

Hertfordshire County Council Transport Asset Management Plan 2008



Contents

1 Introduction

- 1.1 Background
- 1.2 What is Asset Management?
- 1.3 What is in the TAMP?
- 1.4 What is not in the TAMP?
- 1.5 Role of the TAMP
- 1.6 Asset Management Achievements to Date
- 1.7 Hertfordshire's Transport Asset Management System
- 1.8 Level 1: TAMP (Management System)
 - 1.8.1 Annual Report
 - 1.8.2 Demands
 - 1.8.3 Objectives – Our TAMP Principles
 - 1.8.4 Asset Management Practice
- 1.9 Plan Outcomes and Asset Management Practices in Hertfordshire
 - 1.9.1 Life-cycle of the TAMP

2 External Demands

- 2.1 Introduction
- 2.2 The External Demands
- 2.3 Growing Demands

3 TAMP Principles

- 3.1 Sources
- 3.2 Our Approach
- 3.3 The TAMP Principles
- 3.4 Context

4 Asset Management Practice

- 4.1 Overview
- 4.2 Drivers on Asset Management Practices
- 4.3 Option Development
- 4.4 Decision Making
- 4.5 Service Delivery
- 4.6 Performance Monitoring

5 Asset Group Summaries

- 5.1 Carriageways
- 5.2 Drainage
- 5.3 Footways
- 5.4 Intelligent Transport Systems
- 5.5 Street Lighting
- 5.6 Structures



Section 1.0: Introduction

1.1 Background

Hertfordshire County Council has a leading role and unique position in the development of highway asset management in the UK. Hertfordshire was the first authority in the country to formally introduce asset management to the management of the road network. Our Highway Asset Management Plan (HAMP) published in 2002 was the first in the UK. It was also virtually unique internationally as it was produced proactively as a means of developing the service rather than as a response to a government requirement.

We are committed to maintaining a leading position in our asset management practices. This Transport Asset Management Plan (TAMP) identifies how we intend to build on our existing work to advance asset management throughout the organisation.

In creating this plan we have taken the opportunity to take stock of our progress and to determine how we can build on this to further develop the service. This plan represents the second stage of development of asset management practice in Hertfordshire. It builds on the foundations laid by the 2002 plan, learns from our experiences over the last five years and sets out a strategy for taking our asset management practices to the next level.

In the development of this plan we have:

- Critically reviewed the 2002 HAMP
- Assessed our achievements to date
- Reviewed our asset management practices
- Assessed our key supporting software systems
- Evaluated the demands placed on the asset

This exercise has allowed us to establish principles for the development of our asset management practices over the coming years.

Level 1 TAMP

- **Introduction**
- External Demands
- TAMP Principles
- Asset Management Practice
- Asset Summaries

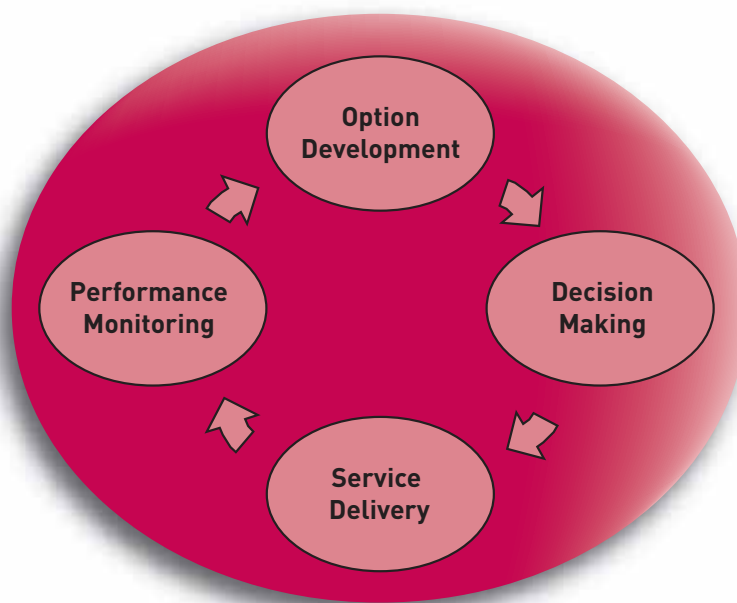
The main outcome of this review has been a realisation that we need to further embed 'Asset Management' into our normal management practices. To achieve this we have created an asset management system which will be progressively implemented over the coming years.

Adopting this systematic approach is essential if we are to realise the full potential benefit of using an advanced asset management approach.

1.2 What is Asset Management?

In Hertfordshire our approach to asset management is based on the definition provided in the CSS framework for Highway Asset Management (2004).

"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."



In order to turn the tenets of this definition into practice we have created the simple continuous improvement cycle illustrated above.

This requires us to take four simple steps in everything that we do:

- **Performance monitoring** - to measure what we do
- **Option Development** - to use collected information to assist us to consider alternatives
- **Decision making** - to evaluate the options to determine the best solutions for Hertfordshire
- **Service Delivery** - to deliver the service by undertaking works

This process focuses on helping us make better decisions about how an asset is managed. Specifically, it encourages us to consider the long term value for money and cost effectiveness of delivering customer desires.

1.3 What is in the TAMP?

The core role of this plan is to promote and encourage good decision making.

The key section is the 'Asset Management Practice' chapter (Section 4), which provides a flexible decision-making model to help asset managers make good decisions by ensuring that they

- ✓ **gather the right information**
- ✓ **ask the right questions**

The plan sets this in context by looking at some of the external influences on our service and how they translate into Hertfordshire County Council's stated objectives in key documents such as the Corporate Plan and Local Transport Plan.

1.4 What is not in the TAMP?

The plan does not set or document corporate objectives, although it does summarise those most relevant to transport in the 'Principles' chapter (Section 3).

Similarly, this plan is not intended as a place to document policies and procedures. Other related documents will set out defined practices, policies and procedures as well as documenting the forward works programme and recording established guidance and practice.

1.5 Role of the TAMP

The role of the TAMP is to link our strategic objectives to the operational policies and procedures. It does this by ensuring that, when we create or review policies, procedures, programmes or practices, we do so in an objective, informed way with our strategic drivers firmly in mind.

These strategic drivers start with the Sustainable Community Strategy, feeding through to the Corporate Plan and Local Transport Plan. Further targets may be set in the Local Area Agreement with overall performance judged as part of the Comprehensive Area Assessment. The TAMP aims to ensure that these strategic goals are reflected in our operation plans and, ultimately, the work we do on the network and therefore aims to be a flexible framework capable of adapting to changing circumstances while still keeping us focused on key strategic goals.

1.6 Asset Management Achievements to Date

Since 2002 we have made considerable progress in implementing the contents of the HAMP. We have learned much from this experience and achieved significant improvements.

In particular we have:

- created the innovative Hertfordshire Highways organisation and, to deliver a specific role, 'Highways Extra'
- introduced an integrated forward works programming process that enables better long term coordination of works on the network, minimising disruption and optimising value for money
- made ongoing use of pavement deterioration modelling – enabling us to better understand long term needs and to improve our planning

These and other key asset management achievements made during the period 2002 – 2007 are examined in more detail in the TAMP Annual Report 2007.

1.7 Hertfordshire's Transport Asset Management System

When planning the development of the next generation of our Transport Asset Management Plan (TAMP) for Hertfordshire, we decided to move away from a solely hardcopy document containing vast quantities of information. We found that in the original HAMP information quickly became out of date as practices were improved and better data was collected.

In developing the TAMP we have chosen to define our system rather than documenting a plan. Our intention is to create an evolving statement of practice that is regularly updated as we refine and improve our practices.

The outline of our asset management system is given below. We aim to progressively develop and implement it over the next five years. The system replaces the current hard copy HAMP with a live electronic system. The system will be based on the Hertfordshire County Council intranet and will be constructed to ensure that it is:

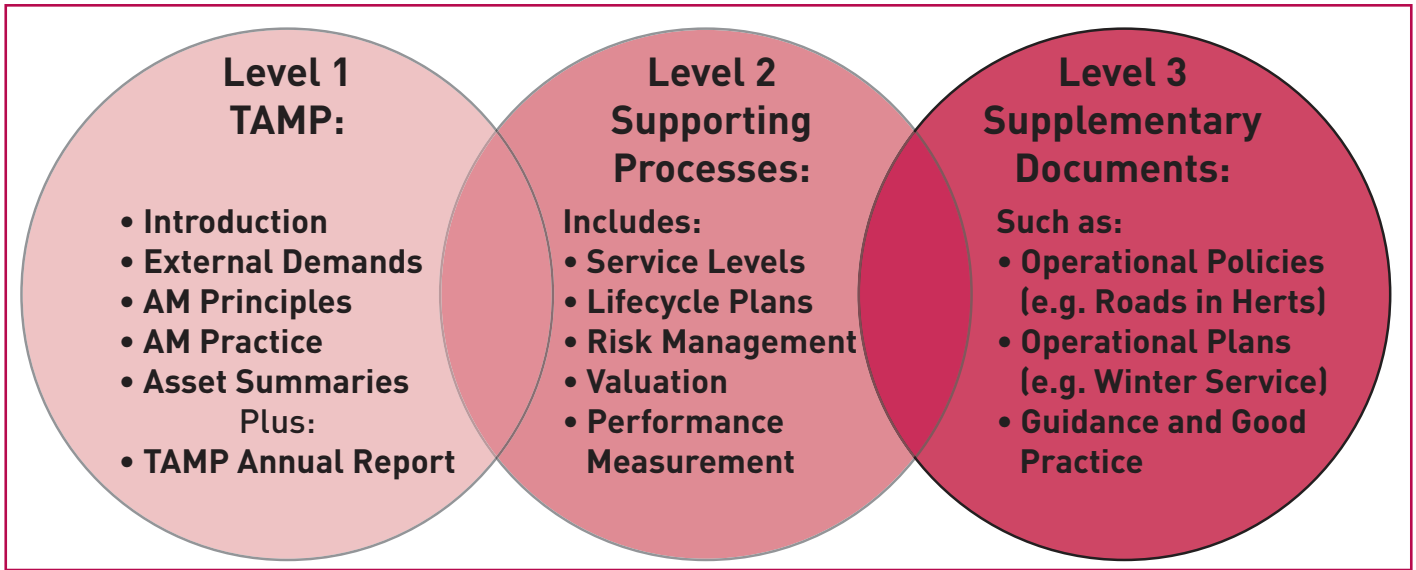
- used by those who manage the asset
- the single starting point for finding information about the asset
- the place where our asset management practices are documented
- regularly updated and improved

In simple terms, the system will focus our activities on enabling us to make better decisions about investment in the asset. In creating the system we have acknowledged that different audiences and users of the system require different levels of involvement and information. A tiered system has been created to reflect this as follows:

Level 1

The highest level of the system (Level 1) is focused on how key decisions are made about the asset. The key decisions relate ultimately to what works are undertaken each year. The system at this level is designed to ensure that the best possible information is presented to decision makers.

A tiered system has been created to reflect this as follows:



Level 2

This contains the processes that underpin the Level 1 system. These comprise a series of individual supporting processes that include details of our performance measurement, lifecycle planning for individual asset groups, risk management and valuation.

Level 3

This level comprises reference documentation, operational plans and other reference details.

1.8 Level 1: TAMP (Management System)

The Level 1 TAMP family includes the following key documents:

1.8.1 Annual Report

A primary output from the asset management system is the annual progress report.

This report will be produced each year and contain:

- a summary of performance results from the previous year together with a commentary on any targets that were not achieved
- an update on any changes to external demands
- an update on current improvement actions

- an evaluation of the effectiveness of the previous years work
- an ongoing review of value for money demonstrating the impact of investment on various parts of the asset

The annual progress report will highlight performance over the past year and look forward to the future. It will therefore be used to identify further improvement actions for the coming year.

1.8.2 Demands

The demands placed upon the asset and upon the county council as the highways authority continue to grow. Our asset management planning needs to deal with growing pressure from a number of areas:

- The effect of new legislation
- Central Government Requirements
- HCC Member Priorities
- Customer Expectations
- Traffic Growth
- New Technology
- Climate Change and Sustainability
- Demographic Factors
- Specific Local Pressures

This is not an exhaustive list, but it does serve to illustrate the wide range of changing demands that we need to deal with. It is important that our asset management system is flexible enough to respond.

1.8.3 Objectives – Our TAMP Principles

Six key asset management objectives, titled **TAMP Principles** have been established. These are linked to, and support the delivery of, the council's objectives on highway maintenance as detailed in the Corporate Plan and the Local Transport Plan (LTP2).

Specifically these principles are:

- T1.** Identify and apply industry leading **good practice** to the management of all transport assets.
- T2.** Consider and manage the **safety** of the network, now and in the future.
- T3.** Consider and manage the **availability** of the network, now and in the future.
- T4.** Consider and manage the **accessibility** of the network, now and in the future.
- T5.** Consider and manage the **environmental impact** of the network, now and in the future, both in terms of our works and the effect they will have on the use of the network.
- T6.** Maximise the opportunity for investment to **maintain and improve** the condition of the transport network.

We will review these principles when necessary to ensure that they remain compatible with and support current corporate objectives.

1.8.4 Asset Management Practice

To successfully implement an asset management approach in Hertfordshire, we need to translate these principles into a practical system that can be used to manage the network on a day to day basis.

In the TAMP, this system is called asset management practice (AMP) and this is where we describe the practices and procedures we need to manage the transport asset using an asset management approach.

Within this system, we have grouped our practices under the four interlinked processes. These processes and their relationship, illustrated by the cyclic diagram in section 1.2, are outlined below.

Option development

The starting point in our asset management cycle is option development. This is where we identify and evaluate suitable options to translate the demands and objectives placed on the asset into deliverable policies, schemes or work programmes. It is important to keep an open mind at this stage and to look at the current level of performance – hence the cyclic nature of this process.

Option appraisal and decision making

Option appraisal processes help decision makers select schemes and programmes of work. The processes assess value for money, effectiveness in delivering objectives and the risk associated with action, and inaction, in relation to each asset group.

Service delivery

Services are delivered either through the Hertfordshire Highways partnership or a small number of other specialist contracts. Contract management and reporting systems are used to ensure that appropriate technical standards are met and that products and services are delivered in an appropriate manner, taking into account customer needs and preferences.

Performance monitoring

The last component of asset management practice in our cycle is performance monitoring. This is where we look to “close the circle” on our asset management decision making tool. This area covers processes that record, report and manage asset performance. This ensures that we implement and complete what we say we will do or that, if we do not, we understand why.

1.9 Plan Outcomes and Asset Management Practices in Hertfordshire

This plan is based upon an evolution of our existing practices. For the past five years asset management has been perceived as a new and in some cases additional activity. Our aim over the next five years is to fully embed asset management practices so that asset management becomes part of our normal business practice.

To achieve this, we will further develop and implement the asset management system discussed above.

The system will enable us to continuously improve the way we manage the assets, and in doing so allows us to deliver better outcomes to the people of Hertfordshire.

Over the term of this plan we aim to have:

- integrated asset management into a seamless part of our normal highway management business practices
- proved that asset management has contributed to the delivery of efficiency savings, the validity of which can be supported by robust factual data
- ensured better value and minimised whole life costs for assets
- addressed high levels of reactive costs in some service areas and increased the proportion of the maintenance budgets spent on planned, preventative work



- informed the works planning process further by presenting asset condition and optimised intervention information visually, across a wider range of assets

1.9.1 Life-cycle of the TAMP

This plan has deliberately not been given a specific end-date. The intention is that, by creating a flexible family of documents, rather than a single monolithic one, individual elements can be added, reviewed, updated and deleted as necessary to keep pace with changing needs and developments.

At some point the TAMP itself will need to be revised or replaced but it is envisaged that this will be a number of years into the future, possibly in response to developments in recognised good practice, significant changes to Hertfordshire's objectives or shifts in the external demands placed upon the county.

Section 2.0: External Demands

2.1 Introduction

This section identifies the demands upon both the asset and Hertfordshire County Council as the highway authority and describes the processes used to anticipate, manage and react to these demands ensure that:

- current and emerging demands are monitored, reported and responded to appropriately
- demands are given suitable consideration when making investment decisions

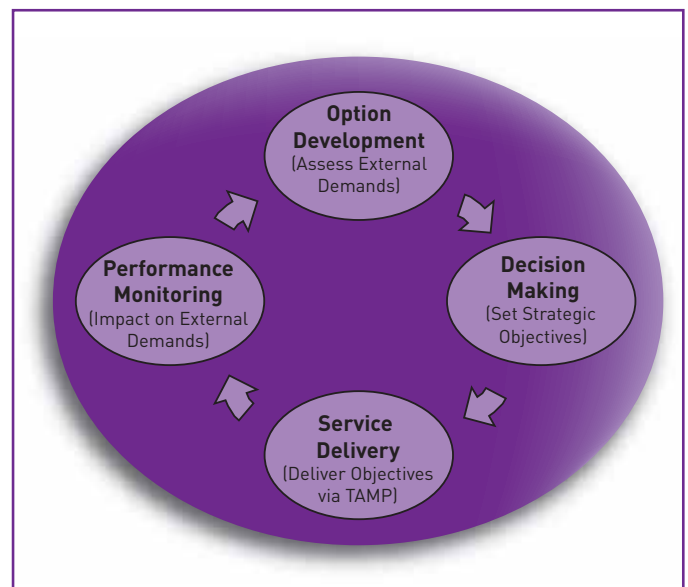
The systems detailed in this section acknowledge that demands change over time, in some cases completely without warning. As such, we're not attempting to predict all possible future issues. Our plans deal with the demands that we know about now or can reasonably predict, as well as aiming to allow an appropriate reaction to the possible but unexpected.

We know that the demands placed on the highway network will change and, in most cases, increase over time. As a core service used so often, by so many people, in so many ways, those future demands will be diverse and unpredictable. However, keeping a long-term view is a key tenet of asset management so this section takes a look at some of the current pressures on the network and some of the potential future pressures that need to be considered whether certain, likely or merely possible.

The purpose of this section is not to present an exhaustive list of challenges, nor is it to provide solutions. The aim is to flag up a selection of the key issues that have been, are being or will need to be considered in order to plan the effective management of the transport asset.

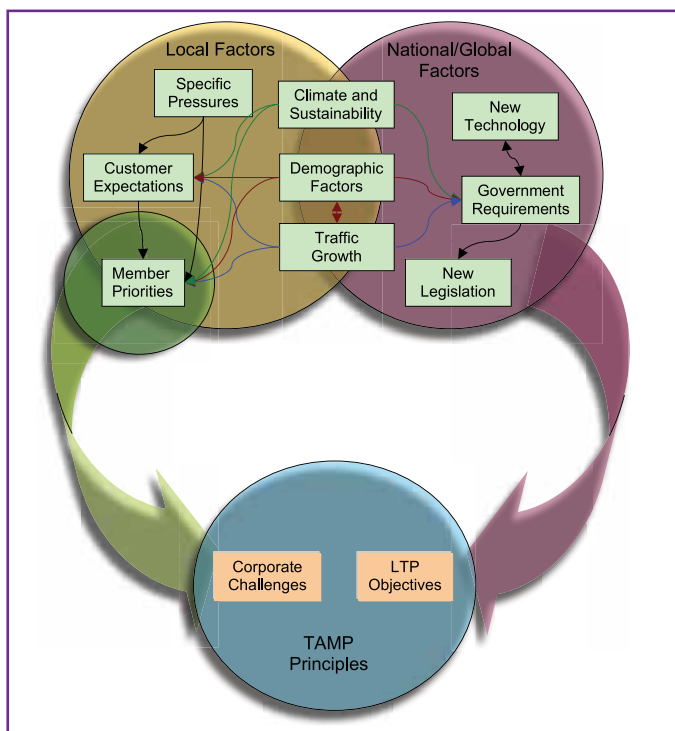
Level 1 TAMP

- Introduction
- External Demands
- TAMP Principles
- Asset Management Practice
- Asset Summaries



2.2 The External Demands

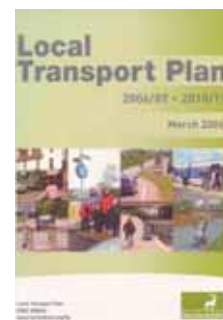
- ED1: New Legislation
- ED2: Central Government requirements
- ED3: HCC Member Priorities
- ED4: Customer Expectations
- ED5: Traffic Growth
- ED6: New Technology
- ED7: Climate Change and Sustainability
- ED8: Demographic Factors
- ED9: Specific Local Pressures



ED1: Legislation drives much of what currently happens on the network. Current legislation such as the Highways Act, Traffic Management Act and New Roads and Street Works Act place a number of duties and obligations on the highway authority and possible future legislation such as the Local Government White Paper “Strong and Prosperous Communities” (published October 2006) may introduce more. The potential implications of the White Paper include unitary status for more areas (although this is unlikely in Hertfordshire) and continued drives for efficiency and local accountability. They could also include a duty to engage local people and the right for them to promote local causes through the ‘Community Call for Action’.

ED2: Central Government Requirements and Initiatives drive or encourage many aspects of the transport network in addition to those stemming directly from legislation. The Local Transport Plan is a key element of Hertfordshire’s transport strategy and underpins much of what the TAMP is designed to deliver. But other significant drivers include Local Area Agreements, the Comprehensive Performance Assessment (to become the Comprehensive Area Assessment during 2008/09), the ‘Gershon’

efficiency drive and the move towards Whole of Government Accounting, which could have a significant impact on the valuation of transport assets if and when it is extended to cover this area. Road pricing too is clearly on the Government’s longer-term agenda at the moment with the London congestion charge well established and other localised trials underway or in the pipeline. It is possible that either further local congestion schemes or a full national ‘pay-as-you-use’ road pricing could follow and these might have significant impacts on both how the network is managed and how it is funded, although it is too early as yet to assess the likely impact of this.



ED3: HCC Member Priorities are the next major factor in shaping the management of the highway asset. The county council’s Corporate Plan 2006 – 2009 sets out seven key objectives. Almost all of these objectives impact on the transport asset in some way but the TAMP and the plans that are developed from it will be particularly critical in “*Dealing with worn out roads and pavements*” and important in meeting other objectives relating to congestion, safety and efficiency.



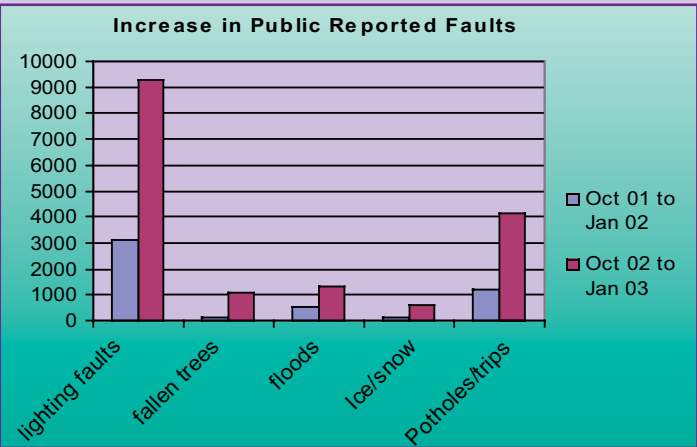
In addition to meeting the stated corporate objectives, the TAMP needs to remain flexible enough to respond to the concerns of Members, individually or corporately, in a considered and appropriate manner.

Although HCC Member priorities are internal to the organisation, as part of the democratic process they are heavily influenced by the views, needs and expectations of our primary customers – the residents and service users of Hertfordshire.

ED4: Customer Expectations - The public are increasingly well informed about the council's services and their rights, such as those under the Freedom of Information Act, and this may have heightened expectations of the service in recent years. These factors combined with easier access via the Customer Service Centre and the internet can exert a considerable pressure on the service as the case study '*Public Reported Faults*' demonstrates.

**Case Study –
Public Reported Faults**

In 2002, the county council introduced direct public reporting of potholes and other urgent faults via telephone to the Customer Service Centre and online via the HertsDirect Website. This was accompanied by a considerable amount of publicity. Faults reported online or to the call centre are fed directly to the highway asset database where an order for the contractor to fix them is raised automatically. While this improved public access to the service and reduced administration and officer time spent on the service, it increased substantially the number of faults reported and, of course, the associated costs.



This example illustrates that even valid improvements often have unexpected consequences and emphasises the need to consider the potential pitfalls of a project alongside its benefits during option appraisal.



Understanding these expectations and providing a service that meets them where they are realistic and manages them where they are not can be a challenge. The MORI survey of Environment services, conducted during the summer of 2006 reported that:

Road and traffic problems are again identified as key concerns. Road congestion remains the most pressing concern among residents, significantly increased from 2005. Whilst the amount of new development is ranked second highest, increasing significantly since 2005. Facilities to enable people with disabilities to use local buses have significantly declined as a major issue since 2005. Other 'major' concerns remain centred on traffic and road usage, condition of roads, speeding traffic and residential routes being used as 'rat runs' though these ratings have not changed significantly since last year.

These issues are clearly reflected in corporate priorities which, in turn, shape the county council's strategy and the TAMP.

ED5: Traffic Growth is a substantial potential pressure on the future of the transport asset, both because of the likelihood of increasing congestion with its knock-on effects on quality of life and the additional strain this wear and tear will place on the fabric of the roads. Both of these concerns are shared by the public and reflected in the Corporate Plan. The predictions of traffic growth in the county are well detailed in LTP2 and so are not repeated here in full but the table below serves to illustrate the pressures faced by a county such as Hertfordshire.

Local Traffic Forecasts - Central Growth, 2001 Base Years

| | 2011 (% increase) | 2021 (% increase) |
|---------------------|-------------------|-------------------|
| National (GB) | 16.7% | 31.3% |
| Eastern Region | 18.6% | 34.9% |
| Hertfordshire | 20.1% | 35.6% |
| Broxbourne | 19.6% | 33.7% |
| Dacorum | 18.8% | 30.8% |
| East Hertfordshire | 25.1% | 43.7% |
| Hertsmere | 19.4% | 32.3% |
| North Hertfordshire | 24.6% | 43.1% |
| St Albans | 19.2% | 32.6% |
| Stevenage | 22.8% | 38.3% |
| Three Rivers | 18.9% | 31.6% |
| Watford | 20.5% | 35.1% |
| Welwyn Hatfield | 20.9% | 34.8% |

Figures derived from TEMPRO, DfT. Quoted in Hertfordshire's Traffic and Transport Data Report 2006 (July '07)

ED6: New Technology may create future opportunities and challenges. For instance the use of Intelligent Transport Systems may help us manage the capacity of the existing network better, while the increased availability of affordable satellite navigation systems may also help reduce congestion. However, this might be at the expense of increasing the inappropriate use of minor roads by through-traffic with potential adverse effects on

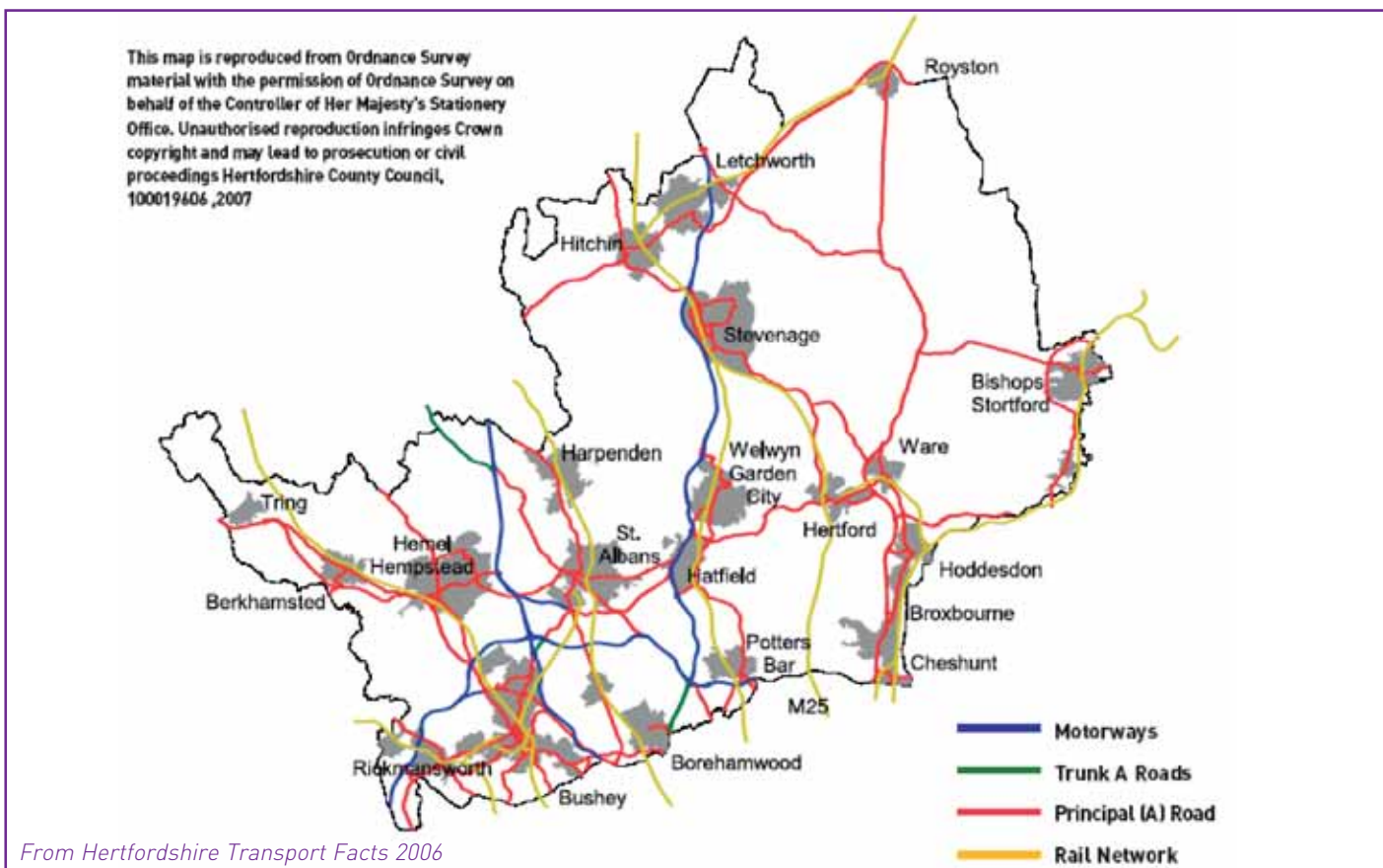
quality of life for local residents as well as additional maintenance costs from wear and tear caused by heavy vehicles on minor roads. This could lead to increased public demand for traffic calming and/or lorry bans from residents on such routes and could also increase the amount of structural maintenance work needed on local through-roads, both of which would increase the demands on our resources beyond current predictions. On the positive side, the potential for increased home and/or flexible working by more of the workforce - opened up by communications improvements like widespread broadband and wireless internet access - could help to offset some of the predicted growth.

ED7: Climate Change and Sustainability

are increasingly high profile factors nationally. If recent trends towards drier summers and more intense periods of rain continue, this will potentially have an impact on a number of aspects of the asset. As well as the potential impact on drainage, such changes could increase the rate of deterioration of roads and other assets from to the effects of standing water as well as subsidence and ground 'heave'. Recent winters have seen more marginal weather with temperatures frequently fluctuating around zero. Although not as severe as prolonged periods of lower temperatures, this freeze/thaw cycle can increase the rate of damage to roads as well as placing extra demands on the winter service.

Recycling – both use of recycled material instead of new and recycling our own waste – is rightly something that, as an ethical organisation, Hertfordshire County Council looks to promote. Great strides have been made in this area in recent years in conjunction with supply chain partners to reuse and recycle construction materials but this needs to remain a consideration in lifecycle planning. The issue of streetlights and whether or not they should be turned off for part of the night may also be one that needs to be addressed. On one hand the electricity used and 'light pollution' generated argue that there are benefits to reduced lighting but on the other hand the safety factors – both in the context of road safety and fear of crime – can argue for increased lighting under some circumstances.

Road and Rail Network in Hertfordshire



ED8: Demographic Factors, while not necessarily pressures in their own right, tend to create or magnify many of the challenges facing Hertfordshire. The county is close to London, generating a high demand for housing and associated services along with heavy commuter flows. There are a dozen medium-sized towns and many smaller towns and villages, creating complex journey patterns. The east-west rail links within the county are poor, reducing the options for journeys of this type. The Local Transport Plan sets out these issues in more detail but the diagram above illustrates some of the issues.

All of these would generate substantially more traffic without any guarantee of a corresponding increase in the infrastructure. Additionally, the London Olympics in 2012, while potentially generating economic benefits for the region, will also tap heavily on the available construction resources. This is likely to increase regional construction prices in the run-up to the event, compounding the existing problem of construction inflation that has been running well ahead of general inflation over the last few years by reducing the real-terms buying power of the available budget.

ED9: Specific Local Pressures on the transport network occur from time to time and need to be factored into any forward planning. Those currently affecting Hertfordshire include proposed airport expansions in the South East, especially those at Stansted and Luton, and the emerging East of England Plan proposing an additional 83,200 dwellings in Hertfordshire by 2021.



2.3 Growing Demands

Some of these external demands are new, but most are developments of existing demands identified in the original HAMP and the first Local Transport Plan.

Although new legislation and central government requirements have brought new duties and powers, some that were anticipated have failed to materialise. For instance a further formal Best Value Review, which formed part of the original timetable for the second generation asset management plan, is no longer a requirement and so was not undertaken.

Member priorities and customer expectations have also moved on in step, with the latter helping to inform the former, as is to be expected. Thus the public concern over the condition of the roads – identified as a customer concern in the HAMP – is now reflected in the Corporate Plan¹ as a key challenge.

New technology has started to deliver some of the benefits foreseen in the HAMP although some of the problems (such as increasing numbers of vehicles being guided onto minor roads by satellite navigation and queue avoidance systems) had not been foreseen.

Traffic growth has generally occurred at a slower rate than predicted, although this should be seen against a background of roads that are already 35% busier than the national average and may well be attributable to parts of the network reaching or exceeding capacity thus increasing the pressure on motorists to find alternatives.

Demographic factors (both general and locally-specific) such as the increasing pressure for more housing are familiar although recent government thinking has placed the provision of affordable housing near the top of the agenda and hinted that it may come ahead of environmental concerns around the protection of the green belt, at least to a degree. This may mean that the pressure on the road network from an increased number and density of dwellings could be greater than previously anticipated.

Climate change and sustainability have worked their way up the local, national and international political agenda since the HAMP was published and, although Hertfordshire has successfully promoted green issues for many years with initiatives such as TravelWise, which has since been adopted nationally, these factors need to be more explicitly stated than they were in the HAMP.



¹ (2006-09)

Section 3.0: The Principles of the Transport Asset Management Plan

This section describes the principles that underpin our Transport Asset Management Plan.

It describes how they have been derived and what they will be used for. Linkage to these principles needs to be explored and determined during option development for the activity, process or scheme. The principles have been used to guide the development of the asset management practices described in the next section and the principles also provide the context and structure for the written evaluation of an asset management decision.

3.1 Sources

Our principles have been derived primarily from:

- Hertfordshire County Council Corporate Challenges, published in the Corporate Plan
- The Hertfordshire Local Transport Plan

Corporate Plan

The Corporate Plan contains a series of challenges, listed below. The challenges are the issues



residents are particularly concerned about. They reflect the complex and long-term issues affecting Hertfordshire County Council.

We will work with partners to deliver against these challenges and the TAMP has

been designed to dovetail with them.

The TAMP will be particularly supportive of our efforts to address Corporate Challenge **C5: Dealing with worn out roads and pavements.**

The current Corporate Plan has a lifespan of

Level 1 TAMP

- Introduction
- External Demands
- TAMP Principles
- Asset Management Practice
- Asset Summaries

2006-09. The TAMP objectives will be reviewed when the Corporate Plan is renewed.

The seven HCC Corporate Challenges for 2006-09

- C1. Helping people feel safe and secure
- C2. Maximising opportunities for all children and young people
- C3. Supporting the independence of the growing number of older people
- C4. Tackling the causes and impact of congestion
- C5. Dealing with worn out roads and pavements
- C6. Reducing the impact of new development on the environment
- C7. Maximising efficiency savings

Local Transport Plan (LTP)

The Local Transport Plan sets out how we will improve transport across the county. It looks at everything from how we can make it safer to cross the road to how we can reduce congestion.



Local Transport Plan Objectives (2006/07 - 2010/11):

| | LTP Objective |
|---|---|
| 1 | To improve safety for all by giving the highest priority to minimising the number of collisions and injuries occurring as a result of the transport system. |
| 2 | To obtain the best use of the existing network through effective design, maintenance and management. |
| 3 | To manage the growth of transport and travel volumes across the county, and thereby secure improvements in the predictability of travel time. |
| 4 | To develop an efficient, safe, affordable and enhanced transport system which is attractive, reliable, integrated and makes best use of resources. |
| 5 | To develop a transport system that provides access to employment, shopping, education, leisure and health facilities for all, including those without a car and those with impaired mobility. |
| 6 | To ensure that the transport system contributes towards improving the efficiency of commerce and industry and the provision of sustainable economic development in appropriate locations. |
| 7 | To mitigate the effect of the transport system on the built and natural environment and on personal health. |
| 8 | To raise awareness and encourage use of more sustainable modes of transport through effective promotion, publicity, information and education. |
| 9 | To reduce the need for the movement of people and goods through integrated land use planning, the promotion of sustainable distribution and the use of telecommunications. |

The plan covers small schemes which will be developed through consultation with local people, as well as major schemes which will be developed through wide public consultation for the benefit of the county as a whole. The current plan is for the period 2006/07 - 2010/11, its replacement will be developed in detail during 2009.

LTP objectives are given above. They are high level policy drivers for Highways and Transportation and have been refined from Government Policy to reflect the local situation.

In addition to the external demands set out in the previous section, internal demands are also considered in developing our TAMP principles. These internal demands are described within these corporate documents:

- Service Plans, Business Plans, Long Term Plans
- The Strategic Environmental Assessment
- The Rights of Way Improvement Plan
- The Accessibility Strategy

Future supporting documents to the TAMP will outline in detail how these Principles will be met. Specifics relating to Planned Outcomes,

Action Plans and Performance Targets will follow in the supporting documentation and will be built into our new and revised operational management policies, processes and procedures.

We also considered the Local Area Agreement and the Hertfordshire County Council Property Asset Management plan during the development of our TAMP Principles.

3.2 Our Approach

The TAMP considers highway transportation assets and primarily deals with decisions over their management. There are HCC services that are not delivered directly by the transportation assets owned, managed and maintained by HCC (e.g. bus services) but the Highways Assets are critical in allowing them to happen (eg meals on wheels, school transport). These services will be discussed in the tactical Transport Policy Document and considered by the 'Policy Management and Documentation Group'.

When starting to develop 'TAMP Objectives', we determined that as Asset Management philosophy is by its nature 'wide-ranging', and cannot itself

be termed 'SMART', so '**TAMP Principles**' were found to be more appropriate. We refined the wording to make them applicable to transportation infrastructure management.

We believe that all decisions made to manage, maintain and upgrade the transportation network should contribute and support these Principles. They form the core of the 'challenge process' that this TAMP aims to apply in the decision making process.

3.3 The TAMP Principles

We will identify and apply good practice to the management of all transport assets. We need to consider the key aspects of how a transportation asset impacts on its users and the environment when deciding how to actively manage, maintain, improve or provide transportation assets. For long term prudent management we need to build up a picture of the important information relating to the assets and endeavour to achieve optimum investment for the works required to them.

Our principles are therefore:

- TP1** - Identify and apply industry-leading good practice to the management of all highway assets.
- TP2** - Consider and manage the safety of the network, now and in the future.
- TP3** - Ensure availability of the network, now and in the future.
- TP4** - Consider and manage the accessibility of the network, now and in the future.
- TP5** - Consider and manage the environmental impact of the network, now and in the future - both in terms of our works and the effect they will have on the use of the network.
- TP6** - Maximise the opportunity for investment to maintain and improve the condition of our transport network.



All our asset management planning activities will explicitly consider and target the delivery of an appropriate balance between the cost, service standard and associated risk.

3.4 Context

In the decision making process, we strive to identify how the transportation assets can contribute to high level (i.e. corporate and LTP) challenges and objectives. Asking these questions is the first step in the performance management cycle.

The high level challenges and objectives set the context and scale of the targets which will be set in the decision making process. As these influences change, relevant parts of the Asset Management Practice cycle should be appropriately modified.

This 'Level 1' TAMP document is informed by strategic documents, which have mid to long term (i.e. 3 – 5 Years) life. The Corporate Plan is 'live' until 2009 and LTP2 until 2010/11.

How the principles link to option development and decision making is explored in greater detail in the next chapter.



Section 4.0: Asset Management Practice at HCC

4.1 Overview

Successful implementation of an asset management approach in Hertfordshire is firmly based on the philosophy of translating and embedding these important principles into a practical system that can be used on a day to day basis to efficiently manage the transport network.

This system, titled Asset Management Practice, is where we pull together and describe all of those practices or tools required to better manage the transport assets following an asset management approach.

Our processes are grouped under four key areas. These consist of:

- Option development
- Decision making
- Service delivery
- Performance monitoring

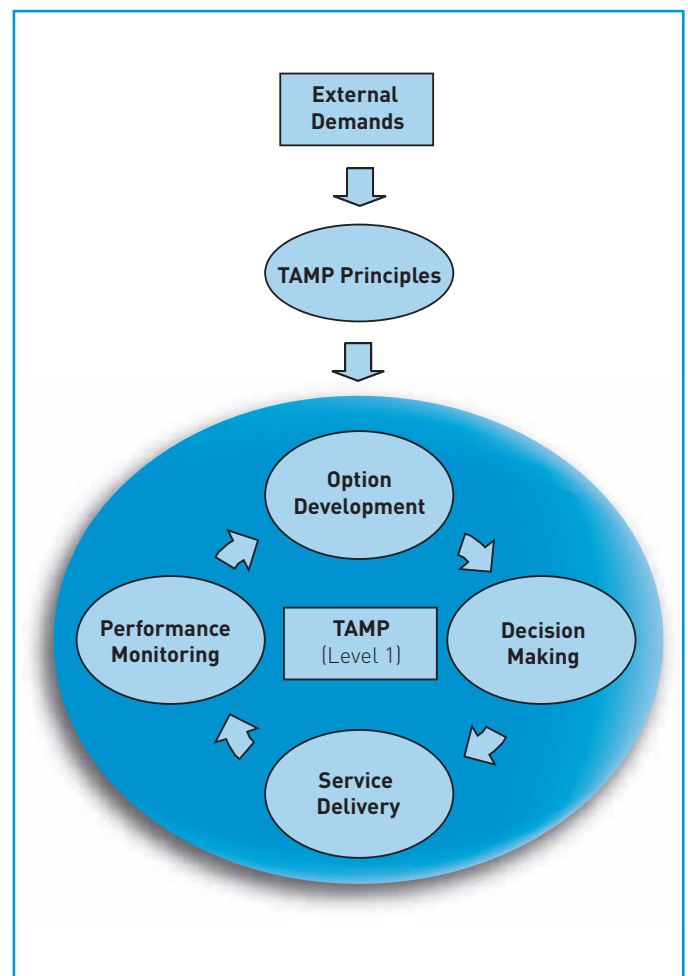
These four areas are closely interconnected. This system is a cycle, with information from one area passing on and influencing decisions made in the next and subsequent areas. Together these key areas form a system that drives continuous improvement.

These key areas of asset management practice and their circular relationship with each other can best be illustrated by the diagram adjacent.

At this highest level the system is generic, and can be applied across different assets and service areas.

Level 1 TAMP

- Introduction
- External Demands
- TAMP Principles
- Asset Management Practice
- Asset Summaries



Asset Management Practice at Hertfordshire

These four areas, their interconnectivity and relationship with other asset management processes are described in more detail in the following section, but in summary comprise of:

- **Option Development:** This is where we generate and assess the options available to the council. Options need to address the issues identified from external pressures, council objectives, past performance of the asset and support future performance of the transportation assets.
- **Decision Making:** Option appraisal processes then assist decision makers in designing schemes, determining programmes of work, reviewing strategy, developing policy and defining procedures. These option appraisal processes incorporate assessment of value for money, effectiveness in delivering objectives and evaluation of the risk associated with action and in-action, in relation to each area of the transport network.
- **Service Delivery:** A main output from the planning process is the Integrated Works Programme, which drives the delivery of planned work to and on the highway, via the Hertfordshire Highways partnership and a small number of other specialist contracts. Contract management and reporting systems are used to ensure that appropriate technical standards are met and that products and services are delivered in an appropriate manner to take into account customer needs and preferences. Associated strategies, policies and procedures define how the planned and reactive works are undertaken.
- **Performance Monitoring:** This is the last component of our cycle where we look to “close the circle” on our asset management practice. Performance monitoring processes record and report upon asset performance and are designed to provide meaningful data to decision makers.

However, before we explore the detail contained within the asset management practice cycle, we should briefly highlight the outside influences that affect or “drive” this process.

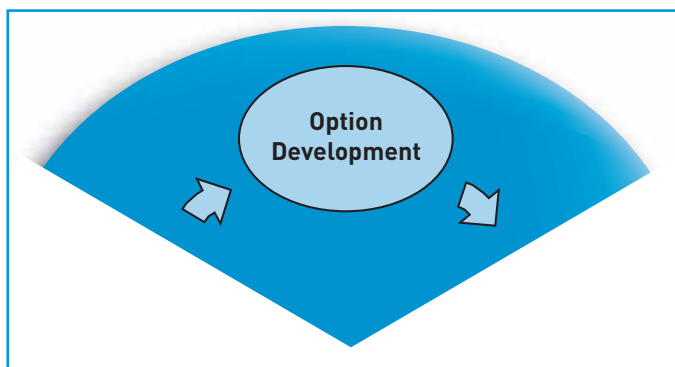
4.2 Taking a Step Back – Drivers on Asset Management Practices

Demand: Section 2 of this plan covers the major external influences or drivers that can have varying, but significant influence on the transport network and affect how we may wish to maintain, manage and improve it. These demands and how the TAMP will attempt to address them are discussed in more detail in the separate section on external demand.

TAMP Principles: Section 3 of this plan outlines Hertfordshire’s objectives (called our TAMP Principles) developed to meet the many and varied external demands discussed above. They are based on the numerous transport related council objectives originating from various corporate sources such as Hertfordshire’s corporate and local transport plans. As indicated in the asset management practice diagram, these principles are very much the “triggers” at the starting point of our asset management cycle, where we try and understand the current and future implications of the external demands placed on our transport network and develop appropriate strategies to effectively and efficiently deal with these.



4.3 Option Development



The starting point in our asset management cycle is option development, where we identify and evaluate suitable options for translating the demands and objectives placed on the asset into deliverable strategies, policies, programmes and schemes.

The option development process and its relationships with other parts of the TAMP are shown in further detail in The Option Development Process diagram.

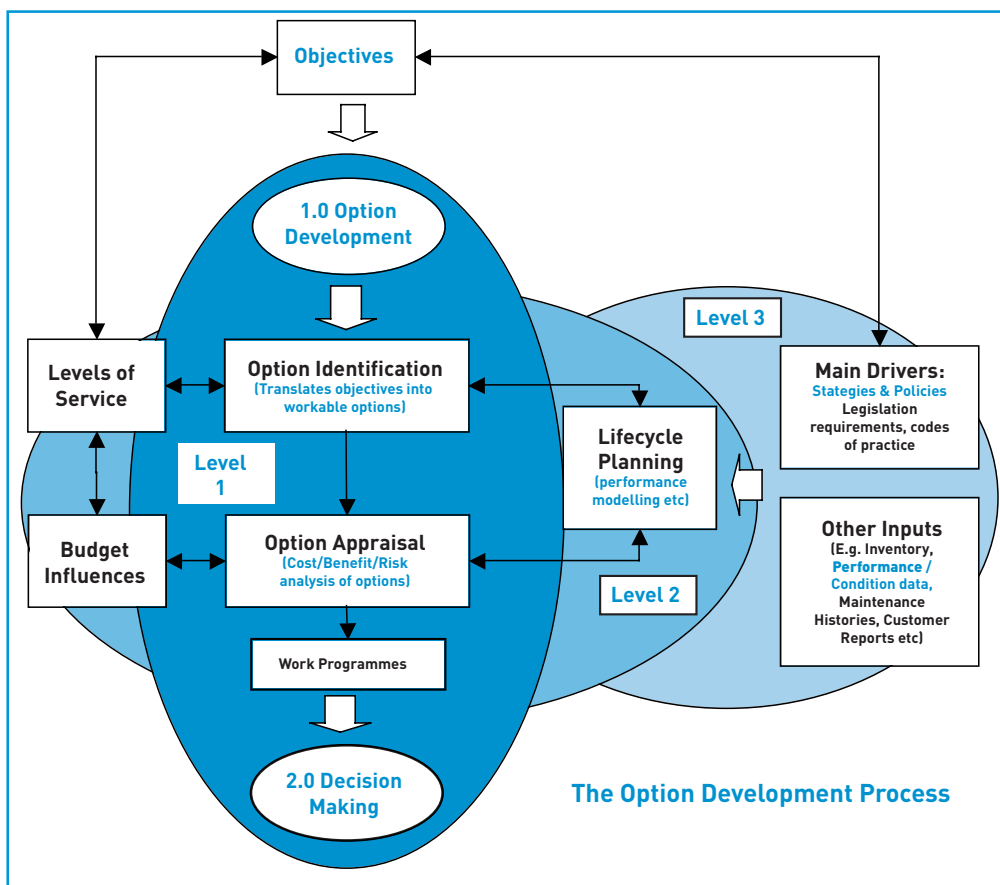
As illustrated in the diagram, Option Development is broken into two main parts;

- **Option identification**
- **Option appraisal**

Option Identification: This is where we identify all the deliverable options that will meet the demands placed on the transport asset. When identifying options, we must consider all phases of an asset lifecycle through creation, routine maintenance, planned renewals and replacements, upgrading and - in some rare

instances for infrastructure assets - disposal.

We must ensure that where the asset in question has an impact upon other assets or services, these potential impacts are considered in the decision making process. We must consider the creation, alteration and stewardship of these assets and the impacts at these stages should ideally be positive or neutral. Negative impacts need to be highlighted and considered further.



During option development we need to look at identifying all appropriate options that could meet our needs, even the less obvious ones and be able to link these back to our six key TAMP Principles to ensure that we are meeting our most important needs.

During this process we also make use of other supporting (Level 2) asset management processes, such as lifecycle planning, to access important detailed information on an asset. Certain asset information, for example performance, condition information and maintenance history, helps us identify relevant options.

When developing the options (for the activity, process or scheme) we should consider options that can deliver the appropriate level of service. This process is informed by budget parameters. We must consider a range of solutions between Minimum (Preserve) and Maximum (Improve) to arrive at an Optimum solution which balances the funding available with appropriate lifespan, serviceability and performance.

A future aspiration, as asset management processes are further embedded, is a budget setting process driven by service level, asset condition, capability and functionality for all transportation assets. This is currently undertaken primarily in carriageways, but has also been applied to evaluating footways and drainage schemes.

Option Appraisal: Once the various asset options have been identified it is necessary to critically evaluate these using option appraisal techniques. This is the formal process for determining the most appropriate (in terms of cost, benefit and risk) option for managing the asset that balances the various demands placed upon it.

As part of the appraisal process we also check on how any proposed option will contribute towards and support our key TAMP Principles. This is undertaken using a “weighted matrix” approach where each option or significant part is “scored” against each of the key TAMP Principles, weighted appropriately for the asset group or service area being considered.

In addition to the fundamental questions “does it fit with the county’s stated objectives?” and “does the proposal do the job we need it to?”; factors that should be considered during Option Appraisal include (but are not limited to): Buildability, Maintainability, Long Term Value for Money and Sustainability.

Guidance, including decision processes (involving checklists or scoring systems where appropriate)

needs to be provided to those undertaking the Option Appraisal. Such guidance should be produced and regularly reviewed by those responsible for developing the relevant strategies and endorsed as supporting these strategies. Industry Best Practice, Technical and procedural guidance as well as technological developments must therefore be kept under regular review to appropriately inform this process.

A list of ‘planned outcomes’ (qualified against the items above) is produced from this process. Planned outcomes record key overarching asset decisions, support the big challenges and objectives and need to be measurable. This enables us to prove that we are supporting them by closing the performance management cycle.

Suggested measures of performance / compliance should generally outlined at this stage. In most cases existing Indicators relevant to that asset group are adopted. If gaps exist more monitoring may be required, although the SMART test (to check if the targets are Specific, Measurable, Appropriate, Realistic and Time-bound) will be rigorously applied and pointless measurement avoided. This process ensures that any option selected can be linked back to one or more of our over-arching key TAMP Principles.

Examples of option development

Carriageway deterioration modelling is a good example of option development and appraisal, and has been undertaken on the carriageway asset in Hertfordshire since 2001. This process helps to produce a maintenance programme that aims to give the best long-term value for money.

The modelling uses various inputs such as carriageway inventory and condition data, maintenance histories and traffic counts and provides two main outputs:

- An ‘optimised’ 5 year forward works programme (FWP)
- A projection of carriageway deterioration / future condition

Other good examples of formal option identification and appraisal techniques are the, less sophisticated but still effective, processes used for evaluating and ranking footway and drainage schemes. For footways, this process takes into consideration inputs such as:

- Current condition, - i.e. severity of defects
- Hierarchy - how busy the footway is
- The history of 'Category 1' defects
 - emergency repairs
- History of trips or other claims
- Likely future deterioration

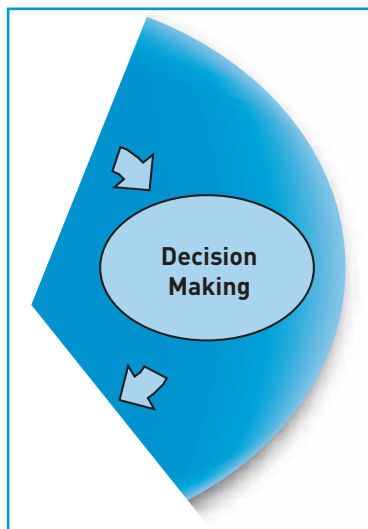
The ranking of schemes using these inputs is undertaken centrally with the output from the process being a prioritised list of schemes for inclusion in the IWP (integrated works programme) and future FWP '(forward works programme).

4.4 Decision Making

The next part of the asset management cycle, which immediately follows on from option development, is decision making.

Decision making is about balancing the various drivers that can affect choice, being aware of the wider impacts and longer-term implications of these choices to reach the most appropriate decision within the limits allowed. These limits can typically involve limited levels of funding and will almost certainly involve some form of compromise.

Decisions involving the management of, and investment in, infrastructure assets can be complex in nature and expensive both in terms of current investment and potential future liability if poor choices are made. As these assets are managed on behalf of the wider community,



decisions need to consider not only the engineering and economic outcomes, but also the broader social and environmental benefits and impacts to the community.

In making any decision it is essential to consider the 'pros and cons' of the different options provided and balance equitably any competing demands. Often in the past key asset investment decisions have been made solely on their short term financial costs, without consideration of all factors and implications.

It is therefore crucial that any key asset decisions should:

- be based on sound information
- be robust, objective and auditable
- link planned outcomes back to key council corporate objectives
- aim to manage the asset in the most effective and efficient manner to minimise whole life costs
- be made on the understanding of their long-term implications
- incorporate an assessment of value for money
- evaluate the risk associated with any action (or inaction)
- be informed by and involved with the 'Holistic view' of activity planning on the network – but not entirely driven by this

As good asset management should be based upon "*knowledge based decision making*" (CSS Framework for asset management 2004), this section is an integral and very important step in our asset management practice cycle, where we discuss those processes involved in making these important longer-term decisions to successfully manage the asset.

The desired outcome from this section of the TAMP is to provide a practical process that facilitates the selection of the optimum overall solution(s) from those short-listed under the option development process, that as closely as possible meets the applicable criteria specified. This process will encourage 'cross asset' and 'cross network' thinking, but in a controlled

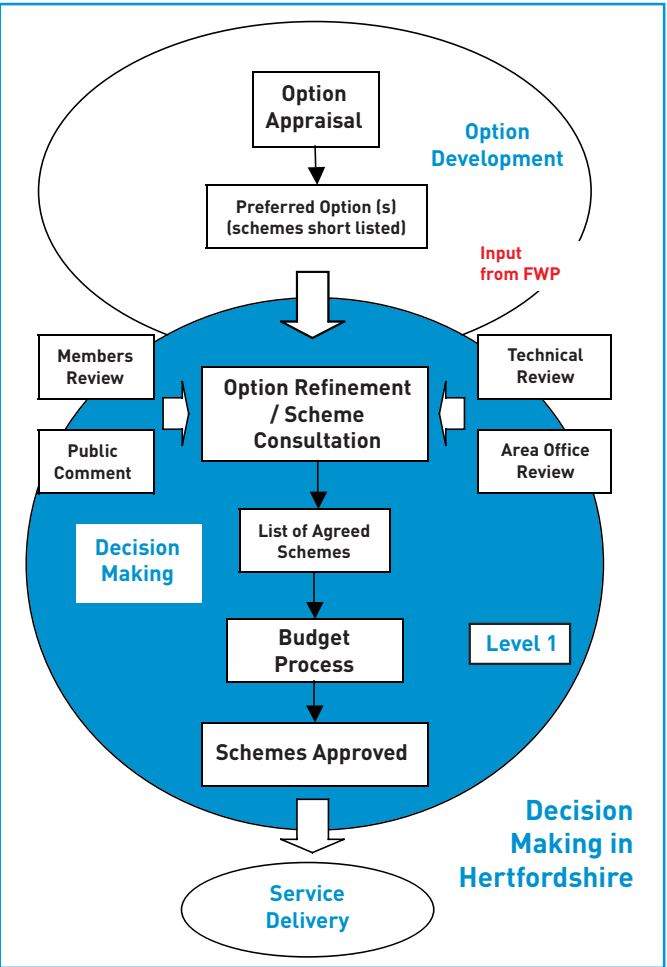
manner, so that decisions about maintaining assets in a 'holistic' way are done in an informed manner.

For example, on parts of the network with identified traffic management problems, such as busy dual carriageways, it is difficult and costly to reduce capacity of the network for maintenance. It would be desirable to combine operations within the same set of traffic management at these locations. However, rather than automatically undertaking work to a range of assets, decisions based on the optimum timing for the works within the overall lifespan of the asset should be considered, as well as the impact of bringing forward or putting the works back.

The decision making process itself will be reviewed and revised as necessary.

Example

An outline of this decision making process, as undertaken for carriageway scheme selection (but equally applicable to other assets), is shown here:



Decision making via the Integrated Works Programme

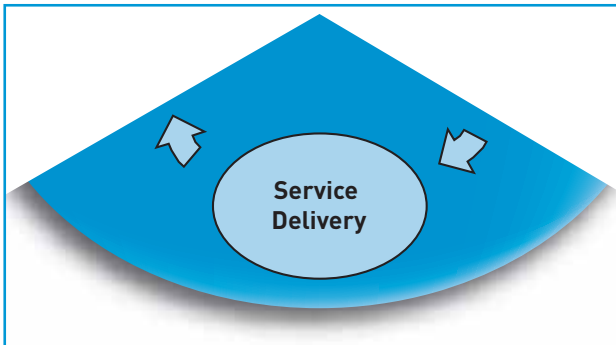
In Hertfordshire, the system we use to translate identified options into specific schemes for progression through the decision making process, and ultimately service delivery, is the Integrated Works Programme (IWP)

This annually updated and published programme brings together into one database carriageway, footway, drainage, street lighting and structures maintenance schemes plus road safety, traffic management, transportation and enhancement schemes. It aims to balance the financial, design and construction resources necessary for scheme implementation, smoothing out peaks and troughs to efficiently use the road space available. This scheme co-ordination is done in advance of the full financial year's work being finalised (by considering works clashes / synergies over multiple financial years) and then facilitating co-ordination of planning, design and works dates within the financial year when the overall works programme has been set.



4.5 Service Delivery

Once decisions have been made these are translated into actual physical works and services (for assets at least) delivered on the ground.



The arrangements for delivery of works and services on the transport network can vary significantly from one authority to the next. None of these arrangements preclude the use of asset management, but some can make the adoption of an asset management approach more difficult.

Any works and service arrangements should recognise the need for accurate and reliable information. Service delivery mechanisms should therefore have in place the processes and systems for collecting, recording and maintaining up-to-date inventory and condition data. Access to a single database, which contains all information about schemes, maintenance, fault reports and asset management, has been found to have its benefits.

The Integrated Works Programme process has been useful in helping to reduce disruption and travel delays to the public and improving efficiency. Development of forward works programmes for five years ahead allows the length and detail of forward planning needed for consistently good scheme delivery. So, robust medium and long term decision making processes have a positive impact upon service delivery.

Having clear customer service standards and processes is important in service delivery. Having the capability for call handlers to pass on fault

reports in a controlled way directly to the team delivering the works allows a speedy response to problems.

Establishing productive and communicative relationships with partners involved in service delivery, both consultants and contractors, often through co-location, can produce benefits well beyond basic savings in travel time and telephony costs.

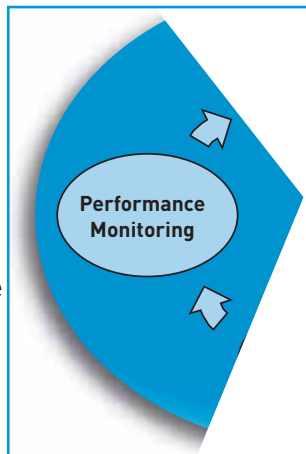
Current and past performance must be systematically analysed and existing systems challenged where targets are not being met.

The Hertfordshire Highways strategic alliance was, in part, established to deliver these objectives and to improve service delivery in Hertfordshire. With the contracts five years old at the time of writing this plan, future delivery arrangements are currently under consideration – a process which has been fed by, and fed into, the production of the TAMP. Future service arrangements will need to build on the experience of Hertfordshire Highways and seek further improvements while retaining the benefits it has brought.



4.6 Performance Monitoring

The last component of asset management practice contained within our cycle is performance monitoring. This is where we look to “close the circle” on our asset management practice cycle and covers the processes that provide a mechanism for recording, reporting and managing asset



performance. The purpose is to ensure that we implement and complete what we say we will do and inform the future option development and decision making processes.

A definition: “Management of performance is an essential tool to ensure that long term benefits of asset management and desired outcomes on the transportation network are being achieved (or not).”

When considering performance monitoring, the measures selected should:

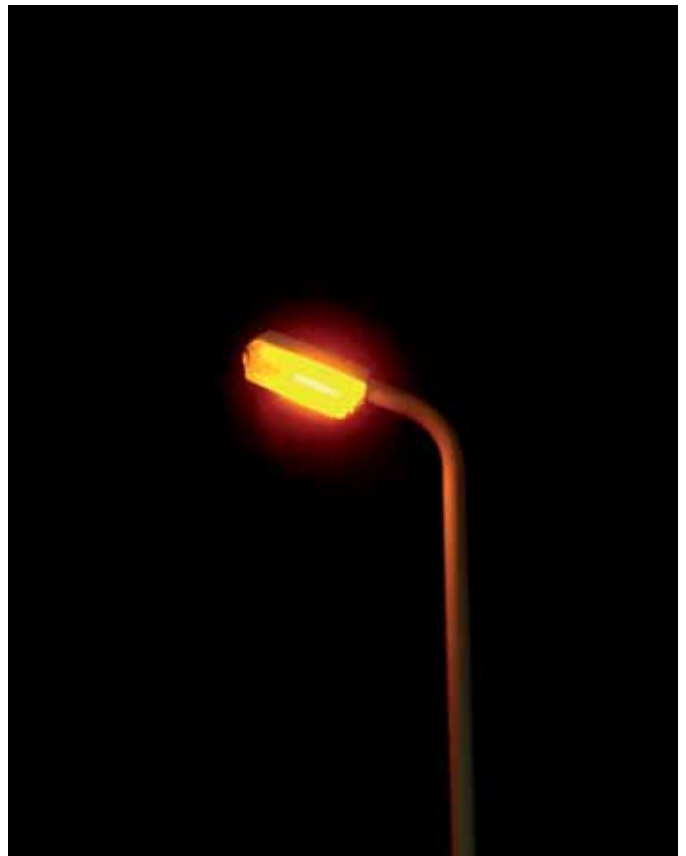
- be meaningful, measurable and repeatable
- move away from simply measuring outputs to concentrate on important asset outcomes
- link back and show achievement against our key TAMP Principles

Performance measures or indicators can be grouped under categories of different levels similar to those shown below to reflect their primary purpose and intended audience within and outside an organisation.

Strategic: Indicators for reporting annual performance to external stakeholders such as the national indicators for the condition of an authority’s principal and classified road networks.

Operational: Indicators primarily used in the day to day delivery and management of the service, e.g. response time in attending to dangerous defects.

Tactical: This group sits between the two more commonly known groups of indicators shown above. It includes those indicators used to assist in the longer-term decision making about assets in the transport network. A typical example may be “the quantity or percentage of a particular asset renewal achieved per annum against programme”.



Not surprisingly there is already an extensive suite of PIs and other local Key Performance Indicators (KPI) in place in Hertfordshire used for monitoring some aspects of an individual asset's performance and parts of the transport network. These are recorded and reported in numerous council documents, some of which are listed below:

| | |
|-------------------------------------|---|
| Hertfordshire County Council | <ul style="list-style-type: none"> • Corporate Plan 2006-2009 |
| HCC Environment Department | <ul style="list-style-type: none"> • Local Transport Plan 2 • Department Service Plan • Department Performance Management System • HAMP 1 |
| Hertfordshire Highways | <ul style="list-style-type: none"> • Service Plan • IMS system |

Most of the current suite of performance measures would generally fall under either the Strategic or Operational categories listed above with very few, if any, being classed as purely "Tactical" asset management performance measures. One exception could be the "average condition indicator" recently introduced for carriageways.

We do not plan to radically change the current performance measures in place, but to critically review and if necessary update these to:

- understand what they currently do (or do not) measure
- whether they are still appropriate and required
- whether they are consistent across all asset groups and service areas
- ensure that they link outcomes back to our key TAMP Principles

It is not the intention of this document to list all of the current and proposed new performance measures. These will form part of the more detailed level 2/3 documents.





Section 5.0: Asset Group Summaries

The following pages contain Asset Group Summaries for the following assets:

- 5.1 Carriageways**
- 5.2 Drainage**
- 5.3 Footways**
- 5.4 Intelligent Transport Systems**
- 5.5 Street Lighting**
- 5.6 Structures**

These summaries include relevant information about each asset group to help highlight its role and significance as well as any key issues, current or future, that need to be considered in its management.

In some cases these summaries are derived from existing asset lifecycle plans, in others they will form the basis of lifecycle plans yet to be developed.

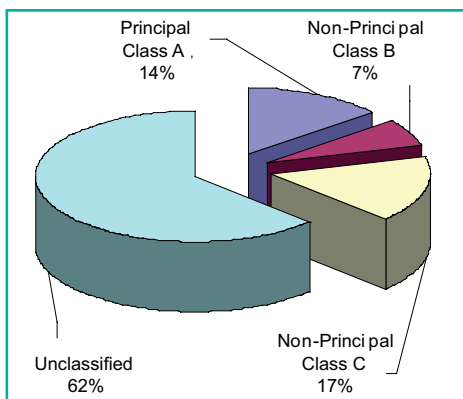
Asset Group Summary: Carriageways

Inventory

We have 32,000,000 m² of carriageway – that's an area larger than the Borough of Watford, or about 5,000 football pitches.

We have over 5,000kms in total **section** length (i.e. dual carriageways are counted twice); which breaks down

- 713 km of A Roads
- 331 km of B Roads
- 834 km of C Roads
- 3129 km of Unclassified Roads



The carriageway asset grew substantially with the de-trunking of former Highways Agency roads like the A10 and A41 and from construction of the Baldock Bypass. There is also a small annual increase due to the adoption of roads from new developments

De-trunked roads at 212km make up over 1/4 of the total A road network in the county, with some of these A roads carrying up to 60,000 vehicles per day.

Notes:

Good basic inventory (reliable lengths, generally reasonable widths).

Surface type information is very basic; little construction information for most roads

Limited information on age

We are not good at capturing and updating data when there is a change

Additional information has been gathered to assist the deterioration modelling (including ground radar surveys to determine construction thickness).

An exercise is underway updating the inventory with recent works done.

Urban / rural split has been based on speed limits – so not always 100% accurate.



Rural B Road

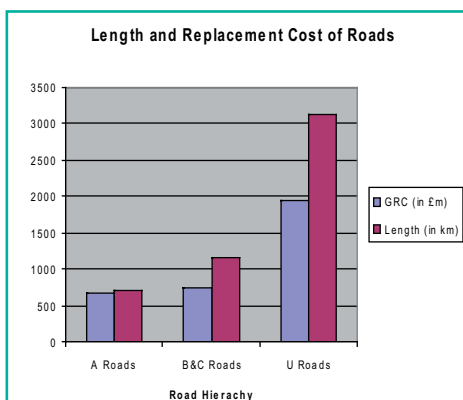


Urban Unclassified Road



Rural Unclassified Road

Valuation



Valuation of Total GRC (Gross Replacement Cost) as at May 2005 = **£ 3,356m**, broken down as follows:

A roads = £673m
B and C roads = £745m
U roads = £1,938m

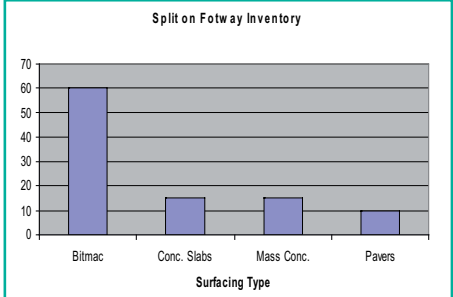


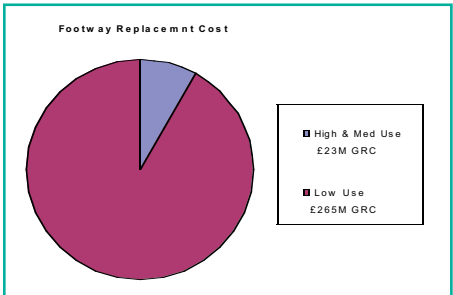
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| Age | <p>The surface deterioration is largely due to age and weathering, rather than traffic use.</p> <p>There are basically 2 failure modes:</p> <p>a) Top down – local roads generally succumb to surface failure first; the structure will not generally fail if water is kept out, so we need to keep the surface sealed to protect both it and the foundations underneath</p> <p>b) Bottom up – roads used by more and heavier traffic will suffer surface deterioration like the local roads, but as the weight of HGVs shakes the foundations, structural repairs, as well as surface repairs, will also be required from time to time.</p> | <p>Notes:</p> <p>The condition of the road is more important than age when determining treatment needs.</p> <p>Some roads will deteriorate faster than others depending on the nature of the road and the factors affecting it. So some roads will need treatment more often than others.</p> <p>Our strategy is based on maintenance intervention at the optimum time to minimise whole life costs.</p> |
| Condition | <p>An annual programme of machine surveys on A, B and C roads and visual surveys on unclassified (U) roads is used to determine the condition of the carriageway asset and help to plan future maintenance work. These surveys also provide the data required for the production of the Best Value Performance Indicators (BVPIs).</p> <p>BVPIs aren't a very good measure of condition as they only count the poor roads, not the relative condition of the rest of the network and therefore don't reflect the amount of preventative maintenance done. As reflected in the BVPI graph below, the results have fluctuated significantly in the past. This is because the methods of collecting and processing the data for the production of the BVPIs have changed frequently and therefore the BVPIs do not provide a consistently reliable historic measure of condition. The results for 02/03 are particularly suspect although recent results have been more stable and have seen additional investment reflected in improved results.</p> <p>We are establishing an "average condition indicator" to reflect the condition of the whole of the network and to support our 'Asset Management Approach' of 'early intervention' on roads that are not yet in a poor condition.</p> <p>The carriageway deterioration model projects future anticipated condition for all roads and helps develop an optimised programme of works – proposing the best value for money treatments at the most appropriate time.</p> | |
| Demands and Performance | <p><i>The Best Value Performance Indicators (BVPIs) are outlined in the graph below.</i></p> <p><i>A higher number indicates a poorer condition</i></p> | <p>The condition of the roads is a key area of public interest. This has prompted the County Council to make "Dealing with Worn Out Roads and Pavements" an objective in the high-level Corporate Plan 2006-09.</p> <p>Besides using BVPIs to monitor objective condition, we also use Customer Satisfaction Surveys to monitor the subjective public view of the service.</p> <p>("% residents who expressed an opinion and believe the County Council has been successful in dealing with deteriorating roads and pavements over the past year, excluding don't knows")</p> <p>2005/06 = 36% 2006/07 = 34%</p> <p>The most recent survey was done prior to the vast majority of Highways Extra's works taking place and so was before the recent improvements seen in the BVPI results</p> |
| Cost | <p>Construction Inflation, in the form of Construction Industry Indices, has run ahead of general inflation – due to the high global price of oil and its adverse affect on the price of bitumen, a primary product used in road re-surfacing.</p> | |
| Key Issues | <p>Updating the Inventory with date of treatment and material type needs to be embedded as a continuous process.</p> <p>Looking for new alternative processes that deliver good value for money.</p> <p>We have a desire to trial new materials and to look for more sustainable maintenance solutions (i.e. those which produce less waste by more recycling of the high quality stone that is used in carriageway construction). This is being investigated using the expertise of our supply chain partners.</p> <p>The design and material choice for improvement schemes needs to take into account future maintenance issues. A whole-life-cost approach is preferable to a short term view.</p> <p>Poor drainage contributes to and accelerates the deterioration of the carriageway – hence there is a key link to getting the approach to drainage right.</p> | |

Asset Group Summary: Drainage

| | | | |
|-----------|---|--|--|
| Inventory | <p>No of Gullies is approx: 165,000</p> <p>For pipelines, the location, length and details (such as size) are largely unknown. Although there are sometimes ad-hoc local area records they do not offer complete coverage and are not easily accessible.</p> <p>For grips (road drainage outlets to ditches), the location, number and length are unknown.</p> <p>Roadside ditches are often privately owned, with some dug as part of highway schemes. Location, number and length not recorded, but there could be some local area office knowledge on locations.</p> <p>For other drainage assets such as SUDS, soakways, interceptors and balancing ponds etc, little or no inventory information is held (similar situation as for pipelines).</p> <p>There are 77 subway pumps, which are routinely maintained and hence their location is known and recorded.</p> <p>The current highway asset database is not able to cope with the recording of drainage assets in a useful way; it is hoped to address this when the system is replaced.</p> | <p>Notes:</p> <p>Gully inventory stored on the HERMIS system</p> <p>Main Issue is the missing / incomplete centrally held inventory for drainage assets, (location, number, length, size and type etc) particularly for the buried pipelines. Some records such as hardcopy plans (and local knowledge) would be available from the area offices.</p> <p>Additional estate road drainage asset is being added to the inventory through adoptions. (CAD / paper based records).</p> |   |
| Valuation | <p>The current valuation of Total GRC (Gross Replacement Cost) is unknown as this formed part of the carriageway valuation in line with the CSS guidance on asset valuation.</p> | <p>Issue: A separate valuation of this substantial asset would be impossible without an accurate inventory</p> |  |
| Age | <p>With current incomplete inventory, age of the asset is unknown, although some parts of the buried pipeline network could be up to and exceeding 100 years of age.</p> | | |
| Condition | <p>Gullies are emptied annually on a fixed schedule, with a small proportion cleaned more frequently. When emptied these are filled with water to check that they run clear and any faults are reported.</p> <p>For the 77 subway pumps there is a scheduled preventative maintenance regime, but the catch pits (sumps) preceding these are not routinely cleaned out.</p> <p>All other maintenance works are generally reactive in nature when prompted from report or flooding incident.</p> <p>The condition of most of the buried network and other facilities is not known. Only those parts of the pipe network identified as having a potential problem are inspected (with CCTV) before a minor repair or drainage scheme is implemented. CCTV surveys are undertaken on a site by site basis as needs require, with no central held repository for any records.</p> <p>Drainage culverts over 1m in dia are classed as structures and therefore handled by the structures team.</p> | | |





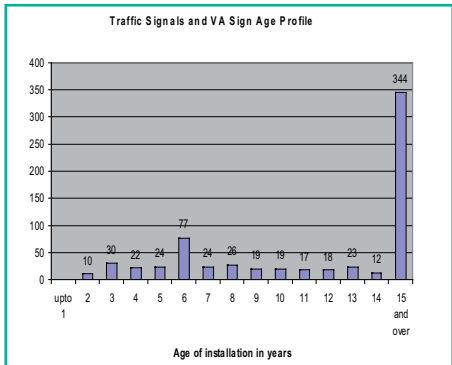
| | | | |
|-----------------------------------|--|-------------|---|
| Demands | Climate change: More frequent storm events of greater impact are likely, but the potential affect from these is yet to be quantified. | Performance | <p>Gully emptying specification in contract – 85% shall be VISITED p.a.</p> <p>Standard Cat 1 defect repair responses times.</p> <p>Currently no other KPIs in place.</p> |
| Programmed Maintenance and Repair | <p>There is an ongoing programme of repair, rehabilitation and improvement to drainage systems prioritised based on the severity, frequency and potential impact of the problem and on the likely cost to solve or mitigate it.</p> <p>This approach is risk-based and reactive although it is accepted that a planned preventative approach would bring performance and reactive maintenance benefits. A deterioration approach to the maintenance of buried drainage assets is impractical with current technology since the condition data required to drive such a programme would have to be gained through CCTV (closed-circuit TV) surveys which are slow and prohibitively expensive on a network-wide scale.</p> <p>However, consideration is being given whether the investigation of drainage problems could be carried out in a more useful and efficient way using such additional data as is available (from reported flooding problems, for instance).</p> <p>Consideration should also be given to extending the planned cyclic maintenance work from gully cleaning and pump maintenance to include regular cleaning of other highway drainage assets such as grips, ditches and soakaways.</p> | | |
| Cost | <p>It is currently difficult to ascertain a detailed breakdown of the full expenditure undertaken on the asset. For cat 1 and 2 reactive repairs, drainage costs are grouped together with other asset costs. If we wish to better understand the full whole of life cost of the drainage asset then this is an area that will need improvement.</p> <p>Furthermore, poor drainage contributes to the early deterioration of other assets, especially rural carriageways. Poor drainage performance may therefore manifest in an increase in faults such as potholes and edge failure with consequent additional maintenance costs on such roads.</p> | | |
| Key Issues | <p>Main issue is the incomplete / missing inventory.</p> <p>Second important issue is that there is no all encompassing AM system for obtaining, updating and storing inventory records (e.g. at adoptions etc) recording flooding / reactive maintenance hotspots (and costs) and analysing the drainage system for developing business cases and prioritising drainage schemes.</p> <p>Although it is unlikely to be viable or cost effective to collect a complete inventory of all drainage assets, a way of storing the data that is available, either historically or through more recent investigations, should be sought both permanently in the new asset data system and in the interim until that system is in place.</p> <p>Current schemes are undertaken to rectify problems on site by site, case by case basis rather by a network wide analysis.</p> <p>There is a limited preventative maintenance programme, with the majority of the service reactive in nature.</p> <p>The ongoing and future potential impact of climate change as applicable to the drainage asset has not been quantified.</p> | | |

Asset Group Summary: Footways

| Inventory | <p>Network Length is approximately 5,000km, split as follows.</p> <div><p>Split on Footway Inventory</p><table border="1"><thead><tr><th>Surfacing Type</th><th>Percentage</th></tr></thead><tbody><tr><td>Bitmac</td><td>60%</td></tr><tr><td>Conc. Slabs</td><td>15%</td></tr><tr><td>Mass Conc.</td><td>15%</td></tr><tr><td>Pavers</td><td>10%</td></tr></tbody></table></div> <p>14% of the network is classified as High and Medium use footways (i.e. contribute to the council's BVPI 187).</p> <p>Growth in the footway network is estimated at 0.5% p.a. but poor inventory for our low-use FWs makes the calculation of a more accurate figure not possible. The two recent waves of de-trunking (including the A10) caused stepped increases in network length.</p> | Surfacing Type | Percentage | Bitmac | 60% | Conc. Slabs | 15% | Mass Conc. | 15% | Pavers | 10% | <p>Confidence in the inventory information is high for length (>90%) but low for width. The inventory is particularly good for High and Medium use footways but poor for the remainder of the network.</p> <p>Although footway surfacing material type is stored in Hermis, the split in inventory does not match our officer's estimates.</p> <p>Our percentage of high and medium use footways is apparently high in comparison with our neighbours.</p> |   |
|----------------|---|--|------------|----------------|------|-------------|-------|--|-----|--------|-----|---|--|
| Surfacing Type | Percentage | | | | | | | | | | | | |
| Bitmac | 60% | | | | | | | | | | | | |
| Conc. Slabs | 15% | | | | | | | | | | | | |
| Mass Conc. | 15% | | | | | | | | | | | | |
| Pavers | 10% | | | | | | | | | | | | |
| Valuation | <p>Total GRC (Gross Replacement Cost) as at May 2005 = £287.4m.</p> <div><p>Footway Replacement Cost</p><table border="1"><thead><tr><th>Category</th><th>GRC</th></tr></thead><tbody><tr><td>High & Med Use</td><td>£23M</td></tr><tr><td>Low Use</td><td>£265M</td></tr></tbody></table></div> | Category | GRC | High & Med Use | £23M | Low Use | £265M | <p>Current valuation would suggest that much of the network is well past its desired service life when comparing design life to calculated replacement frequency.</p> <p>Service life is related to use and construction type.</p> | | | | | |
| Category | GRC | | | | | | | | | | | | |
| High & Med Use | £23M | | | | | | | | | | | | |
| Low Use | £265M | | | | | | | | | | | | |
| Age | <p>We do not have reliable surface or construction ages for most footways, making effective planning of preventative maintenance more difficult.</p> | <p>We lack accurate age data but can make a reasonable estimate of footway age on site. In the future, better age-related data will prove useful to inform renewal programmes.</p> <p>Assumptions of the initial construction date can be made on some estates in Hertfordshire by checking the date of construction of the neighbouring houses.</p> | | | | | | | | | | | |
| Condition | <p>Current condition information for our high and medium use footways is obtained from detailed visual inspections (DVIs) used to generate BVPI 187. Currently this BVPI is at 29% (down from 50% in 2002/03) with a target trajectory of 33% set for the end of LTP2 period in 2010/11 where a lower number indicates better condition.</p> <p>Our knowledge of the condition of 'non-surveyed' lower use footways is poor and the cost of undertaking DVI surveys on this greater percentage of the network may be prohibitively expensive (but needs to be evaluated in relation to the projected benefits of having this information).</p> <p>Works by statutory undertakers are a primary cause of accelerated deterioration in footway condition. Tree root action and vehicles running over the footway also contribute significantly to deterioration on some footways. This makes predicting future condition trends more difficult as these factors can cause sudden, drastic deterioration unlike deterioration due to age or weathering, which is usually more gradual and progressive.</p> | | | | | | | | | | | | |



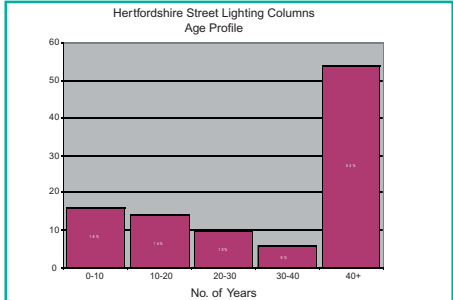
| Demands | <p>The footway network is growing year on year through the adoption of new developments and as a result of some Integrated Transport Schemes.</p> <p>The purpose of BVPI 165 is to monitor the number of crossings that have appropriate facilities for disabled people. Maintenance works must ensure that pedestrian crossings continue to meet the standards of BVPI 165.</p> <p>Installation of additional pedestrian crossings or other accessibility-enhancing measures is often promoted by the Local Transport Plan programmes.</p> <p>Future maintainability is considered in the design of town centre enhancement schemes when staff responsible for the structural maintenance of footways are consulted about material selection.</p> <p>Footway works are prioritised in relation to their classification. Footway classification is based on estimated level of use, most of which was done by the District councils prior to Hertfordshire Highways.</p> <p>Footway classification can occasionally change due to a change in the level of use of the footway. For example, when a new school is opened the level of use of some nearby footways may increase.</p> | Performance | <p>The condition performance of our higher-use (Category 1 and 2 footways) is monitored via BVPI 187.</p> <p>This indicator score has improved (ie reduced) in recent years, initially due to procedure and inventory issues being tackled and then latterly assisted by the positive impact of ‘Highways Extra’.</p> <div><p>Footway Condition</p><table><thead><tr><th>Year</th><th>Indicator Value</th></tr></thead><tbody><tr><td>00/01</td><td>52</td></tr><tr><td>01/02</td><td>52</td></tr><tr><td>02/03</td><td>52</td></tr><tr><td>03/04</td><td>52</td></tr><tr><td>04/05</td><td>48</td></tr><tr><td>05/06</td><td>40</td></tr><tr><td>06/07</td><td>30</td></tr><tr><td>07/08</td><td>30</td></tr><tr><td>08/09</td><td>30</td></tr></tbody></table></div> <p>(a lower score indicates a better condition)</p> <p>The predicted condition profile of our lower-use footways is unknown due to the limited condition data for these classes of footway.</p> <p>There are currently no condition indicators for footways apart from BV187, which covers only a small portion of the network – albeit the part that sees the most use. We would like to explore the introduction of an average condition indicator (ACI) to give an indication of condition across all categories of footway.</p> | Year | Indicator Value | 00/01 | 52 | 01/02 | 52 | 02/03 | 52 | 03/04 | 52 | 04/05 | 48 | 05/06 | 40 | 06/07 | 30 | 07/08 | 30 | 08/09 | 30 |
|---|--|-------------|--|------|-----------------|-------|----|-------|----|-------|----|-------|----|-------|----|-------|----|-------|----|-------|----|-------|----|
| | Year | | Indicator Value | | | | | | | | | | | | | | | | | | | | |
| 00/01 | 52 | | | | | | | | | | | | | | | | | | | | | | |
| 01/02 | 52 | | | | | | | | | | | | | | | | | | | | | | |
| 02/03 | 52 | | | | | | | | | | | | | | | | | | | | | | |
| 03/04 | 52 | | | | | | | | | | | | | | | | | | | | | | |
| 04/05 | 48 | | | | | | | | | | | | | | | | | | | | | | |
| 05/06 | 40 | | | | | | | | | | | | | | | | | | | | | | |
| 06/07 | 30 | | | | | | | | | | | | | | | | | | | | | | |
| 07/08 | 30 | | | | | | | | | | | | | | | | | | | | | | |
| 08/09 | 30 | | | | | | | | | | | | | | | | | | | | | | |
| <p>Deficiencies in footway inventory, particularly for lower use footways. The systematic updating of the Inventory needs to be resolved and the classifications audited.</p> <p>Lack of condition data for low use footways makes the production of a forward programme of planned preventative treatments difficult (and unlikely to be as cost effective as it could be).</p> <p>Condition of our lower use footways is assumed to be generally in poor condition and getting progressively worse (since investment has historically been targeted at higher-use footways).</p> <p>Consideration needs to be given to what other options are available to obtain condition data. Once this is acquired, then it would be possible to establish an Average Condition Indicator (as established for carriageways).</p> <p>An accurate break-down of Category 1 and 2 reactive repair footway spending is not easily available. We aim to introduce more comprehensive reporting on footway renewals, to compare against the trends in reactive spending.</p> <p>We need to better understand the relationship between asset renewals, reactive and insurance claim costs and the failure factors affecting footway surfacing service life such as age (for bitmac), vehicle overloading, trees and works by statutory undertakers.</p> <p>Consideration of future maintainability should be embedded systematically into the design of HCC schemes and the evaluation of proposed developments for adoption.</p> <p>A formal treatment selection process to complement the current site selection process would support TAMP Principles 1 and 5.</p> | | | | | | | | | | | | | | | | | | | | | | | |
| Key Issues | | | | | | | | | | | | | | | | | | | | | | | |

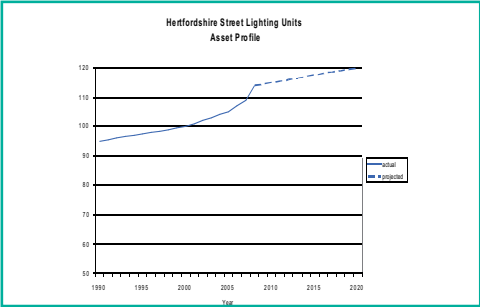
Asset Group Summary: Intelligent Transport Systems (ITS)

| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------------------------|---|--|--|------------------------------|-------|------------------------|------|------------------------|-----|--------------------|-----|------------------------------|-----|-------------------------|-----|----------------------------------|-----|---------------------------|-----|-----------------|-----|-------------------|------|----------------------------|------|--|--|
| Inventory | <p>This group of Assets includes:</p> <table><tr><td>Junctions – signal controlled</td><td>= 171</td></tr><tr><td>Pedestrian / cycle crossings</td><td>= 409</td></tr><tr><td>Vehicle Actuated Signs</td><td>= 70</td></tr><tr><td>Variable Message Signs</td><td>= 4</td></tr><tr><td>CCTV Installations</td><td>= 5</td></tr><tr><td>Urban Traffic Control System</td><td>= 1</td></tr><tr><td>CCTV Monitoring Systems</td><td>= 1</td></tr><tr><td>Baldock Tunnel Monitoring System</td><td>= 1</td></tr><tr><td>Remote Monitoring Systems</td><td>= 3</td></tr><tr><td>Rising bollards</td><td>= 3</td></tr></table> <p>Passenger Information Systems</p> <table><tr><td>Departure Screens</td><td>= 17</td></tr><tr><td>ePIPs (Information Points)</td><td>= 34</td></tr></table> <p>These assets cover all modes of transport, - self-drive and passenger transport and allow better use of the network, by keeping users better informed of network status (i.e. availability and journey reliability).</p> | Junctions – signal controlled | = 171 | Pedestrian / cycle crossings | = 409 | Vehicle Actuated Signs | = 70 | Variable Message Signs | = 4 | CCTV Installations | = 5 | Urban Traffic Control System | = 1 | CCTV Monitoring Systems | = 1 | Baldock Tunnel Monitoring System | = 1 | Remote Monitoring Systems | = 3 | Rising bollards | = 3 | Departure Screens | = 17 | ePIPs (Information Points) | = 34 | <p>Every part of this Asset Group is increasing in number.</p> <p>For example, there about 20 new Traffic Signal sites per year. These come from the adoption of new developments, area plans, regeneration projects, etc.</p> <p>Many of the other asset numbers can be anticipated to at least double in the next few years.</p> <p>The total number of Vehicle Activated Signs (VAS) in the county is unknown. Many district councils have installed VAS's, in some cases without maintenance agreements. There are many to potentially adopt.</p> <p>The Baldock Bypass Tunnel monitoring equipment was a major recent addition.</p> |    |
| Junctions – signal controlled | = 171 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pedestrian / cycle crossings | = 409 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Vehicle Actuated Signs | = 70 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Variable Message Signs | = 4 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CCTV Installations | = 5 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Urban Traffic Control System | = 1 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CCTV Monitoring Systems | = 1 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Baldock Tunnel Monitoring System | = 1 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Remote Monitoring Systems | = 3 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Rising bollards | = 3 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Departure Screens | = 17 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ePIPs (Information Points) | = 34 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Valuation | <p>Valuation estimated at Sept 2007 Gross Replacement Cost = £57m</p> <p>There is an upwards pressure on costs due to:</p> <ul style="list-style-type: none">the skills shortagesconstruction inflationenergy costs continue to rise | <p>Refurbishment costs are lower than replacement costs, as less structural works are required (eg ducting can be re-used when refurbishing)</p> |  | | | | | | | | | | | | | | | | | | | | | | | | |
| Age | <p>Traffic Signals and VA Sign Age Profile</p>  | <p>44% of the traffic signal sites are more than 15years old.</p> <p>Each year there are an additional 25 sites (@4% of the overall stock) reaching the end of their service life.</p> <p>Emergency replacements cost more than 50% of planned replacements. Allowing the equipment to fail before replacement also raises issues around safety from unplanned outages!</p> <p>Other ITS Control systems are generally obsolete after 6 years and in need of replacement after 10 years.</p> <p>Control equipment is quite vulnerable to collision damage arising from road traffic accidents and being custom-built there is a time issue around replacement (often longer than 3 weeks).</p> | | | | | | | | | | | | | | | | | | | | | | | | | |
| Condition | <p>The failure mode is more relevant than exterior condition. These assets are inspected regularly for functionality with any noticeable surface defects noted. Regular electrical safety testing is also conducted.</p> <p>A programme of structural testing is not required as the steelwork is replaced before anticipated catastrophic structural failure. Loss of function (electrical / electronic failure) is much more likely within the current asset lifecycles.</p> <p>A lifecycle plan is to be developed to consider how to optimise maintenance and renewal programmes and to ensure appropriate standards are applied to all new or revised installations to minimise whole life costs.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | |



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| Demands | <p>Demands upon this asset group come from increases in traffic volumes, movements to new developments, identified accident sites and area plans, all of which increase the demand for new or improved traffic control measures to make best use of the network.</p> <p>Pressures exist to reduce technical standards in order to save on initial installation costs. This is especially the case where a new system is being provided as part of a new development.</p> <p>Developing a lifecycle plan for this asset will help to ensure that departures from standards are only agreed where there is likely to be no adverse impact on whole life costs or service levels as a result.</p> | Performance | <p>'Outages' (time out of service) and response time to repair is measured. Steps are being taken to try to improve 'time to fix' failures.</p> <p>The travelling public expect high availability, so the 'time to fix' is the key measure.</p> <ul style="list-style-type: none"> • Critical Faults are well reported (by the public and from monitoring systems). • Service degradation (i.e. not complete failure, but inefficient performance) however is not picked up systematically. • Work is underway to understand the issues around non-critical faults. • Time to fix needs to be accepted as an area requiring monitoring and consideration. |
| Key Issues | <p>Inventory information (locations and descriptions) needs to be made widely available to the rest of Hertfordshire Highways, to ensure efficient service delivery.</p> <p>'ITS' systems are often substituted for other engineering solutions. Often the lower initial cost solution is chosen without evaluation of the whole life costs. The evaluation and approval of new schemes needs reviewing, to consider whole life costs and maintainability. Such a review needs to include new developments – including the calculation and disbursement of commuted sums.</p> <p>Invest-to-save options should be explored further, particularly on energy reduction and communications – which could potentially reduce costs and improve service delivery.</p> <p>The time taken to fix failures needs monitoring and further consideration – to optimise network availability and mitigate potential disruption.</p> <p>Economic quantification of disruption due to the failure of these assets would assist in the assessment of the priority of repair and is an area of potential service improvement.</p> <p>Consideration need to be given to how to better protect Traffic Signal Control Equipment from collision damage, in order to reduce the risk of disruption to the network.</p> | | |

Asset Group Summary: Street Lighting

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| Inventory | Number of Units: Total Lighting Units: 109,000 (exceeds column no. due to multiple lamp installations and other mounting types) Lit Signs: 15,700 Bollards: 6,000 Sub-way lights: 4,000 Belisha beacons: 430 High mast: 115 | Notes: Generally inventory is very good. Confidence in no. of units etc high, but not all detailed attributes (e.g. column type / age etc) is complete or correct (90% say). Inventory reports from the "Hermis" system can be extracted in "real-time". Growth in the inventory is between 1%-2% p.a., but recently also added another 1%-2% from de-trunking of HA roads. |   |
| | Column Types: Mild Steel (MS) with exterior protection: 22,638 MS hot dip galvanised: 7,300 MS hot dip galv. and ext protection: 1,272 MS protection unknown: 130 Stainless Steel: 96 Concrete: 22,977 Steel Galvanised: 20,362 (same as hot dip) Aluminium: 20,769 Cast Iron: 2,847 Wood: 51 Composite: 1 Other: 217 Total 98,660 | | |
| Valuation | Valuation of Total (all assets) GRC (Gross Replacement Cost) as at May 2005 = £136M (report from CAS) (NB £1200 - £1500 per column). | | |
| Age |  | A large proportion, 54% (approx. 60,000) of lighting columns are in excess of 40 years old. We do not know the specific ages of columns prior to 2000 (approx. 90%) although these can be estimated from the knowledge of when these areas were originally installed. | |
| Condition | <p>Detailed condition data (for the 64 fields of DFT appendix B form) is populated in the Hermis database. Information from annual visual inspections is used to populate the database/appendix B, which was due for completion in Aug 2007. Any identified defect from these inspections will either initiate a repair or further (structural) inspection.</p> <p>In addition, an Aural Test (by Hammer) is undertaken on all mild steel columns every 5 years under the lump sum contract and 5,000 MS columns undergo an ultra sound structural inspection every year. (NB Typically a 10% failure rate has been experienced from these inspections of older MS columns and smaller % of the concrete columns).</p> <p>In the order of 60,000 (54%) of columns are older than 40 years (manufactures guarantee is 25 yrs), with most concrete columns falling within this category and at a higher risk of failure. We still need to fully understand the mode of failure, but a possible cause is corrosion of the reinforcing steel from water ingress inside the column.</p> <p>All urgent defects originating from structural testing regime are dealt with as "ad-hoc schemes" under the capital renewals programme.</p> <p>Electrical periodic testing is undertaken on all units every 5 years.</p> | | |

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| Demands | <p>Only limited funding is available for street lighting renewals so this is prioritised on the basis of Risk with structural replacement programme taking precedence.</p> <p>Where funding is made available for new/improved street lighting these are evaluated and ranked on:</p> <ul style="list-style-type: none"> • Traffic or Pedestrian Flow • Crime statistics <p>Growth also comes from adoption of new developments and specific requests for new lighting (50 requests received in 2006, which cost £8,000 to investigate and £50,000 for improvements made).</p> <p>As indicated by the graph below, asset growth averaged 500 units p.a. in the 90's, increased to 1,000 units p.a. between 2000/05, but increased significantly by 5,000 units in 2007/08, when the A10 was detrunked. Growth rates are anticipated to return to around 500 units p.a. for the next decade.</p>  | <p>Performance</p> <p>Best Value Performance Indicators (BVPIs):</p> <p>BVPI 215a Average time taken for council to repair street (in days): Target = 10 days. 2006/7 result = 6.5 days</p> <p>BVPI 215b Average time for the electricity supply company to restore supply Target = 28 days 2006/7 result = 25.59 days</p> <p>Local KPIs:</p> <p>Report on % complete for:</p> <ul style="list-style-type: none"> • bulk clean and change • Visual and Structural Inspections <p>% of Street Lighting working: Target of 98% achieved</p> <p>Exposed Wiring: (% repaired within 24hrs) Target of 100% achieved</p> <p>Street Lighting column knock downs (2 hr response time as Cat 1): 100% (12 mths to July 07)</p> <p>Public Reported 'Outages' repaired with 5 days: 99.88% (12 mths to July 07)</p> <p>Street lighting 10 day scout and repair: 99.59%(12 mths to July 07)</p> |
| Cost | <p>For asset renewals, approx 1500 columns are replaced p.a. (plus on average a further 500 p.a. from adoptions), so approx. 2000 new columns are added each year. Structural capital works have increased in recent years due to the number of failures identified during inspections.</p> <p>Energy cost has increased from approx. £1.5m p.a. 3 yrs ago to now £2.8m p.a. This is an increase of approx. 90%. NB However additional budget was requested and secured for this increase.</p> | |
| Key Issues | <p>A large proportion of MS columns are over 40yrs which is well in excess of manufactures design life and at risk of fatigue, but Risk from this is managed by annual aural/ultrasound testing.</p> <p>The majority of concrete columns also fall within this age band and are at a higher risk of failure. We still need to fully understand the mode of failure, but a possible cause is corrosion of the reinforcing steel from water ingress inside the column.</p> <p>Street Lighting is high energy user (20% of HCC total energy bill). We need to continue assessing how our energy use can be reduced and thus HCC's carbon footprint minimised. We have a policy in place for using low wattage equipment on new Installations, e.g. modern luminaries are produced at reduced wattage, concentrate light on the carriageway and reduce light pollution.</p> <p>For subsidiary (pedestrian) lighting, energy use can be reduced by the use of "white light" which gives you comparative lighting levels to yellow light but at reduced wattage rating. Led lighting is also considered for signs and bollards to reduce energy use and provide long lamp life (minimise replacements).</p> <p>In addition the New European lighting design standards advocate lighting that can be adjusted (dimmed) to suit vehicle demand. Further reductions of CO2 could be achieved by installing remote monitoring in new systems (to reduce/remove the need for physical scouting patrols).</p> | |

Asset Group Summary: Structures

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| Inventory | <p>Total number, including all 3rd party structures = 2,500.</p> <p>In addition to the detailed summary in the 2002 HAMP, there are 85 structures which have come from the A10 de-trunking that are yet to be classified.</p> | <p>Inspections are carried out on just over 2,000 structures (on a 2 yearly general inspection cycle). We do not inspect 3rd party structures (just under 500 in number). In Hertfordshire, we inspect walls with a retained height over 1m and any other structures with a span >900mm. These account for the total number of inspected structures.</p> <p>Confidence is high on the inventory content. Inventory reporting facilities are currently very limited and therefore detailed breakdowns are currently very difficult to produce.</p> |   |
| Valuation | <p>GRC = £149m. (as of May 2005)</p> | <p>The continuing work being undertaken on the Asset Inventory will allow more accurate valuations in the future.</p> | |
| Age | <p>Average age is 38 years. This is calculated from inventory information stretching back as early as 1773.</p> | <p>Due to two recent waves of de-trunking there is now a significant additional aging stock which requires a significant amount of planned maintenance.</p> | |
| Condition | <p>Condition of this asset group is currently assessed through inspection and structural assessment.</p> <p>Currently, the Hertfordshire average BCI score is 76 (out of 100, where a good score is a high score). This is based on a condition factor for structural elements (1 – 10), combined with multiple weighting factors, eg for Risk and element type.</p> <p>A new CSS National Standard has been established, based upon the Hertfordshire system.</p> <p>We have started the new CSS BCI (Bridge Condition Index) surveys and will complete the first cycle during 2008. In the meantime, Hertfordshire's own indicator is being used.</p> <p>Completion of the full CSS BCI survey cycle will mean better information is available to facilitate more effective maintenance prioritisation.</p> | | |

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|------------|---|-------------|---|
| Demands | <p>Asset growth is accelerating due to New Developments. With Hertfordshire earmarked for new housing growth – this is expected to continue. Developers have been seeking the construction of 'landmark structures' which are more costly to build and maintain.</p> <p>The Olympics are increasing demand on some structures.</p> <p>Traffic growth is a particular issue, which can accelerate the deterioration of a structure.</p> <p>On the Primary Route Network; 140 bridges have been identified as requiring major works.</p> <p>On the rest of the Network 33 bridges require strengthening and 36 require major maintenance.</p> <p>Bridge parapets have been surveyed and those found to be sub-standard have been prioritised for improvement works. 606 bridges were found to have sub-standard parapets and 61 are high priority. On average 5 sites per year are being resolved, in priority order.</p> | Performance | <p>Operational requirements, outlined in legislation and Codes of Practice, prescribe inspections, signage and the provision of data for abnormal load routing. We are meeting the statutory requirements and complying with the Code of Practice.</p> <p>Availability and reliability are very important, but are not currently measured.</p> <p>National indicators on these topics are currently being finalised and are anticipated to become live in 2008.</p> <p>Preparation for these indicators would be prudent and support the wider Asset Management Principles.</p> |
| Key Issues | <p>More work needs to be done on the databases to clarify the categories of structure.</p> <p>We are currently working to complete the migration and validation of data in the databases.</p> <p>We do not have a very good inventory of retaining walls. Work is being done to collect this information.</p> <p>Completion of the new Indicator Survey together with improvements in data handling (mentioned above) will facilitate a systematically informed and prioritised works programme and allow a move toward workstream focused programmes, where appropriate.</p> <p>Refinements in asset valuation will allow economic factors to be better considered in the prioritisation process.</p> <p>Completion of a lifecycle plan will clearly set out how the Asset Management Principles are supported by the Highway Structures Asset Group and assist in preparing for new National Indicators.</p> | | |

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Asset Group Managers

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