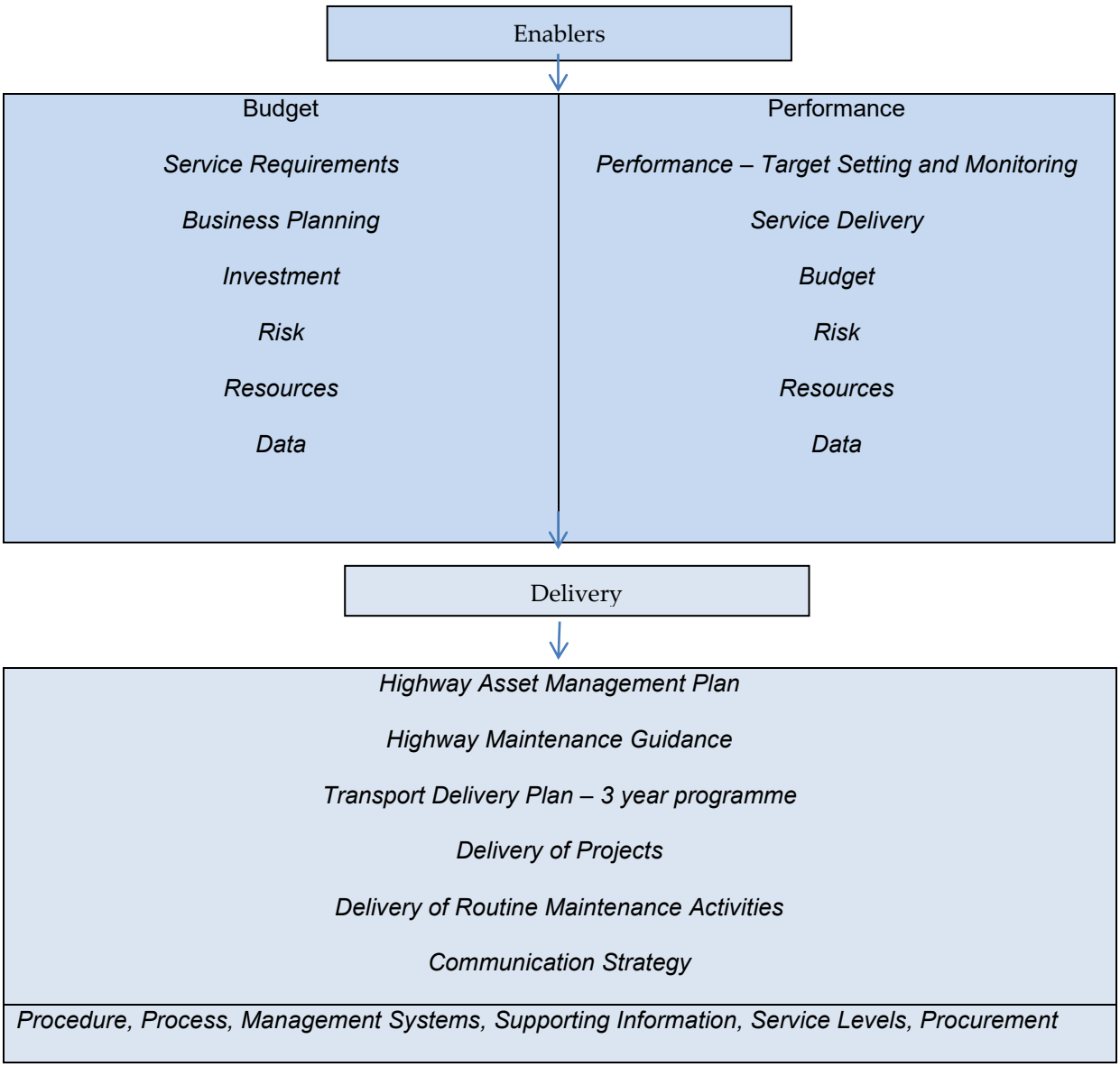
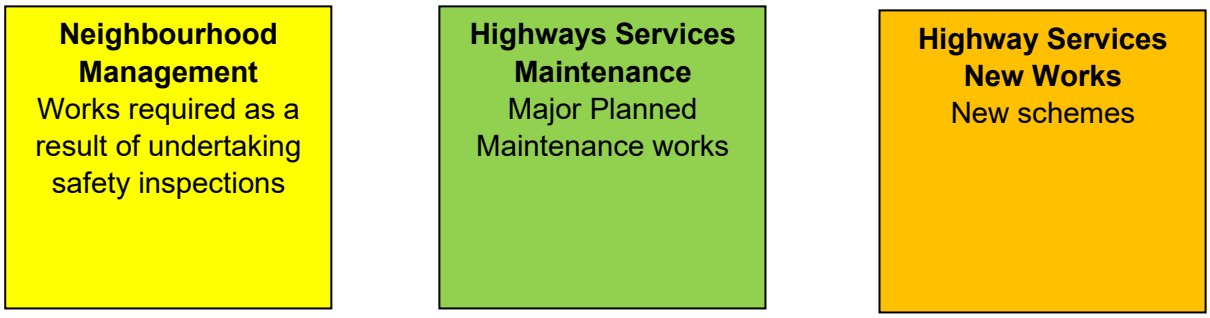


Fig1 – Solihull MBC's Highway Asset Management Framework

A key element of the Asset Management Framework is this HIAMP. This Plan is a working document that contains approved policies and guidance, service standards and interventions that reflect the Highway Authority's legal requirements.

This document reflects the guidance provided by Highways Maintenance Efficiency Programme, (HMEP) document 'Highway Infrastructure Asset Management' guidance and the National Code of Practice 'Well-managed Highway Infrastructure'.

Highway Service Delivery structure



Neighbourhood management – Responding to customers and Members the team undertake safety inspections that generate reactive maintenance which are subsequently delivered through Highway Services HMC partner.

Highway Services Maintenance – Deliver the major highway maintenance programme for footways and carriageways. These works are delivered through our partnering contractor.

Highway Services New Works - Deliver new schemes giving consideration to the future maintenance implications of the critical highway asset.

User Preferences

Solihull's road network provides the backbone of its economy and the maintenance of its highways in an appropriate condition is paramount. This is reflected in customer contact data which indicates on-going customer interest in the condition of carriageways.

Recent results for the borough, from the NHT customer survey, show that the condition of roads is both the item that is "most important to users" and the aspect "in most need of improvement". The data indicates a strong preference for improvement in carriageway (road) condition.

The preferred strategic options support the key messages that disseminate from user data and the Member feedback.

These are:

- Recognises the importance of all Carriageway assets
- To adopt a preventative maintenance approach, targeting a 'steady state' or better.
- Considerations on funding disaggregation (i.e. more emphasis on carriageways)
- Footways, Structures and Traffic signals programmes to be rationalised and focused around priority assets.
- Consider how the service contributes to the Medium Term Financial Strategy (MTFS)

Strategy for Main Asset Groups

The user preferences are supported by current network intelligence which gives clear direction for a Strategy that focusses on the condition of carriageway assets as a priority. This has been acknowledged in creating this Strategy for each asset as outlined below.

Carriageways

Carriageways (roads) are the asset group in greatest need of attention and the desired outcome of this Strategy is to deliver an improvement in their overall condition. The Strategy targets increased investment in order to arrest the progressive deterioration.

Desired Outcome: to deliver a sustainable improvement in overall carriageway condition.

- Priority Investment: a preventative Strategy should be adopted as this will deliver the best value for money, preventative works will be given budget priority
- Investment will recognise the potential differences in condition between the various road hierarchies
- Investment in drainage maintenance and improvements will continue.
- Investment in safety fence maintenance and upgrades will continue.
- De-cluttering will be considered for all aspects of highway asset management

Preventative Approach - A preventative approach should be adopted. This means investing a greater proportion of the available budget to treat roads in the early stages of deterioration. A preventative approach programmes preventative treatments at the optimal time, so that more costly treatments are not required. This Strategy is the roads equivalent of painting wooden window as necessary before they rot and need expensive replacement.

Predicted Condition -The condition profiles assume that a small element of revenue funded works contribute to the overall condition e.g. where significant areas of patching are undertaken.

The Strategy is designed to allow better management of customer expectations. By providing specified target standards, by improving planning of works and providing a more consistent condition it is expected that users will have greater clarity of what can be expected. Improved communication with customers using this information should improve customer perception and satisfaction.

Summary

- Sustainable improvement of measured critical highway asset condition possible
- Predicted decrease in quantities of minor defects (pot holes and similar) in the longer term
- Increasing customer satisfaction as a result of decreasing reactive repairs and more stable condition

Footways

Regular condition surveys of the borough's footways are undertaken and the assumptions in this Strategy are based upon the data collected. The priority for footways is to address the condition of the busier footways

Desired outcome - to improve condition of high use footways (referred to as Cat 1 and 1a on the footway hierarchy) and maintain other footways in no worse than current condition.

- Priority Investment: the investment required to improve the condition of busier footways
- Footway investment on the remaining footways shall be maintained based upon targeting a "no worse than at present condition"
- A preventative Strategy will be adopted using surface treatments where appropriate

Prevention - A large proportion of the Borough's footways are bituminous. A regime of preventative treatments such as slurry sealing offers the opportunity to delivered improved condition at a lower cost. A programme of preventative treatment will form part of this Strategy and is incorporated in Delivery Plans.

Reliability of Predictions - Predictions of asset deterioration is based upon robust condition surveys and historic data that is used to support deterioration modelling combined with engineering judgement ensures quality works planning for the highway assets.

Highway Structures (bridges)

Desired outcome: to maintain safe structures whilst making steady progress in addressing structures where strengthening is desirable, utilising structures condition and location as determinant factors.

- Priority investment: in statutory duties and a small number of priority structures
- Strengthening programme; strengthening of structures will be undertaken progressively using a prioritisation of those structures where strengthening provides the greatest benefit to users
- Maintain the safety of the structures stock -Reduce the number of structures requiring strengthening works

Statutory Duties -The council will continue to meet its statutory duties as the owner of highway structures via a regime of inspections and management of abnormal loads and bridge use. Funding allocations to allow repair of damage to structures requiring immediate attention (e.g. vehicle strikes in order to keep the asset safe) will be maintained.

Bridge Strengthening Programme – A list of schemes has been identified where maintenance work is desirable. The remaining structures will be managed utilising a regime of inspection/monitoring. The Strategy is based upon addressing the highest priority structures within this list as below:

Priority 1 Works: Structures which require immediate (next 1-3 years) attention to prevent them from becoming hazardous to users or that require works that will prevent high repair costs from being required.

Priority 2 Works: structures which require attention but can be managed by monitoring until funding is available to enable works to be undertaken (targeted completion of this programme within 10 years)

Traffic Signals

A number of traffic signal and signal controlled crossing installations that are now coming to the end of their design life have been identified and these form the basis of the traffic signals strategy.

Desired outcome: to retain a reliable safe traffic signals stock.

- Priority investment: Highway priority traffic signal junctions and signal controlled crossings that are in need of replacement.
- Refurbishment Programme: on-going replacement needs driven by age of site, obsolescence of equipment and deterioration of condition/reliability.

Reliability -The reliability of the traffic signal stock will continue to be met by a regime of inspections and reactive repair.

Refurbishment Programme - A programme of refurbishment will address sites where, due to age or obsolescence of equipment, the future reliability of the site could not be assured. This list also includes sites where there is a need to upgrade in order to improve traffic flows through the junction or to upgrade the operation of an existing signal controlled crossing. The programme has been prioritised as follows:

1 **Priority 1 - Traffic signal junction works**, essential refurbishment of high priority junctions and works that will improve junction operation and provide added value.

2 **Priority 1 - Signal controlled pedestrian crossing**, essential refurbishment of high use crossings and identified works that will provide added value.

3 **Priority 2 – Traffic signal Junction Works**, the remaining junction sites that are at or nearing the end of their expected lives (they will exceed 20 years old by 2017)

4 **Priority 2 - Signal controlled pedestrian crossing**, these are the remaining signal controlled crossings that are not included above.

The Strategy is designed to complete Priority 1 works within the first 3 to 5 years.

Street Lighting

The Council's Street Lighting management and maintenance is supported by an approved Street Lighting Strategy. The strategy sets out the how the implementation of low energy lighting currently using LED technology is to be undertaken. All new developments are required to include low energy lighting if they wish the roads to be adopted.

The columns are being replaced based on a risk assessment with tests being undertaken on a 5 year rolling programme. All other routine maintenance such as bulk lamp replacement and electrical testing will be undertaken as defined in the codes of practice for street lighting.

Drainage schemes

The Strategy continues to provide annual investment in drainage improvements – recognising that positive drainage systems will help prolong the life of pavements. This investment will provide a mechanism to manage flooding issues and develop solutions and will be funded from within the capital/revenue carriageway allocation.

Capital Improvement and Road Safety Schemes

The Strategy supports the need to focus on improving road safety and encouraging growth through delivering appropriate improvement schemes. Whilst the Strategy does not directly cover these activities, it is intended to facilitate a joined up approach to the delivery of improvement and maintenance schemes. There is also an on-going requirement to understand the future maintenance implications of new capital schemes.

Further efficiencies gained by adopting effective Asset Management could be used to incorporate additional works to minimise whole life costs and traffic disruption.

The Asset Management Strategy and resultant long term delivery plans, will allow a more coordinated approach to the provision of Capital Improvement and highway maintenance schemes. This will ensure that maximum value is achieved from various capital and revenue investments through the lifecycle of new and existing assets.

Sudden Asset Failures

Whilst the Strategy advocates a planned and risk based approach to Asset Management, there may be exceptional circumstances in which a particular asset fails rapidly - beyond prediction. In this event, planned activities will be reprioritised (using the principles contained within this Strategy) across all asset groups in order to facilitate the inclusion of additional schemes within the programme.

Planning Considerations

The Council understand the importance that growth and re-development has on the future of the local area and economy. However, there is a need to ensure that any new development / change of use promoted through the planning process fully consider the impact on the existing highway network and its future maintenance.

Data Management and Information Systems

The Council's Highway Asset Management Strategy and Plans are supported by robust and reliable data.

The following systems are currently in operation by the Authority to manage its Highway Data

- Symology Insight Highway Management System
- Yotta Pavement Management System
- GIS

Good Practice

Solihull Council is committed to developing and implementing best practice and will make best use of the following forums where appropriate:

- Highway Maintenance Efficiency Programme (HMEP)
- The Chartered Institute of Public Finance and Accountancy (CIPFA) Highways Asset Management Planning Framework
- Highways Asset Management Financial Information Group (HAMFIG)
- UK Roads Board
- West Midlands Highway Alliance (WMHA)
- ADEPT Asset Management Working Group
- National and regional conferences
- Professional Institution engagement
- Competency training
- West Midlands Highway Infrastructure Management Group (HIMG)

Review Process Monitoring and Performance Reporting

The Strategy will be reviewed on a three yearly cycle in line with the LTP time table to allow informed decisions to be made in order to accommodate any changes in funding and priorities within the longer term forecasts.

The Strategy should apply regardless of funding levels which may vary over time.

Proposed maintenance works will be reported annually for Cabinet approval

LTP Guidance

- Improving road safety
- Improving bus journey times
- Relieving traffic congestion and improving journey time reliability
- Improving accessibility and social inclusion on the transport network

- Improving the working of parking and waiting arrangements
- Encourage walking
- Encourage cycling
- Bringing transport infrastructure to a state of good repair

4 Asset Information and Data

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.

Types of Data

The following asset data types are required:

- **Inventory**: comprising details of the number, 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 flows, accident records, public satisfaction, claims, heavy vehicle routes, etc

Good asset data is the foundation on which asset management processes are built.

Asset Management Data Requirements

Asset data is required to enable the following 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 development of affordable levels of service
- The assessment of current and development of associated performance indicators
- The modelling of future maintenance options through lifecycle planning scenarios
- The identification of future investment need
- The development of long-term forward works programmes. (These processes will then identify future budget requirements)
- Valuation assessments for each of the assets and the calculation of replacement cost

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

Asset Groupings

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

Asset Area	***Elements***
Carriageway	Carriageway, traffic calming features, cycle lanes, high friction surfacing, central reserves.
Footways, cycleways and cycle lanes	Footway, footpaths cycleways and cycle lanes (both surfaced and un-surfaced), un-surfaced and non-trafficked hard areas, surface type, length, width, usage.
Structures	Bridges, subways, culverts, embankments, retaining walls, other highway structures.
Lighting & Lit Signs	Lighting columns, lamps, cabling, ducts, feeder pillars, lit signs, subway lighting.
Drainage	Footway and carriageway (channel) gullies, footway and carriageway drainage connection pipework, dedicated highway pipework systems including manholes and catchpits, Soakaways

Existing Data

Solihull differs to most boroughs as the topography is split between rural and urban giving two distinct areas. Subsequently the asset data base is large and diverse. The high risk asset data has been identified and collected first, and the low risk asset data afterwards. High confidence exists for the data sets collected on an annual basis by data specialists, such as road, bridge and lighting conditions.

Different assets have varying levels of inspection and reporting routines depending on the frequency of their usage, as a result data varies across data attributes.

Existing data storage

The data is stored on several systems; the highway assets are stored on Symology with the bridge data held on Bridgestation Where possible all asset data will be held on Symology.

Asset Data

Although the high risk asset data does exist there are areas with limited data. It would not be cost effective or indeed necessary to collect every piece of "missing" asset data.

Data Management

Data management procedures ensure that all asset data is kept up-to-date. Additional asset data will be added to the inventory as it is identified. Accuracy of the inventory data must be rigorously maintained, as degradation of data quality will have a significant and detrimental effect on the validity of the results of management of the asset.

The inventory management procedures should include, inter alia, the following:

- Named managers responsible for the data for each asset group (Data Owners)
- Named managers responsible for the datasets
- Inventory verification/validation procedures
- On-going data collection
- Update procedures for new works
- Interaction with Highway Inspectors
- Methods for updating the inventory

Data Use

Data is required to support the following activities:

- Maintaining an inventory: So that we know accurately the extent of the highway assets we own and aid the Council to plan and programme works and establish and quantify needs.
- Routine Maintenance management; to enable us to demonstrate that inspections and repairs are undertaken in accordance with our policies
- Customer Queries and Service requests; to enable us to track customer queries and be able to demonstrate that we 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 BVPIs, KPIs and Local Performance Indicators

5 Levels of Service

What are Levels of Service?

This HIAMP guidance document definition of levels of service is as follows:

“Levels of service describe the quality of services provided by the asset for the benefit of the customers. They are composite indicators that reflect the social, economic and environmental goals of the community. Levels of service are therefore the manner by which the highway authority engages with the customer and are about reflecting the customer’s interests in terms that can be measured and evaluated.”

Levels of service are developed from both asset condition (existing/desired) and demand aspirations (i.e. what the asset is expected to deliver both now and in the future).

The developments of levels of service that reflect and support user aspirations are a key element in the adoption of an asset management plan. This section describes the basis on which levels of service (service standards and performance targets) have been established. These standards take into account statutory duties of the council as a highway authority, the council’s strategic highway network goals and the expectation of the customers.

The target levels of service contained in this plan have been determined by applying the generic service options described in this section to all asset groups. These have been applied in detail to individual asset groups. These steps are detailed in the lifecycle plans and have led on to the development of long term plans for the forward work programmes.

Use of Levels of Service

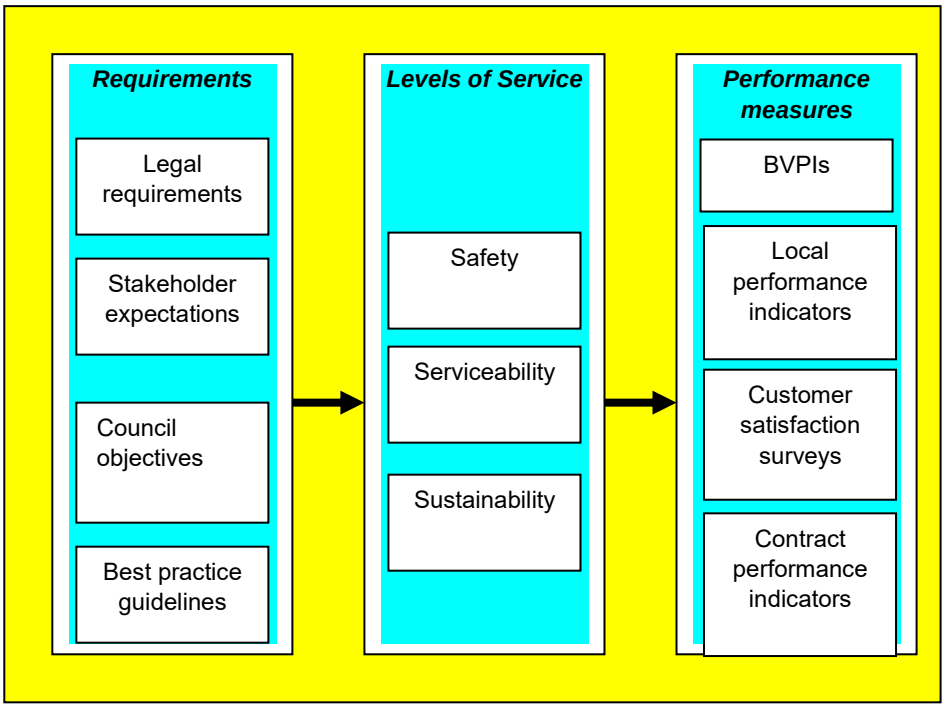
The levels of service defined in this Section will be used:

- To provide more detailed information to customers about the level of service they can expect and perhaps in some instances to outline what they cannot reasonably expect unless they are prepared to pay more
- To be seen to directly influence how priorities are assessed how funding needs are identified, how funding is distributed and how the effectiveness of that spend is subsequently assessed.
- To create a means of assessing the benefit of using asset management planning as opposed to current methods. This may mean stating some targets for what it is specifically expected that this plan can achieve and monitoring whether these are delivered
- To be able to assess the costs of delivering differing levels of service and to make more informed choices between the options available. This is what the use of service options and option appraisal techniques will provide
- To provide better information to enable consultation with customers to incorporate not only questions of preference, in terms of what is important to them and how satisfied they are but also about what they would be prepared to pay more for, or to sacrifice in order to pay for a higher level of service in another area.
- To provide more detailed information to members about the level of service that can be provided given the funding available and service options available should the level of funding change.

Development of Levels of Service

The levels of service adopted have been developed for each asset group with the understanding of the factors and requirements that can affect delivery of the highway service. These factors originate from various sources, including legislative requirements, best practice guidelines, codes of practice, LTP objectives and stakeholder expectations.

The model used for developing Levels of Service is shown in the diagram below:



Legislative Requirements

The role of the highway authority as asset manager is governed by an extensive range of legislation. In relation to highway maintenance, much is based on statutory powers and duties contained in legislation and precedents developed over time as a result of claims and legal proceedings. Even without specific powers and duties, boroughs have a general duty of care to users and the community to maintain the highway in a condition fit for its purpose. Legislative requirements include duties and powers:

Duties: tasks the authority must carry out by law

Powers: tasks the authority may exercise by law if it so determines

Where the council elects to exercise its powers, these generally incur a duty, e.g. Council's power to erect road signs, creates a duty to maintain them.

These considerations, along with self-imposed minimum standards, directly affect the levels of service that the authority provides.

The legislation listed below, but not limited to, governs the statutory and discretionary powers for delivery of the highways service are contained in the following: -

- The Highways Act 1980
- Traffic Management Act, 2004
- Railways and Transport Safety Act, 2003
- New Roads and Streetworks Act, 1991
- Road Traffic Act 1988
- Road Traffic Reduction Act 1997
- Transport Act 2000
- Wildlife and Countryside Act 1981
- Rights of Way Act 1990
- Countryside and Rights of Way Act 2000
- Construction (Design & Management) Regulations 2015

Stakeholder Expectations

Providing public services is increasingly under the scrutiny of all stakeholders In developing a long term approach to managing the asset it becomes very important that we understand what the expectations of internal and external stakeholders are.

We undertake this in a variety of ways;

- NHT Surveys: undertaken annually with an overview of all highway related services.
- Department Surveys: highways department may from time to time commission bespoke surveys to gauge public satisfaction on the services being delivered, this could be highways specific.
- `How have we done' surveys: Usually on specific schemes or work activity to gauge public opinion on the work that has been undertaken and levels of satisfaction both with the outcome and delivery.

Gathering useful information to aid understanding of what the customer wants can be invaluable to support development of a strategic approach to management of the highway and to identify what is important to residents and what can be achieved.

It is also important to manage stakeholder expectation. With a better understanding of why decisions have been made or why highway treatment strategies are adopted can save unnecessary customer dissatisfaction and create an inclusive decision environment.

Best Practice Guidelines

A number of best practice guidelines or Codes of Practice (COPs) are currently implemented by the Council and influence many parts of the Highways Service.

Although it is not a statutory requirement to implement a COP, adopting it provides a strong defence to third party claims by demonstrating that the authority has undertaken all practical steps in safe guarding the highway user.

Key best practice guidelines or COPs not only influence the establishment of the **Good** Level of Service (where this has been adopted) but has also been used for determining the **Desirable** Level of Service where they have not already been adopted due to reasons such as current financial constraints.

It will be important to develop the relationship between the HIAMP and the Codes of Practice to ensure that each informs the service delivery and ultimately achieving the delivery identified in the LTP.

Service Options

A developed asset management approach is intended to facilitate better decision making by providing enhanced information to support the decision making process. In practical terms this means the identification and assessment of Service Options.

A key objective of preparing an asset management plan is to relate the level of service provided by the highway infrastructure with the expectations of the stakeholders. Asset Management planning enables the relationship between level of service, cost of service and the associated risk (the price/quality/risk relationship) to be determined and then evaluated in consultation with stakeholders to determine the optimum level of service that they are prepared to pay for (Attainable Level of Service).

Service Option Identification

The following are the service level categories selected by the Council for inclusion in this HIAMP:

- **Existing** - that which the council currently provides
- **Desirable** - that which is requested/desired by service users, political commitments etc
- **Poor -** that which falls short of the minimum required standards
- **Fair** - meeting that which is required by law or council policy
- **Good** - that which meets the Code of Practice requirements and recommendations
- **Excellent** - the level of service that the council aspires to achieve

Determination of Optimum (Attainable) Service Option

It is anticipated that following evaluation of the selected service options outlined above, using the risk management techniques described in Section 6, and their subsequent review and approval by senior council officers and Cabinet, an **Optimum** or **Attainable** Service Option will be determined

for each asset group. This may be one of the levels of service outlined or, more likely, will be a mix of options that makes the most efficient use of current funding and resources to provide the best long-term solution for the management of the asset.

Once this has been undertaken, the lifecycle planning process is again utilised to develop the Forward Works Programmes necessary to deliver the Optimum service option and performance measures put in place to monitor actual asset performance against desired.

6 Lifecycle Planning

Introduction

Highway assets have lifecycles that include the following phases:

- Creation/Acquisition
- Maintenance
- Renewal or Replacement
- Upgrading
- Disposal or Decommissioning

Consideration of each of the above phases for the borough's highway assets will help drive a shift towards longer-term asset management and planning. Such a longer-term approach is a key element of the asset management approach.

The Lifecycle Planning Process

Detailed lifecycle plans have been produced for the following critical highway assets;

1. Carriageways
2. Footways
3. Structures
4. Street Lighting and Lit Signs
5. Drainage

For each of these assets, the following aspects were considered;

Inventory

For maintenance management purposes, the highway network is divided into categories. These categories require the accurate location of condition data, defects and inventory items. Network referencing data should be robust and reliable, since it is used frequently to facilitate the collection of carriageway condition data.

Condition

Assessing Condition

There is a number of performance measures used to assess the condition of highways. Performance Indicators (PI's) enable the condition of the carriageway and footways asset groups to be compared with those assets managed by other authorities.

These indicators are used throughout England and enable comparisons between authorities.

Each of these indicators provides a measure of the percentage of those assets that are in need of further investigation and/or repair. Therefore, the lower an authority's figures are for these indicators, the better the condition of those assets.

Current Condition

Current condition will be determined by inspection regimes and survey routines that currently exist. Developing forward works programmes on a best value approach will move away from a worst first approach and seek to deliver works on an optimised need basis, with consideration of cost and achieving the goals and objectives established through levels of service.

Desired Condition

There are many ways the desired state of a network can be determined. Understanding the authority's goals and objectives and what levels of service can be attained will help to define the condition of each asset group that we should expect, perhaps with consideration of impact on levels of funding.

Option Appraisal

Maintenance, Renewal or Replacement and Upgrading

The maintenance treatment for highways may be categorised as:

- Cyclic: e.g. gully cleaning

- Routine: e.g. emergency rectification of dangerous defects such as potholes, removal of dangerous litter / detritus and small patching repairs arising from safety inspections.

Routine maintenance also includes small patch repairs up to 5 square meters

- Planned: e.g. resurfacing, bulk change of lanterns.

Planned maintenance also includes works designed to restore or renew roads to their original design lives. These treatments will include major structural overlays and full depth reconstruction.

Disposal or Decommissioning

In the vast majority of cases, highway assets need to last indefinitely. The only way that a road can cease to be highway is via the formal legal process called Stopping Up. It is very rare for roads to be stopped up. Therefore, the duties in terms of maintaining roads continue to rest with the authority in perpetuity. However, there are items on the highway that will require to be changed or removed as legislation changes, for example light columns and lamp heads.

Whole Life Costing

Whole life costing is a means of establishing the total cost of ownership of an asset.

All costs associated with the asset are considered, from the cradle to the grave. Such costs will include those associated with building or acquiring new assets, routine maintenance, replacement, renewal or enhancement and disposal.

Whole life costing will enable informed decisions about competing demands for funding because we will have an improved awareness of the total cost of managing assets.

The council should be better equipped to forecast future cost demands, based upon the life expectancies of assets and the impacts upon assets' lives made by improvement and maintenance treatments.

The process will help to consider the most appropriate treatment and the stage at when it needs to be applied to ensure the asset is maintained in a serviceable condition.

Whole life costing will help ensure that the funds available to the authority are used as efficiently as possible. For instance, whole life costing will enable the assessment of the long-term costs of maintaining schemes before they are constructed and where appropriate this will help prioritise works by identifying the appropriate investigation periods during its life.

Whole life costing will help decide what maintenance treatments to use and at what point in an asset's life the appropriate treatment should be applied. Often treatments such as painting lamp columns, waterproofing bridge decks or surface dressing roads can avoid the necessity for more expensive treatments at a later date. The key is in the selection and timing of the treatment and it is here that whole life costing is pivotal.

Budget Optimisation

Getting the most out of the available budget is key to effective management of the assets. Budgets are generally spilt into Capital and Revenue. Asset lifecycle planning can be used to optimise these budgets and to ensure that each finance stream is used with consideration of the impact on the other.

Performance Gaps

One method of defining performance gaps in terms of road condition is to utilise PI values. However, these gaps may be difficult to monitor, because PI targets and trajectories tend to use past PI performance as a basis, rather than absolute aspirations in terms of condition.

Performance gaps can also be achieved through comparisons with other authorities. A key performance gap is the difference between where we are now and the optimum level of service.

7 Investment Strategies

This section describes the current funding streams and their implications on this asset management plan.

Current Sources of Funding

Funding for highway asset maintenance, upgrade and renewal can be split into capital and revenue expenditure.

Capital

Capital funding can be defined as “investment that will increase the value of the asset”. Capital funding may often be externally sourced primarily from central government and through the Local Transport Plan’s (LTP) process, grants, prudential borrowing and developer contributions (Section 106 and 278). Capital expenditure for maintenance is generally associated with upgrading and renewal and is used to improve the life of assets by strengthening or replacing them, (e.g. overlaying a carriageway surface).

Revenue

Revenue funding can be defined as “investment that will maintain or reduce the rate of depreciation of the value of the asset”. Revenue funding is generally internally sourced from the local authority’s regular income (e.g. council tax). Revenue expenditure is used for cyclic and reactive maintenance activities which make the network safe for day to day use.

Future Funding

It is important to understand what funding streams exist for delivery and improvement of the highway network. With funds available for the authority is important to be able to present cogent business cases for defending existing levels of funding, pitching for higher levels of funding or securing ad-hoc funds as they become available.

Bringing levels of service developed with stakeholder interaction, risk management and whole life cost arguments into the decision making process will serve to support this.

8 Works Programming

Background

The development of forward work programmes is a process that can be carried out once a decision has been made upon how much money is to be spent upon each of the assets in any given financial year. A systematic approach to works programming will ensure that funds are targeted at where they will achieve maximum benefit, both in terms of asset condition and the minimisation of whole life costs.

For those assets which have comprehensive condition data, it is also possible to use works programming techniques to help decide upon the allocation of funds and to gauge the effects of

differing programmes of work upon performance measures. In this way, the development of works programmes can be used as a service prioritisation technique.

Practice

It is the aim of the highways authority in the medium term to move towards the use of projections to develop forward works programmes over 1, 3 and up to 10 years where possible. The length of the forward works programme will be dependent on several factors including asset data availability, security of funding levels and advancement of levels of service. Forward works programmes will be developed for each asset group based on the evaluation and ranking of alternative improvement projects and maintenance treatments, and including all cyclic routine maintenance functions. These individual programmes will subsequently be amalgamated to form an Integrated Forward Works Programme (IWP), which will include all assets and services and input from other organisations who may have an interest in or an effect on the management of the highway network.

The IWP will integrate the works required from all of the funding streams and initiatives, and by bringing all of the proposed works on the network into one location enable co-ordination of works to take place. It will be able to assist with both short-term road space/traffic management issues and longer term planning.

With good quality condition data available for analysis it will be possible to predict the likely future maintenance schemes and their locations. The timing of other works can then be reviewed to ensure situations do not arise where new works are destroyed by subsequent tasks.

This long-term programme will be built on projections using currently held data and knowledge; as such there will be significant limitations on the reliability of the initial projections. The reliability of projections regarding the precise nature and location of the works for the later years of the programme will be relatively low; however, an aggregation of the anticipated needs is a valid method of predicting future funding requirements.

The anticipated levels of confidence in the long-term programme are detailed below:

Confidence Levels in Forward Works Programme		
Year(s)	**Description**	**Confidence Level**
1	Work is in Progress	95%
2	Firm Recommendation	90%
3-5	Reasonable Assessment	75%

The latter years of the forward works programme will essentially be used as a financial planning tool. The forward work programme is a live document available on the Council web site. Changes to the programme due to unforeseen circumstances are inevitable and will be dealt with as a regular part of the management process.

9 Overall risk implications of the plan

The Importance of Risk Management to Highway Management

Managing risk is an integral part of the management of the highways assets. All activities from identification and prioritisation of repair of defects to the establishment for budgets have risks associated with them. The purpose of this section is to introduce a process for managing these risks in a holistic manner.

A growing interest in risk management is being fuelled by a backdrop of an increasingly litigious society, this Council has a high repudiation rate and this is not currently an issue. All of these lead to a desire to improve upon risk management procedures.

The adoption of a risk based approach to works programmes and defect identification ensures that available funding is prioritised to respond to higher risk areas.

The Application of Risk Management

The objective of applying risk management within the asset management plan is to identify the specific risks associated with the management and operation of the network and by doing so ensure that these are managed in a structured, appropriate and auditable manner.

The assessment of comparative risk is a key asset management tool. It can be used to assist with option appraisal and selection by assisting with the assessment of:

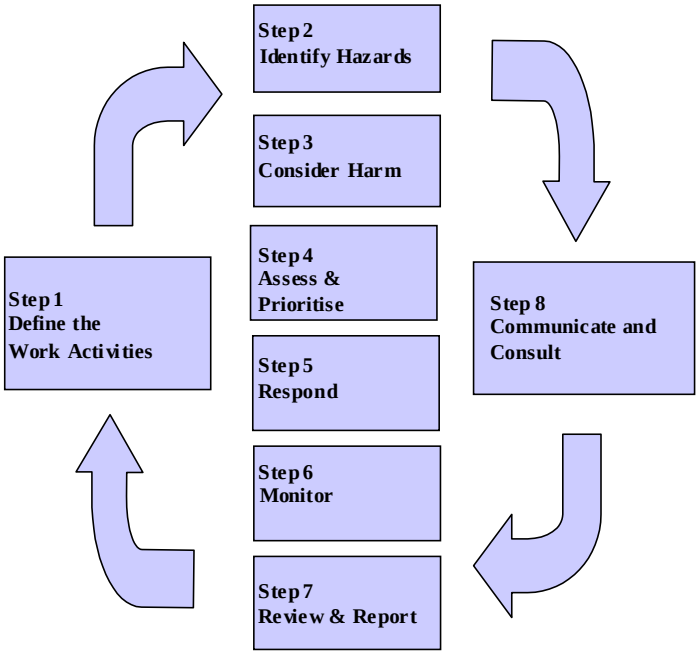
- The comparative risks of providing differing levels of service
  E.g. is it acceptable to fund only a minimum (Fair) level of service for a certain asset group i.e. a repair when broken approach

- The comparative risk of funding works on different assets
  E.g. is it better to fund works on streetlights as opposed to footways?

- The comparative risk of funding improvements to the network as opposed to maintenance works
  E.g. is it better to provide additional speed control facilities or to increase response time to certain defects?

Risk Assessment and Management Procedure

The schematic figure below shows the flow in which the associated risk would be defined and managed;



The council has developed a Risk Analysis Matrix to prioritised in terms of how likely it is that harm could occur and the severity of the potential impact.

Risk ratings are determined by a combination of likelihood and impact. Each risk is plotted and prioritised using a simple 3x3 matrix. The matrix uses a “traffic light” approach to show high (red), medium (amber) and low (green) risks as given below.

I M P A C T	High	Amber	Red	Red
	Medium	Green	Amber	Red
	Low	Green	Green	Amber
		Low	Medium	High
	LIKELIHOOD			

The Risk Assessment is used with the following key as outlined below;

Net Risk	Action and Timescale
Green	No further preventive action is necessary but consideration should be given to solutions or improvements that impose no additional cost burden. Monitoring is required to ensure controls / precautions remain effective and review annually or sooner if there are changes.
Amber	Action should be taken within 6 months to reduce the risk as low as is reasonably practicable. A consideration of costs versus effectiveness should be considered. Where an amber risk is associated with a harmful impact/severity further risk assessment may be necessary to establish more precisely the likelihood of harm as a basis for determining the need for improved control measures.
Red	Action must be taken immediately / as soon as possible. Work should stop or not commence until adequate control measures have been implemented. While the control measures should be cost-effective, there may legally be an absolute duty to reduce the risk. This means that if it is not possible to reduce the risk, even with unlimited resources, then work must remain prohibited.

11 Performance Monitoring and Management

To effectively manage the highway network, it is necessary to develop ways of measuring the service against the goals and objectives of the Council. Comparing the levels of service will provide a basis on future decision making for the management of the asset.

It has been agreed that the best way to make this assessment is by developing a set of performance measures to be adopted across the Council enable benchmarking, development of a support environment and to promote sharing of knowledge and best practice.

These performance measures shall be developed during the implementation stages of the Highway Infrastructure Asset Management Plan. Measures will be primarily focussed on two separate areas; customer satisfaction and benefits of the HIAMP.

To impose another suite of performance measures would be fruitless in an existing environment of PIs and local performance indicators. However, Solihull will be able to measure their performance against existing national and local indicators that are in place.

The benefit of implementation of any additional performance measures needs to be clearly identified in advance, as collecting and analysing performance information takes time and ultimately costs money.

Performance indicators have been amalgamated under three headings;

- **Strategic** – Primary purpose to report on performance to others.

  Report on annual performance to external stakeholders, e.g. Performance Indicators. They provide a snapshot of the overall performance but do not generally assist with the day-to-day management of the asset.

- **Tactical** – Primary purpose to assist in resource allocation decision making.

  Provide on-going management information to the highway authority, e.g. random auditing of the on-going condition assessment of the asset.

- **Operational** – Primary purpose to provide information to improve the efficiency of service delivery.

  Provide operational information to service deliverers, principally focussed on measures associated with the delivery of the works, such as time to respond to reports of defects or the number of schemes brought in within the initial budget.

Appendix A – Glossary of Terms and Abbreviations

Abbreviations

The following abbreviations may be used in this document:

AM:	Asset Management
BVPI:	Best Value Performance Indicators
CPA:	Comprehensive Performance Assessment
CVI:	Coarse Visual Inspection
DfT:	The Department for Transport
DVI:	Detailed Visual Inspection
GIS:	Geographical Information System
HIAMP	Highway Infrastructure Asset Management Plan
KPI:	Key Performance Indicator
LCP:	Life Cycle Plan
LoS:	Level of Service
LTP:	Local Transport Plan
SCANNER:	Surface Condition Assessment of the National Network of Roads
TAMP:	Transport Asset Management Plan
UKPMS:	United Kingdom Pavement Management System