

6. EXPERIENCE FROM OTHER COUNTRIES AND SECTORS

6.1 Section 6 looks at experience from other countries and in other sectors, both to compare their experience with our findings up to this point and to draw some further lessons for implementing asset management for local transport infrastructure. It also looks at what lessons the review might have for other, non-infrastructure, local authority assets.

(i) Developments in other countries

6.2 Developments in transport infrastructure asset management overseas are similarly being driven by funding pressures, drives for greater efficiency — particularly through whole life cost based decision making, and a desire to improve service delivery. In some cases the development of asset management is linked to or triggered by changes in accounting or other statutory requirements.

6.3 Table 6.1 summarises the variety of approaches that are used for accounting for infrastructure internationally as well as in the UK, and there are further details in Annex I. Where changes have been made or are in prospect these tend to be away from historic cost approaches to current accounting, and towards renewals/component type approaches to calculating depreciation. The main drivers for change appear to be a concern, arising from the development of asset management, that historic cost does not provide useful information about the performance of the asset, does not support moves to longer term planning and whole life costing, and does not provide useful information to support policy and funding decisions. New Zealand and Australia have had the greatest experience in implementing AMPs as discussed in Box 6.1.

Box 6.1 Asset Management Plan Implementation Experience in New Zealand and Australia

New Zealand is a world leader in public sector infrastructure asset management as it is in the property sector. Legislation enacted in 1996 required all local authorities to prepare long term financial strategies, updated every 3 years. These must take account of asset creation and depreciation and have specific regard to the costs and benefits of different options. Local authorities have to publish asset management plans for each of their asset types and, among other things, their plans must state explicit service levels. A lot of emphasis is placed on minimising the whole life costs of operating and maintaining the assets. Plans were initially subject to scrutiny by Audit New Zealand.

The national government set a programme of requirements to be followed in developing asset management plans and also funded workshops to raise awareness of the importance and benefits of good asset management. Implementation has also been supported by substantial research programmes. A National Asset Management Group was established, covering local authorities and utilities services, to develop infrastructure asset management. Its steering group includes a representative of Audit New Zealand. The Group is responsible among other things for the provision and updating of national guidance documents on asset management.

Australia has also practiced asset management for a long time and a lot of work has been done to develop systems and approaches. All state agencies and most local authorities now have a range of systems in place. However, as in the UK, progress varies considerably between authorities. In most cases asset management is still not fully integrated into business processes, and a study carried out for the Australian Local Government Association in 2004 concluded among other things that progress was being handicapped by a lack of adequate guidance and a need for greater standardisation in approaches and systems. It also concluded that asset holders often took too narrow a view of what asset management could and should be delivering for their authorities and that more needed to be done to raise awareness of its potential.

- 6.4 A particularly interesting feature of asset management in New Zealand is that it has been developed in a much more integrated way across the whole asset base than is so far the case in the UK and many other countries. The key asset management guidance document produced by the National Asset Management Group, itself a cross-sectoral group, is described as an 'infrastructure management manual' but it actually covers land and property, parks and recreation, and cultural and heritage assets as well as roads, water etc. The separate guidance document, about to be updated, on valuation and the calculation of depreciated replacement cost also covers the same wide range of assets within a common framework, although there are naturally differences of detail, e.g. to reflect the different lives and deterioration rates of particular assets. New Zealand has also produced some interesting guidance, again covering both property and non-property assets, on setting service performance levels, including customer consultation.

Table 6.1: Summary of international and UK infrastructure accounting approaches

	Asset Management Plan-based approach:	UK GAAP-based FReM Renewals approach	Conventional Depreciation approach
	<ul style="list-style-type: none"> • Depreciation = AMP Estimate • Actual spend capitalised 	<ul style="list-style-type: none"> • No Depreciation • Actual spend expensed • Assertion of adequate condition 	<ul style="list-style-type: none"> • Significant Components depreciated over economic lives • Actual spend capitalised or expensed as appropriate
Historic Cost	Water Company UK GAAP statutory accounts using historic cost	UK Water Regulatory Accounts — Historic Cost (some modifications) US State 'Modified Approach' French Local Government	UK Local Authority SORP UK Water Company IFRS statutory accounts using Cost Model Australia State Govt (e.g. VicTrack) US State 'Standard Approach' Canadian Federal Government
Current Cost / Fair Value	CSS/TAG Approach Water Company UK GAAP statutory accounts using Alternative Accounting Rules	Highways Agency — <i>some road elements</i> Northern Ireland Roads Service — <i>Roads</i> Transport Scotland UK Water Regulatory Accounts — Current Cost (some modifications) French National Government	UK Water Company IFRS statutory accounts using Revaluation Model Highways Agency — <i>structures</i> Northern Ireland Roads Service — <i>Other highway infrastructure assets</i> Australia State Govt (e.g. VicRoads) Network Rail (value in use, one asset, weighted life) New Zealand Federal Government

(ii) UK water and rail industries.

- 6.5 Companies operating in regulated industries in the UK such as water and rail are required to prepare two sets of accounts: commercial accounts compiled in accordance with either UK GAAP or IFRS as required by the Companies Act, and regulatory accounts.
- 6.6 Regulatory accounts are prepared to provide financial information about regulated businesses for use by the regulator, the industry, investors, consumers and other stakeholders. They provide more focussed information than the statutory accounts because they relate specifically to the regulated activities whereas statutory accounts relate to the activities, including unregulated ones, of the company as a whole and are more focussed on the requirements of investors.
- 6.7 The main focus of the regulatory accounts is to provide information to assist in dealing with price regulation, to monitor performance against the assumptions underlying a current price control, inform future price control reviews and address competition issues, both anti-competitive behaviour and comparative performance benchmarking. The regulatory regimes for water and other utilities create very strong links between financial management, physical asset management and investment, and service delivery, with the same financial (regulatory accounts based) information serving all purposes.
- 6.8 Further information about accounting arrangements for both water and rail is given in Annex J. A key point to note is that the water industry, where asset management is well developed, uses an AMP based approach to calculate 'depreciation'.
- 6.9 On the face of it the regulation of a private sector utility and the provision of public services by local government and other public sector bodies might seem to be very different activities. In practice if one substitutes cost control for price control and self-regulation for independent regulation, the objectives and drivers of both are very much the same. Both water and rail face very similar issues to the holders of other transport infrastructure — ageing infrastructure, legacies of under-investment, efficiency drivers and the need to get more out of the assets to meet rising demand and improve service delivery for customers. There is therefore the potential to learn lessons from the way in which they manage their assets.
- 6.10 The water and rail industries provide interesting contrasts. In the water industry, asset management has been practiced since the late 1980s, having originated in the early stages of privatisation, and it is therefore now very well established. Although inevitably performance varies between companies, the best have very highly developed well-integrated systems, processes and data. As part of the regulatory process, water authorities are required to submit their asset management plans to Ofwat, who in addition to using them to inform price reviews, actually score the individual plans. On the basis of this scoring, we asked Ofwat to suggest two companies who exemplified best practice. As a result we visited Three Valleys Water, one of the smaller water only companies though part of a very large international group, and a very large water and sewage company, Yorkshire Water. Some examples of their work are described in Box 6.2 below.

Box 6.2 Three Valleys Water and Yorkshire Water

Good asset management includes putting in place comprehensive and consistent approaches to whole life cost based risk assessment.

Before 2003 **Three Valleys'** approach to capital maintenance was based on condition assessment and reaction to failure. Since 2003 they have developed a risk based approach based on condition assessment, reaction to failure, planned Failure Mode and Effects Analysis (a model for predicting failure potential in systems, processes or components) and criticality assessments and prioritisation of investment based on business risk. The advantages of the new approach include: a better understanding of asset deterioration and failure rates and the use of that information to support risk based decision making; a more comprehensive assessment of 'criticality'; whole life cost based approach is enhanced; and a highly visible audit trail of total programme build up. The approach can be applied at different operational levels – whole company; area level (3); individual sites (400) or components (20,000) and supports scenario planning.

Yorkshire Water have developed their asset management approach over several years in order to embed it within their investment decision making process. Information from their asset management system is linked with a failure prediction system, a risk management system and a customer survey system to generate a vast but highly user-friendly database about the entity's assets, the risks and costs to the business of their failure and the cost/benefit appetite of their customers to different levels of service.

The system can be interrogated to generate a prioritised list of investment projects, using a whole life based cost/benefit financial analysis but also governed by other constraints set by management e.g. total capital funding available. The resulting list is ranked in order of the marginal benefit of each scheme, and in effect provides the capital investment programme for the company. The schemes at the top are essentially the highest priority ones that must be done in order to continue to meet service levels and comply with regulatory requirements. This allows human intervention to focus on those projects that fall close to the pass/fail line.

The system has removed the need for ad hoc exercises and is capable of doing even highly complex 'what if' scenario planning within 24 hours.

The database is also continually updated with data captured from live projects e.g. the actual cost of supplies purchased. The whole process essentially works through the discipline and processes to capture information from all sources and to feed it into the systems to maintain an up to date database of the company's asset information, business risks and costs. This approach has helped the company to target its capital investment far more effectively than before and to reduce the estimated amount of overall capital investment required when compared with previous, more limited, modelling techniques. The information generated – particularly the failure prediction model – has meant that the company has been able to reduce to approximately 2% the proportion of its annual capital budget that it holds back for reactive work.

- 6.11 The rail industry has started to implement asset management much more recently. We were informed by Network Rail that comprehensive asset management was not something either British Railways or, post-privatisation, Railtrack, really gave much attention to. Since the creation of Network Rail as a not-for-dividend company, both Network Rail and the Office of Rail Regulation (ORR) have put significant effort into developing asset management and using it to improve safety, availability, reliability and cost effectiveness of the network. Network Rail are still working to implement asset management fully and have some way to go before they are comparable with the best companies in the water industry, but essentially what they are working to put in place is very similar.
- 6.12 The effort being put into asset management is already delivering results. Network Rail has delivered a 24% efficiency saving over the three years to 2007, equivalent to a £1.3 billion cash saving. Their experience in building up asset management quickly and its key role in transforming the performance of the network offers some particularly interesting lessons for our review as discussed in Boxes 6.3 to 6.5.

Box 6.3 Network Rail Infrastructure Cost Model

Network Rail has developed a new Infrastructure Cost Model (ICM) to estimate the costs of operating, maintaining and renewing the network for different specifications of usage and capability. It produces forecasts of activities, expenditure and network output measures over the long-term (up to 40 years), and can disaggregate these forecasts to segments of the network.

Key inputs to the model include detailed asset information (location, type, age etc mapped to a common definition of the network), current and forecast traffic levels, unit costs of key activities and assumptions about trends in input prices and efficiency. The model predicts the level of maintenance and renewal activity associated with applying the company's asset policies, using inputs including estimated service lives, activity frequencies and expected failure rates.

ICM provides the activity and expenditure forecasts in the strategic business plan. The model has delivered a step change in NR's business planning processes by:

- Integrating existing forecasting models, ensuring consistent assumptions and increasing speed and flexibility of scenario testing;
- Increasing transparency of costs and underlying assumptions; and flexibility to change critical assumptions such as unit rates and asset lives;
- Much more detailed geographic disaggregation of the network, allowing NR's 26 strategic routes to be further split into some 300 segments.

As well as informing NR's business planning processes, ICM is used to assist Government and ORR funders to make decisions on levels of funding and rail outputs by demonstrating the cost and funding implications of different service outputs.

Source: Network Rail Strategic Business Plan

Box 6.4: Development of unit cost data

Network Rail is also establishing a uniform Cost Analysis Framework (CAF) to support renewals. A key reason for the previous lack of robust unit cost data was the difficulty in establishing consistent definitions and associated reporting processes, so the key first step was to define the units of volume.

In each asset area the CAF aims to identify the major repeatable work activities for which meaningful volumes can be defined and which will account for the majority of asset expenditure. Unit cost can then be generated and reported for all these repeatable work types. The overall coverage of unit cost reporting is being extended to cover around 80% of asset renewal expenditure. Unit cost reporting will not be extended to cover activities which are low volume or not repeated regularly, or are low value minor works.

Box 6.5: Improving service availability

Improving service availability is a key driver for both the water and rail industries.

For Network Rail all whole life evaluations for maintenance and renewal work will include consideration of both the cost of the work and the track possessions required to enable its implementation. This will help to make sure that work is carried out efficiently while encouraging innovation in reducing possession time.

Signalling renewals can provide opportunities to improve the capacity and capability of a route for a relatively low incremental cost. Route value improvement options are therefore now considered as part of asset renewal schemes.

Conclusions – water and rail

- 6.13 The water and rail sectors have a number of useful lessons for local transport asset management. Although implementation is at different stages, the asset management frameworks, the principles to which they operate and the kind of detailed systems and information needed to support them are conceptually much the same across all three sectors. Water in particular is much longer established and, while performance varies between companies, the quality of their asset management is a key factor in marking the best out from the rest. This provides further evidence of the benefits that asset management can deliver – benefits which are also starting to be seen with Network Rail. The experience with regulatory accounts also provides further support for the merits of an asset management plan based approach underpinned by systematic, reported and audited financial information.
- 6.14 The rail and water industries also offer a number of more detailed lessons for local transport infrastructure.
- (i) effective infrastructure asset management depends on it being given sufficient priority, including attention at the most senior levels in the organisation. For both water and rail, asset management is a core function, a key driver of business planning, management and service delivery, not simply an add on tool; it therefore receives close attention from the most senior people in the businesses and their regulatory bodies.

- (ii) asset management is most effective when it is integrated properly with other key business processes, particularly finance and customer service; one set of information, including financial information, should serve all business needs. Although both the water companies and National Rail also produce commercial accounts, it is the regulatory accounts and the information that underpins them that support asset management and other business processes.
- (iii) investing more to develop more and better quality information and systems has a cost, but delivers very big returns. In particular the best practice water companies have been implementing comprehensive asset management for a long time and highly sophisticated, well integrated systems supported by a lot of detailed data. Nonetheless they are clear that they will continue to invest in further and better systems and data because these are still delivering high returns in terms of cost savings and better service performance for customers.
- (iv) Network Rail's rapid progress and early successes demonstrate that it is possible to achieve significant benefits quickly from asset management if implementation is well structured and has strong leadership and support from the top of the organisation.

(iii) Major Repairs Allowance

- 6.15 The final area where we were asked to look at wider experience was local authority housing, particularly the Major Repairs Allowance regime (MRA). The MRA regime provides a methodology, set within an asset management planning framework, for calculating the capital cost of keeping stock at steady state and is based on the annual cost of replacing individual building components as they reach the end of their useful life. It has been accepted by CIPFA/LASAAC as a reasonable estimate/measure of depreciation. This is then fed into the Housing Revenue Account subsidy calculation. Support to deal with backlogs of work needed to bring all homes up to standard is given separately.
- 6.16 The MRA is relevant to this review because, although the nature of housing assets is very different, the approach adopted and the principles that underpin the system has a lot in common with the principles and framework that underpin the CSS/TAG approach to the calculation of annual spending need (i.e. the measure of depreciation) for highway infrastructure. Both systems are designed to operate within the context of Resource Accounting and Budgeting, both promote whole life cost principles, and both operate within the context of comprehensive asset management planning.

Background

- 6.17 From April 2001, following a consultation exercise the Government introduced a new financial framework for local authority housing based on a form of resource accounting. Under this system the Housing Revenue Account (HRA), which records revenue expenditure and income relating to an authority's own stock, was changed to reflect on a consistent basis the resource used over the lifetime of the assets rather than simply the annual cash spend. Whereas the previous system showed historic debt charges, the HRA now reflects both the cost of capital employed and the cost of wear and tear or deterioration of those assets.
- 6.18 MRA subsidy can be used for any HRA capital expenditure but the guidance makes clear that authorities are expected to use it in line with the priorities they have set in their HRA business plans and in a way consistent with the purposes for

which the MRA is provided. There is flexibility to spend resources outside the financial year in which they are allocated. This allows works to be planned with maximum timeliness and efficiency, consistent with the best value/whole life cost approach that underpins the methodology and the wider housing management reforms.

MRA calculation

- 6.19 MRA is calculated by allocating each property in an authority's stock to one of 13 building archetypes. These are derived from the type of dwelling, form of construction, age and size. Each is divided into a series of building elements or components, each of which is assigned a standard life and a replacement cost. The data is then used to calculate an equated annual allowance for each archetype sufficient over a 30 year period to meet the cost of all the elements that will fall due for replacement in that period. (The approach is described in greater detail in Annex K.)
- 6.20 MRA is accepted as a reasonable estimate of depreciation, although authorities are free to calculate their own charge for depreciation in the HRA and should do so if for some reason they feel that their own authority's position is out of line with the MRA calculation. However, experience of operating the system shows that generally the MRA figure is considered appropriate.
- 6.21 The MRA does appear to have provided a robust basis for determining what needs to be spent on a whole life cost basis to maintain the stock in a steady state and for allocating Government support. It fits in a fully integrated way into the wider Housing Business Planning process. The experience of using it seems to have generally been very positive. According to CLG, the calculations that the methodology produces are accepted by both central and local government as robust.

Conclusions — MRA

- 6.22 The approach to calculating depreciation for transport infrastructure in the CSS/TAG guidance and the MRA approach are very similar, as is the asset management context in which each operates. The fact that the MRA has now been in place for several years and commands confidence among practitioners is further evidence that the CSS/TAG approach should be capable of delivering comparable results.
- 6.23 One of the detailed issues that has been raised as a concern about the implementation of the CSS/TAG approach is that the depreciation calculation can be subject to annual fluctuations due to short term price movements. While this does not create a budgeting problem for local authorities so long as depreciation continues to be reversed out instead of hitting the bottom line in authorities' accounts, it does make it harder to distinguish the long term impact of spending from short term effects. We were therefore particularly interested to see that the MRA system smoothes expenditure profiles to reflect the long term, life cycle nature of the approach. We recommend that it would be worth looking at whether a similar approach might be appropriate for transport infrastructure.

(iv) Possible lessons for other assets

- 6.24 Having information on a robust and consistent basis on what needs to be spent to maintain operational assets in a steady state is a highly desirable objective for all the stakeholders that we have talked to. The lack of such information is a major concern for both central and local government when it comes to seeking evidence to inform decisions on local government capital programme allocations during spending reviews. Similar issues arise in determining spending needs and priorities at the local level. Even achieving good quality, comparable data with a particular type of asset, such as transport infrastructure, would be a big step forward compared to the present situation. But there remains a need for consistency of financial information between asset types.
- 6.25 If a comparable approach can work successfully for such different types of assets as highways and housing, it should in principle be capable of working for other local authority operational assets. And, since the approach is AMP based, its extension to other asset types would help to further embed asset management, strengthen the links between asset management and financial management, and promote a more integrated, corporate approach across both property and infrastructure assets. It would also provide a methodology to support the Government's objective that in the longer term depreciation should hit the bottom line in local authority accounts.
- 6.26 It is beyond the remit of the present study to examine this in detail. We have however raised the idea informally with experts in both valuation and public sector asset management within RICS, who support the proposition that it merits further investigation. We also note the experience of New Zealand, which operates common asset management and valuation frameworks across its public sector fixed assets.
- 6.27 We therefore sought views from consultees on whether this idea should be investigated further. The results of the consultation exercise are considered in Section 7, which also comments on other relevant developments since the consultation draft of the draft of the report was published.