

## 4 TRANSPORT ASSET MANAGEMENT — DRIVERS, PROGRESS TO DATE, COSTS AND BENEFITS

### **(i) Drivers for implementing local transport asset management**

4.1 At the local level, development and implementation of transport asset management is being driven by the following factors:

- first and foremost by the need to deliver and demonstrate delivery of effective management and maintenance of the assets, providing a good quality and cost-effective service to users. Linked to this is the increased emphasis on longer-term planning, engagement with stakeholders and more collaborative working with neighbouring authorities and other relevant service providers;
- opportunities for greater and more flexible funding, including invest-to-save type projects, provided by the new prudential system of local authority capital finance. Importantly, the Prudential Code also requires authorities to have explicit regard not only to affordability of borrowing but also to option appraisal, asset management planning and strategic planning when making investment decisions; and
- other drivers to delivering economy, efficiency and effectiveness, notably the Best Value Duty and the Gershon efficiency programme.

4.2 More generally, asset management should be a key tool for financial management as well as for service delivery. This is recognised in CIPFA's own Financial Management Model, and in the attention given to asset management in the Use of Resources element of Comprehensive Performance Assessments. To maximise benefits, asset management and financial management need to be properly integrated.

4.3 In addition, there are a number of drivers for the introduction of transport asset management plans which operate at the local as well as the national levels, as already discussed in Section 2:

- need for robust and consistent information about the cost of holding assets, enhancing them where necessary, and maintaining them to appropriate standards in order to support funding allocation decisions;
- growth in funding, particularly capital, in recent years following a long period of under-investment. This had led to significant deterioration of transport networks, characterised by large maintenance backlogs and unmet demands for enhancements to increase capacity and improve quality of service to passengers and road users. There is a need to demonstrate that the new resources are being used to maximum effect; and
- pressure on revenue resources, as a result of constraints (from both Government and local taxpayers) on council tax levels and expectations, borne out by the 2007 Comprehensive Spending Review, that central government support will not continue to rise at the rate seen in recent years.

### **(ii) Progress to date**

4.4 Progress in implementing transport asset management varies considerably across the UK. In England, the Department for Transport commissioned a study, undertaken by Atkins Global in parallel with our own, to review the current state of progress in implementing Transport Asset Management Plans (TAMPs) and to identify best practice. The study report was published in January 2008 and is

available on the Department for Transport website. It found that there had been considerable slippage in the development of TAMPs compared with authorities' earlier expectations. In April 2006, 76% of authorities had said that they would have a TAMP in place by December 2006, but by April 2007 only 33% of authorities had done so. Nonetheless, 93% of authorities expected to have a TAMP by the end of 2007. Insufficient resources were cited as the main reason for slippage. Atkins found that, in most cases, the focus of work so far had been on highways, and that therefore most documents would be better described as HAMPs rather than plans covering the full range of relevant transport assets. However, authorities generally stated their intent to go on to develop full TAMPs.

- 4.5 It is important to recognise that achieving a completed TAMP or HAMP is not the same thing as having comprehensive asset management planning systems in place and using them effectively. In most authorities the development of systems and data is proceeding more slowly than the production of TAMP documents, so even if 93% of authorities did have TAMPs in place by the end of 2007, most will still need to do considerable further work to deliver comprehensive asset management. In particular in many cases, completed TAMPs will not initially be underpinned by good quality inventories or cost information. Addressing those issues will be essential if authorities are to make their TAMPs robust and realise the wider benefits of asset management.
- 4.6 We have seen some good examples of AMPs, one of which is given in Box 4.1, that recognise this issue, describe progress so far, and set out clear plans for further development.

**Box 4.1: Developing Newcastle's HAMP**

Newcastle City Council have included in their first HAMP, which is published on their website, an Asset Information Strategy. This breaks their asset base down into detailed categories and for each one gives details of the coverage of existing inventory data, with information on things such as how the data is recorded, the confidence level, date of last survey and update frequency, together with proposed arrangements for filling in gaps.

A similar approach is adopted for condition data which is addressed as part of a series of Life Cycle Plans covering each of the main asset types.

Information issues together with other asset management processes and practices are also picked up in the Improvement Plan attached to the AMP. Newcastle intend to carry out a formal review of their HAMP every three years, at which time a new Improvement Plan will also be prepared.

- 4.7 The picture in Scotland and Wales shows similar variations in the amount of progress made so far, though authorities in each country are working together in national groups to develop asset management and share data and experience. A contract was put in place in 2006 to support Welsh authorities collectively in developing asset management and there is a specific group dealing with valuation issues, working along similar lines to the English regional groups. There has also been a separate three year commission, just finishing, with participation also from the Welsh Assembly Government, to provide information on the condition of the infrastructure. This has collected the data needed for performance indicators as well as information on backlogs. Previously Welsh authorities had only collected and reported carriageway data on A & B roads, but this has now been extended to cover all roads and performance indicators are being amended to reflect the wider network. Wales will be letting a new Commission to take work forward. In Scotland a four year contract was awarded in January 2008 for consultants to

support the implementation of roads asset management, both to develop a national framework and to support regional groups and individual authorities in developing their own plans and systems. On valuation, Scottish authorities are hoping to work in collaboration with colleagues in Wales, and also with Northern Ireland where local roads are already subject to valuation by the national Roads Service.

- 4.8 Despite the mixed overall picture in terms of TAMPs, authorities generally appear to have excellent information on the lengths of their roads, but most do not have good information on road widths. This is a serious problem not only for asset valuation, but also for operational activities that are based on rates per square metre. For instance, there is some evidence to suggest that those authorities that do have good information about road widths pay lower rates for things such as condition surveys and term maintenance. In the absence of reliable information, tenderers will deal with uncertainty by pricing up. Information about lengths, widths, location and composition of footways is less good than for carriageways, but still better than for some of the remaining groups.
- 4.9 Authorities also generally appear to have reasonable data on bridges, and the problem of recent years with columns reaching the end of their life has meant that many have good data on street lighting. The picture on other asset types is very much patchier, although the asset categories concerned generally represent only a relatively small proportion of total value. However, given the scale of transport infrastructure across the UK, this still represents many billions of pounds worth of investment. It also includes items such as safety fencing, signs and lighting which make important contributions to safety.
- 4.10 One matter that has come out strongly in the Atkins review is what a TAMP should cover. The issue is important for authorities in that the TAMP document provides a key means of communicating with various stakeholders, both local and national. However, for the purposes of the CIPFA review, in looking at an AMP based approach our focus is on the scope and quality of the underlying asset management planning processes and data — whether an authority's asset management planning systems and the way that these are used enable it to deliver all the benefits described in paragraph 4.14 below. That said we would expect a fully developed Transport Asset Management Plan document to include information about all the issues identified in paragraph 4.14.

### **(iii) Costs of transport asset management**

- 4.11 Evidence from sectors such as water, which we look at in Section 6, shows that if organisations have good strategies for collecting and handling information, and enforce clear disciplines, e.g. that anyone responsible for implementing a change to the asset must update the data base immediately, then the cost of maintaining comprehensive data and systems is more than offset by the effort saved in not having to do one off exercises to gather and process information for particular purposes. This is even before one takes account of the savings from better asset stewardship and financial management. Many authorities have admitted to us that, in the past, in the absence of asset information strategies, a lot of information has been collected but either not retained once it had served its immediate purpose or else retained by the originators but not known about or accessible to other potential users. It is also important to put in place and enforce protocols to ensure that the inventory is updated whenever relevant works are carried out or one off surveys undertaken.
- 4.12 The other, more significant on-going cost is in collecting information about the condition of the assets. Much of that work is already being done to support maintenance and renewal programmes, meet safety obligations and produce

performance indicators, but there may be some additional costs if authorities are to realise fully the benefits of asset management, for example collecting more detailed and frequent information on condition to support deterioration modelling. However, again, experience from other organisations indicates that it is more cost effective to collect this information systematically in accordance with an overall strategy than to have to do urgent one off exercises when an issue or problem arises. There is also scope for authorities to work together, sharing information and modelling costs. Some work is also supported centrally through Government research programmes, and these are also increasingly taking account of the needs of transport asset management.

- 4.13 Overall, we conclude that there are some additional one off costs involved in the initial implementation of asset management, in particular in collecting a basic level of inventory data. However, once asset management systems are established, the cost of maintaining data and running systems is relatively modest in real terms, and small in comparison with the value of the savings and service improvements that they deliver. We discuss these costs further in Section 7 and Annex M.

#### **(iv) Benefits of transport asset management**

- 4.14 At the local level an asset management based approach has the potential to enable the asset holder to:

- Set defined levels of service and monitor performance against them (see Box 4.2);
- Understand and track over time the condition and performance of its assets and the costs of holding them;
- Assess the consequences of particular funding levels and strategies, in terms of the performance outcomes that different levels of funding could buy;
- Maximise the use of resources, both for maintenance and new investment, on a whole life cost basis; and measure the longer term impact that spending decisions now will have on the condition and performance of the asset base and longer term spending needs (see Boxes 4.3 and 4.4);
- Reduce financial, operational and legal risks, including better 'safety' decision making; appropriately targeted asset management can reduce insurance claims and premiums (See box 4.4 and Section 7);
- Use reliable and consistent information to support benchmarking, better cost control and reduced life cycle costs (see Box 4.5);
- Use the above to deliver unit cost savings and efficiency gains; given the general perception that spending on transport infrastructure, particularly highways, is insufficient to maintain it to an appropriate level of service, savings are more likely to be delivered in the form of lower unit costs, increased whole life based outputs or reduced backlogs rather than actual savings in transport budgets;
- Undertake better informed and more transparent resource allocations, including policy formulation as well as investment decisions, based on robust and consistent financial information. This does not necessarily always mean choosing the economically optimal solution, but it does enable decision makers to understand the cost of trade-offs between financial and other benefits and make them transparent to stakeholders (see Box 4.6); and

- Demonstrate stewardship of the assets and explain policy and resource allocation decisions to users and local taxpayers.

4.15 As referenced above, during the review we have identified a number of examples where these potential benefits are already being delivered in practice. The following case studies are taken from some of the authorities who were among the early starters in developing transport asset management and are therefore well enough advanced to be demonstrating efficiency gains and other examples of best practice.

#### **Box 4.2: Defining and monitoring levels of service**

Surrey County Council is working to develop levels of service for all highway assets and key related activities. They are developing a comprehensive set of operational standards, which reflect a steady, improving or deteriorating state. These have been grouped under a range of categories, originally identified in their asset plan, and include safety and condition of the asset, environmental impact, accessibility etc. The work also involves both the identification of risk and cost for each of these operational standards, as well as identifying the present operating level, with current funding. Future changes in these operational standards will then be jointly considered by Members and officers, and will be based on locally derived customer priorities or levels of service, and information on the revised operational standards. Once set up, progress in meeting existing or new operational standards will be regularly monitored.

#### **Box 4.3: Maximising use of resources**

Shropshire County Council has used whole life costing to justify a change in approach to carriageway maintenance under which earlier and more frequent but inexpensive treatments such as surface dressing are being applied to prevent the onset of more severe deterioration, which would require expensive reconstruction works. The whole life cost analysis suggests that the change will deliver potential savings at a scheme level of up to 24% over a 40 year cycle and eventually 16% per annum overall across the network as a whole.

As part of the revised strategy Shropshire are developing a system to prioritise major schemes on the basis of value added rather than worst first. This is expected to yield further efficiencies.

#### **Box 4.4: Optimising costs and supporting decision making**

Hertfordshire County Council was the first UK authority to develop a TAMP, producing its first plan in early 2002. It has put a lot of effort into both data collection and modelling work. The Project Steering Group had the benefit of a presentation on some of their work, from which the two following case studies are taken.

Hertfordshire has adopted a Pavement Performance Model which can be used to produce two main types of output: projections of deterioration/future condition of individual parts of the network; and a multi-year forward works programme, optimised on a whole life cost basis. Inputs to the model are the inventory of assets and quantities, unit rates for various replacement/rehabilitation treatments, traffic counts and HGV%, measure of road pavement stiffness, information about road pavement type and surface, age and depth, and condition data. The system has enabled Hertfordshire to move away from the traditional 'worst first' approach to maintenance to a programme which is prioritised on the basis of maximising value on a whole life cost basis. Hertfordshire estimate that this will increase the benefits gained in respect of long-term condition from a given budget by over 50% — effectively a 33% efficiency saving.

While the previous example demonstrates what can be done with complex modelling and a lot of data, this second Hertfordshire example was based on a much simpler, broader brush use of whole life costing. Like many authorities, Hertfordshire had a problem with deteriorating footways. Pavement slabs were known to be more costly and to cause more accidents, but tended to be the preferred option for residents. So an exercise was undertaken to look at the real — whole life based — costs of different footway treatments.

Information was put together for each treatment option on:

- planned life cycle costs — initial construction plus subsequent reconstruction/resurfacing/surface treatment;
- ongoing reactive costs — urgent safety works and minor maintenance; and
- other regular costs — insurance costs.

This was used to calculate the annual whole life cost per square metre of each treatment. Paving slabs were the most expensive option at £2.82 per square metre, while the best value option was Bitmac, costing less than half that of slabs at £1.39 per square metre. As a result, members have adopted a new strategy to move away from paving slabs except in high amenity areas such as town centre shopping streets and a planned programme of replacing the worst slab footways with Bitmac is under way. Hertfordshire have also used the evidence from the whole life cost exercise to explain and justify the new policy to local residents.

#### **Box 4.5: Reducing life cycle costs**

Derbyshire County Council is also developing life cycle planning as part of its work to develop transport asset management planning. Their approach has been to start small and grow the system over time, concentrating effort initially on the major assets – carriageways, footways, street lighting and structures, which together represent over 95% of Derbyshire's total asset value. They have started with a simplified analysis at first, developing more detailed systems and filling in gaps in the inventory over time.

This gradual approach includes developing a model to measure changes in asset condition over time. The model can be used to assess different service options – 'what ifs'. It estimates funding needs, condition and effect on asset value, and can be used to establish a link between asset consumption and asset renewal values. The model is being calibrated by comparing its outputs against the perception of local engineers as to what is actually happening to the condition of different parts of the network.

Even with a simplified approach, a model of this kind is capable of delivering a lot of complex information. An important part of the project therefore is developing the system to produce outputs in a form that can be readily understood by and serve the needs of members, senior management and other stakeholders.

#### **Box 4.6 Informing resource allocations**

Kent County Council developed an interim valuation in 2005, using the CSS/TAG guidance. They were one of the first authorities to get to grips with calculating depreciation as well as Gross Replacement Cost. They believe that the interim valuation is probably conservative so the calculation will be refined as more condition and inventory data become available and as the valuation process (methodology, guidance etc) is refined in the light of experience. Nonetheless Kent were able to use the interim valuation to inform decisions on how the highway 'repairs' budget should be allocated between different asset groups. (Repairs here mean works designed to maintain the structural integrity of the asset, and does not include revenue-funded routine or cyclical works such as grass cutting, gully emptying or winter maintenance.) The budget had previously been allocated on a largely historic basis, and Kent were concerned that this did not properly reflect spending need across the asset base as a whole.

Relative spending need for each asset type was calculated based on the annual spending requirement to maintain it at steady state, plus the cost of tackling the assessed backlog over 10 years. This gave a combined requirement for each asset group (carriageways, footways, drainage, safety fences etc) which together added up to the total budget requirement. Since this was greater than the funds available, the budget was allocated between asset types pro rata to the percentage each contributed to the total funding requirement. This produced some significant shifts in funding, for example it demonstrated and addressed a significant mismatch between need and spending on street lighting. Having a more rational basis to justify the way in which scarce resources are allocated could also be important in the event of legal action following a road accident.

## Conclusions

- 4.16 For highway and other transport authorities, the infrastructure is by far the biggest asset that they hold. Comprehensive transport asset management is a new and untapped resource for most authorities. The few local authorities that have made good progress are already seeing significant benefits, and expect to achieve more as their systems and expertise develop further. Although it is impossible as yet to quantify precisely the extent of the possible value for money improvements from implementing an AMP based approach, the significant benefits from the approach are confirmed by the experience in other UK sectors.
- 4.17 Early findings from local government, combined with the greater experience in the water and rail industries, indicate that improved long term value for money from proper Asset Management Planning could be equivalent at least to 5% p.a (worth some £250m on the 2005/06 capital and revenue budget spent on roads maintenance). Improvements would come from more soundly based investment appraisals and consequent reductions in the long term whole life costs of the assets in question. It is important to avoid assuming these are 'cashable savings' that could ultimately be redirected to other service priorities (such as social care) or result in some reductions in council tax. That might be the case to some degree, but in reality the improvements in value for money are more likely be felt in equivalent reductions in existing sizeable maintenance backlogs.
- 4.18 One might therefore expect asset management to be being pursued as a high priority across the UK public sector. However, the reality is rather different. We have found that transport asset management is still not generally well understood or supported within the UK public sector other than among those transport practitioners directly involved in its implementation. As a result its potential is a long way from being realised.
- 4.19 Consistent, high quality financial information is an essential component of good asset management. Delivering the types of benefits identified in 4.14 will require further work including:
- Development and maintenance of good quality inventories and cost information to support these; and
  - Clarification and update of the CSS/TAG guidance on specific issues in order to encourage consistency.

Although there will be some one-off costs initially, particularly in collecting inventory data, good information strategies and working practices should mean that the total costs of collecting and using information in the longer term are no greater than at present. A further case study about the costs and some of the early savings from asset management has been included in Section 7.

- 4.20 Section 5 looks at how well different accounting approaches could support the financial information needs of transport infrastructure asset management and meet the wider information objectives of the review. It then goes on to look more specifically at the case for a change in the SORP and what would be involved in implementing this.