Chapter 12

Transport Asset Management

Chapter Overview

This chapter outlines how the Council is improving the way it manages its transport assets. The over-arching aim of this work is to help the Council establish a well maintained transport network which fully supports the County Council's Local Transport Plan objectives.

The Council's approach to transport asset management is grounded in the following principles:

- Better coordination with and support for LTP Integrated Transport Programme and LTP objectives.
- Strategic planning and coordination of works
- Maximising efficiency

The Council is introducing a number of changes in the way it manages its transport assets to ensure these principles translate into action.

Asset Management and the LTP objectives

Timely, effective and efficient management of transport assets is an essential part of Oxfordshire County Council's network strategy which aims to make the best use of its existing infrastructure in order to help towards delivering the priority objectives set out in Chapter 3. Such proper maintenance of the highway network will ensure the most cost effective use is made of Oxfordshire's transport assets.

Road Safety

A highway network that is well maintained will help to deliver safer roads by eliminating poor network condition as a possible cause of accidents. The comprehensive data collected on the condition of the network will inform

decisions as to where and when maintenance is needed for road safety purposes. Ensuring that the County's street lighting stock is well maintained and improved where necessary will help towards reducing night time accidents and crime.

Street Environment

A well maintained highway network with quality materials chosen to be in sympathy with their surroundings will have a positive impact on the street environment. The layout of the street, materials used and nature and location of street lighting can all have a positive impact on the street environment, and there will be a dialogue between planners and engineers on the design of highway maintenance schemes in sensitive areas.

Congestion/Air Quality/Accessibility

With pro-active asset management, the County Council expects the number and duration of maintenance interventions to decrease over time. This will help to reduce traffic-related pollution and congestion at roadworks caused by queuing traffic.

Transport Asset Management Plan (TAMP)

The County Council has for some time been working to get a better understanding of the condition of its transport assets so that maintenance can be strategically planned and targeted to the parts of the network which need it most both in terms of their condition and the potential contribution that they can make towards delivering the LTP objectives.

The close linkages between highway maintenance and operation of the transport network require the ongoing development of a strategy for Oxfordshire to inform the ways in which the LTP will address its transport problems. To achieve this the right interventions need to be made at the right times and carried out in the most efficient and effective manner. The development of a comprehensive *Transport Asset Management Plan (TAMP)* will support these aims.

A TAMP is a document that provides a comprehensive statement of the extent and condition of transport assets, and a realistic, co-ordinated programme of future maintenance work, actions and improvements.

The TAMP will include asset valuations and financial models. These will be used to decide efficient and cost-effective treatments and interventions, in line with LTP objectives & policy. Funding/condition scenarios will be used to model the effects of budget changes over time.

The TAMP will be developed alongside organisational, system and procedural reforms. It will be used to modify and improve current practice and to inform Members, Officers and the Community.

Towards a Transport Asset Management Plan

A review of Highway Management Practice in Oxfordshire was carried out by OPUS International Consultants in 2004 with the specific intention of providing a staged, costed plan for the improvement of highways management practice and the implementation of an improved asset management approach.

The Council adopted the recommendations of the review and is currently implementing them. They include the need for a combination of process, resource and systems improvements and the development of a TAMP. Management consultants have been appointed to carry out a series of Business Process Reviews while comprehensive inventory and condition data of the county's highway network is also being improved and expanded.

Within the first two years of the LTP, the County Council will carry out business improvements which will result in a more effective and efficient use of available resources, complete our inventory and produce a TAMP to allow maintenance to be targeted where and when it is most needed in line with the LTP. The County Council will increase its asset management capability by providing a dedicated resource to ensure that the TAMP is fully implemented.

As part of the TAMP the County Council will develop asset valuation models to determine the value of the highways stock. Ultimately this will be used to demonstrate good stewardship of the asset and will dictate a maintenance strategy that not only looks at present costs but also looks at future maintenance.

The TAMP will be developed to include a comprehensive highway inventory. As the scope and quality of these data improves along with the capability of the data management systems and the quality of the policies and procedures then so will the County Council's ability to make fully informed decisions about the nature and timing of maintenance activities and servicing schedules.

TAMP Development Schedule

The timetable for the completion of the TAMP is given in the table below:

Task 1: Establish inventory

Action	*Benefit*	*Target date*
Carry out a comprehensive check on the integrity of virtual highway networks.	Ensure accurate fitting of data	Completed
Check/amend boundaries and parameters within the Asset Management system databases	Speed limits accurately represented. Use of latest traffic flow figures Traffic sensitivity, etc Data broken down by Division, Town, Parish	Ongoing
Update inventory 2005/06 Scheme construction data	Construction & performance history, audit trails, claims defence, efficient use of PMS for scheme identification, improved BVPI's	PMS updated within 1 month of site works
Review & update previous 4 years scheme construction details	Construction & performance history, audit trails, claims defence, efficient use of PMS for scheme identification, improved BVPI's	May 2006
Carry out sample checks and identify additional inventory collection requirements in time for next budget round.	Programme and resource implications qualified. Confidence in quality of data. Comprehensive up-to-date inventory.	Completed
Review framework for scheme prioritisation	Weightings related to condition, location, LTP objectives, network integrity, local factors, etc	Completed but will need regular review.
Integrate works order system	Facilitates building of asset histories (cost; servicing; location; performance) More timely and accurate customer feedback (client monitoring/QA and customer service requests).	June 2006
Task 2: Produce 6 year forward programme of structural maintenance schemes		
Action	*Benefit*	*Target date*

1st tranche: Desktop study using data in PMS. Site visits and overview. Consider co-ordination issues and benefits of incorporating other Oxfordshire CC or third party works.	Cross-referenced to existing HAMP (DVI) records, accident claims, repair history (eg incidence of Category 1 defects), customer service requests. (HAMP – Highway Assessment of Maintenance Priorities)	Completed
2nd tranche Detailed visual inspection, scoring & shortlisting. Consider co-ordination issues and benefits of incorporating other Oxfordshire CC or third party works. Site investigation/coring (targeted). Qualified cost estimates.	Highest priority schemes qualified. Main 2006/07 structural maintenance schemes finalised and included in LTP submission. Provisional scheme programme produced for following 5 years	Completed
3rd tranche: Financial modelling – Cost/timing/treatment scenarios	Value engineering: Cross-referenced to existing HAMP records, accident claims, repair history (eg incidence of Category 1 defects) Cost/benefit analysis and funding implications	May 2006
4th tranche: Forward programme of works	Prioritised scheme list to meet LTP objectives and Policy. Improved short, medium and longer term planning and budgeting.	June 2006

Task 3: Skidding resistance		
Action	*Benefit*	*Target date*
Produce new policy for Skidding Resistance in line with revised guidance and risk management protocols.	Compliance with latest guidance.	Completed
Review site categories on A & B roads		Completed
Analyse Scrim results, accident data and site characteristics to produce prioritised list of sites requiring further investigation or treatment.	Higher risk sites treated first. Works incorporated into main surface dressing, structural maintenance or traffic & safety programmes Future budget implications known.	Completed for 2006/07
Re-survey & Review annually	Consistency of measurements. Site categories refined. Accident records and Scrim data updated. Audit trail.	July to November annually
Task 4: Policy development		
Action	*Benefit*	*Target date*
Consider implications of new Code of Practice for Maintenance Management.	To review Oxfordshire County Council levels of service and practice with recommendations of new Code.	Reviewed December 2005. Continue to review annually.

Review & develop Policies that incorporate LTP, corporate and departmental objectives, and sound asset management/risk management practice.	Annual review of HM Policy Manual. Develop as 'sister' document to TAMP. Policies and service standards that reflect asset management practice, Best Value Code of Practice for Maintenance Management, Best Value Improvement Plan and appropriate levels of service. Circulated to local Councils, Members and Officers and published on OCC website.	Ongoing

Task 5: Production of TAMP Document

Draft: by May 2006
Final Approved **Document:** by July 2006
Test funding/condition scenarios: Ongoing process

The County Council will also be amending its assessment and ranking criteria to reflect changing priorities in line with the LTP policies and expressed public opinion.

Inventory of Existing Transport Assets

A large amount of information relating to the condition of Oxfordshire's highway network is already collected but the amount and detail of this inventory will be expanded as part of the development of the TAMP. This continually updated inventory is already being used to inform the LTP programme.

Roads

Oxfordshire County Council has data on over one million items on its highway inventory. Some of this information is being used to inform the replacement or servicing of assets. However, other asset information has not been updated for some time. This is being addressed as follows:

- Construction data - improved procedures for updating surfacing records in the Pavement Management System (PMS).
- Safety Fencing - new inspection and testing regimes coupled with inventory collection and cyclic servicing schedules.
- Road Markings and Traffic Signs - new inspection and testing regimes coupled with inventory collection.

- Tree Management – survey of entire highway tree stock. An ongoing programme, currently in its second year, is creating an inventory including data on species, condition, size, location, treatments and actions. This has generated a large prioritised works programme with repeat cycles of survey and tree husbandry. Two full-time arboriculturalists have recently been appointed to carry out this work.
- Base Revenue budget allocations increased significantly to facilitate all the above from 2005/06.

The County Council is also looking to:

- Use vehicle mounted GPS to record servicing frequencies and inventory (e.g. gully cleaning).
- Develop the works ordering system to track items of inventory and to build cost and performance histories.
- Introduce new protocols across the Transport Service for keeping inventory information up to date.
- Carry out periodic inventory sampling and review.

Comprehensive structural condition information is now held for most of Oxfordshire's classified network. Machine survey coverage has been systematically extended beyond that required by central government in order to obtain more reliable, objective and timely data for informed decisions. The following tables detail the County Council's development of an improved approach to annual condition surveys.

(a) Machine Surveys			
	Pre - 2004	2004/05	2005/06 and beyond
Deflectograph	Principal Roads – full coverage (3 year repeat cycles)	Principal Roads (full coverage - 3 to 5 year cycle to comply with previous definition of BV96)	As latest guidance, and to provide trending data for comparison with previous BV96 (deflectograph) indicator. In particular, it is intended to use deflectograph at targeted (scheme specific) sites and to monitor those sections of road where intervention times are approaching critical.
Scanner	Nil	Principal Roads ito comply with new BV96. A selection of secondary roads also surveyed.	2005/06: Scanner survey in **both** directions on 100% of B-roads, plus 15% coverage in one direction on C-roads. 2006/07 – as latest guidance
High Speed Road Monitor (HRM)	All A & B roads.	Completion of cycle on B roads, together with 25% of C road network	2005/06: 90 to-100% of *remaining* C-road network (ie those not previously surveyed by Scanner or HRM)
SCRIM	All A roads plus some B roads	All A roads and most B roads on 2 year repeat cycle	All A roads and priority B-roads annually. Other B roads biannually, together with, some higher risk sites on other classes of road. Site Categories have now been reviewed for all of the relevant network, and new policies and procedures established around a risk management approach and synchronised works programme.

(b) Other surveys and inspections			
	Pre 2004	*2004/05*	*2005/06 and beyond*
Coarse Visual Inspection (CVI)	All non-Principal roads	50% of B & C road network plus 25% of unclassified roads annually	As latest guidance – currently 25% of unclassified network annually.
Detailed Visual Inspection (DVI)	50% of existing Category 1a, 1 and 2 footway network.	50% of re-defined Category 1a, 1 and 2 footway network.	As latest guidance – currently 50% of re-defined Category 1a, 1 and 2 footway network.
NRMCS	Selected sites	Selected sites	Selected sites - subject to DfT requirements.
HAMP	Targeted sites on (non-principal) carriageway and all footways as identified by divisional Inspectors, and through service requests from public. HAMP is an assessment system that ranks schemes in priority order, according to established criteria.		Targeted sites on carriageway, footway and cycleway as identified by divisional Inspectors, service requests, interrogation of DVI data, and by reference to frequency of Category 1 defects and third party claims. A review of the relative weightings, site criteria, rates and maintenance treatments in HAMP is planned for 2005/06 to ensure they continue to be aligned with current priorities, values and practice, and that schemes are ranked accordingly.

Street Lighting

The condition of the existing street lighting stock is well documented and a rolling improvement and replacement programme is planned using environment friendly lighting. Wherever road or footway maintenance is planned the street lighting and electrical apparatus along the route is reviewed to avoid multiple interventions.

Night time accident problems are assessed by the County Council using records from Thames Valley Police and lighting improvement schemes are considered to ensure an improved night time environment.

The County Council will make the best use of funds to provide new or replace/improve existing lighting (to current codes of practice) for:

- Night-time casualty reduction schemes identified by road safety team.
- Better Ways to school schemes
- Sustrans/Cycle routes in urban areas.
- Casualty reduction/community safety schemes taking a wider objective to include, where appropriate, re-lighting whole lengths of road not just the features that are being installed. This will ensure a consistent system of sustainable lighting and an improved night-time environment.
- Major road maintenance schemes by treating the road as a corridor (including street lighting, illuminated signs and bollards and traffic signals) on a similar basis as Highway Agency.
- Replacement of life expired (35-40 years old) or unsafe or below standard and obsolete lighting with more sustainable and environmentally friendly lighting.

Bridges

Oxfordshire County Council maintains over 1300 bridges and other structures carrying the highway over rivers, streams and other infrastructure. Many of these structures are of historic significance and as such form important features in the highway environment. Some, such as Magdalen Bridge in Oxford, are important tourist features.

The Council regularly inspects all of its structures and carries out routine maintenance identified by inspection with the objective of maintaining all structures in a steady state condition. Inspections are carried out using the County Surveyors Society (CSS) Bridge Condition Indicators (BCI) allowing performance of the bridge stock to be measured and benchmarked with other authorities.

We have an ongoing programme of structural maintenance to prolong the life of structures through painting of steel bridges, waterproofing of concrete decks

and repairs to concrete and masonry. Together with reusing the original materials wherever possible we believe this is a sustainable approach to bridge management.

There are still a number of sub-standard structures to be strengthened as a result of the bridge strengthening programme on both County owned and Network Rail owned bridges. By the end of the first LTP period the majority of County structures requiring strengthening should be completed. However for the Network Rail Bridges the programme is dependent on other priorities on their network.

Structures Asset Management Plan

The Structures Asset Management Plan (STAMP) will be included within the Transport Asset Management Plan and its detailed development will be assisted by the Code of Practice for Bridge Management introduced in September 2005.

The County Council already has a well developed Bridge Management System (BMS) enabling a rolling program of bridge inspections to be scheduled and recorded in line with the County Surveyors' Society (CSS) Guidance on Bridge Condition Indicators. The Council is now on the second cycle of bridge inspections in which an overall condition factor in excess of 90% is being achieved.

Through the CSS the County Council has been involved in the Department for Transport / Highways Agency project to develop performance measurement for Bridges and carried out trials of the application of the proposed Key Performance Indicators in 2005/06.

As part of the STAMP we will be developing asset valuation models to determine the value of the structures stock. Ultimately this will be used to demonstrate good stewardship of the asset and will dictate a maintenance strategy that not only looks at present costs but also looks at future maintenance.

The BMS will be developed to enable easy production of the KPIs and asset valuation; however before this can happen the inventory data will require validating.

The County is a member of the CSS South East Area Bridge Improvement Group which compares bridge management performance across the South East, thus driving continuous improvement.

Bridge Strengthening

The county bridge strengthening programme is now complete for primary routes; leaving around 25 bridges on other classified and non classified routes to be strengthened. A further 16 bridges classed as sub standard are to have permanent structural weight restrictions applied to manage the risk of overloading or increased monitoring to manage the risk.

Upstream of Oxford the River Thames is crossed four times within the county, of these crossings two have structures that are Ancient Monuments dating from the 12th Century, one is a toll bridge and the fourth has a poor alignment and is on a minor road.

One of the 12th Century bridges at New Bridge on the A415 has been assessed as substandard and is currently being monitored. The recent 2004 Principal Inspection showed rapid deterioration and indicated that the bridge should be replaced during this LTP. As this is a route identified in the TNR for improvement it will not be possible to strengthen the existing narrow stone arch bridge to take 40 tonne vehicles because of its historic status. A new alignment will need to be found probably upstream of the existing bridge.

The other structures requiring strengthening are generally smaller and of local significance providing access to homes and businesses. It is proposed to strengthen four or five of these bridges a year thus completing the programme during this LTP period or at the latest early on in the next LTP. Within the programme are a number of river bridges along the Old Abingdon Road in Oxford; these will be strengthened at the same time as Cold Harbour Railway Bridge on the same road. The County Council is working closely with the Environment Agency's consultant to ensure that EA's proposals for controlling flooding in Oxford are compatible with our proposed scheme.

Road Over Rail Bridge Strengthening

The Bridgeguard 3 programme to assess road over rail bridges is now finalised

Currently there are ten bridges carrying the public highway over the railway that are assessed as substandard and require strengthening, another five substandard bridges are on minor routes and a permanent weight limit is acceptable both to Network Rail and the County.

Feasibility studies are underway or completed on Oxhey Road, Goring, Potash and Cold Harbour bridges.

Funding will be split in accordance with the guidelines for strengthening produced by the County Surveyors' Society. The draft programme for bridge strengthening over the next five years sets out the proposed year for work

based on County Council requirements; this needs to be ratified with Network Rail to meet their priorities. The bridge strengthening programme is set

Rail bridge strengthening programme

There are currently ten bridges carrying the public highway over the railway that are assessed as substandard and require strengthening, another five substandard bridges are on minor routes and a permanent weight limit is acceptable both to Network Rail and the County.

Feasibility studies are underway or completed on Oxhey Road, Goring, Potash and Cold Harbour bridges.

Funding will be split in accordance with the guidelines for strengthening produced by the County Surveyors' Society. The draft programme for bridge strengthening over the next five years sets out the proposed year for work based on County Council requirements; this needs to be ratified with Network Rail to meet their priorities.

Details are given in the table below:

Number	Bridge	Owner	Failure (BE4 or BD21)	OCC Proposed Strengthening Year
221	Goring Station	Network Rail	BE4	2006/7
936	Potash Railway	Network Rail	BE4	2007/8
184	Lower Heyford Station	Network Rail	BE4	2007/8
188	Oxhey Road	Network Rail	BE4	2006/7
1070	Wolvercote Road	Network Rail	BD21	2007/8
170	Cassington Road	Network Rail	BD21	2007/8
169	Yarnton Road	Network Rail	BD21	2007/8
907	Sands Road	Network Rail	BD21	To be agreed
222	Spring Farm	Network Rail	BD21	To be agreed
896	Cold Harbour	OCC	BD21	2006/7 – 2007/8

Maximising Efficiency

The Council is taking a number of steps to improve operational efficiency and effectiveness in delivering highway maintenance.

Major initiatives for improving efficiency

- **Oxfordshire Highways** - The County Council has established Oxfordshire Highways, a formal partnership organisation to further develop the existing contractual arrangements between the County Council and its term consultant and contractor for engineering design and for highway works. Oxfordshire Highways will be responsible for the delivery of a large part of the transport investment programme. Real and continuous service improvement in the delivery of both revenue and capital funded works is being realised by integrating the resources of the three organisations under a formal partnership agreement and removing internal barriers by creating the single identity of Oxfordshire Highways. The involvement of consultant and contractor in the practical issues of treatment selection and construction will help make the best use of available money and achievement of higher targets for condition.

- **Single Service Action Plan** - This is being pursued to develop a single service culture in the delivery of network maintenance which uses best practice from across the county to provide a common high standard of service in line with LTP objectives.

- **"Spend to Save"** - The County Council's term engineering consultant has developed a software package to assist them with highway maintenance PFIs, which has the ability to predict condition against performance indictors in relation to varying expenditure profiles. This will take into account both the injection of single capital sums and the annual budgeting of both revenue and capital. This level of understanding will be valuable in allocating resources to best effect.

- **Performance Monitoring** - Since the start of the 2004/05 financial year, delivery of network maintenance have been monitored monthly against profile on a time and cost basis so that management intervention at either a local or service wide level could be properly informed. This has been extended to monitor performance against LTP targets.

- **Exor Strategy** - This is the main software used by the County Council for highway works. A focused upgrade and improvement is being carried out, in conjunction with the Business Process Reviews, to improve the

way it is used to provide a customer interface and deliver maintenance schemes.

- **Organisational changes**, Business Process Reengineering and Partnership working will lead to improved operational efficiency and contribute to all targets being achieved.

- **Sharing of knowledge** and best practice at local, regional and national levels by representation on working groups and through benchmarking

- **More efficient procurement** e.g. corporate procurement of energy for Street Lighting and Property Services; South East Counties Consortium for specification and procurement of automated highway condition surveys; Partnership arrangements with contractors, consultants and suppliers; Cooperative procurement with Bucks. CC

Other specific actions for improving efficiency

The following specific actions have been identified to improve the efficiency and responsive of maintenance activities:

- The County Council is amending assessment and ranking criteria to reflect changing priorities in line with the LTP and public opinion;
- Schemes will be designed and programmed to accommodate shared priorities, initiatives and improvements;
- Working with Local Councils, Highways Agency and other Stakeholders to improve maintenance services (eg Quality Parishes, Litter Concordat, Town and City Centre enhancements, roundabout sponsorship, tree management);
- Working with Highways Agency on Traffic Control Centre project and undertaking review of main County road diversion routes;
- The Council has significantly increased budgets for safety works. To pay for large prioritised programmes of works to improve skidding resistance and surface texture at selected sites, to undertake the Tree Management Action Plan, and to renew safety barriers and road markings;
- Produce solutions that are cost effective;
- Produce designs that embrace good practice;
- Take steps to reduce the adverse effects of highway works on the environment;
- Work with planners and landscape architects to incorporate environmental enhancements within scheme designs;
- Allocate specific budgets to improving maintenance in main urban centres and villages;

- Works will be planned and co-ordinated to minimise traffic disruption and nuisance;
- Consult the public and keep the community informed;
- Develop the 'Roads On-Line' system for publication on the internet; and
- The Council is actively involved in the eLGIN project at a regional level to provide the public with access to Oxfordshire's streetworks information.