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NATIONAL FOUNDATION FOR LOCAL GOVERNMENT ENGINEERING 1998 FELLOWSHIP AWARD



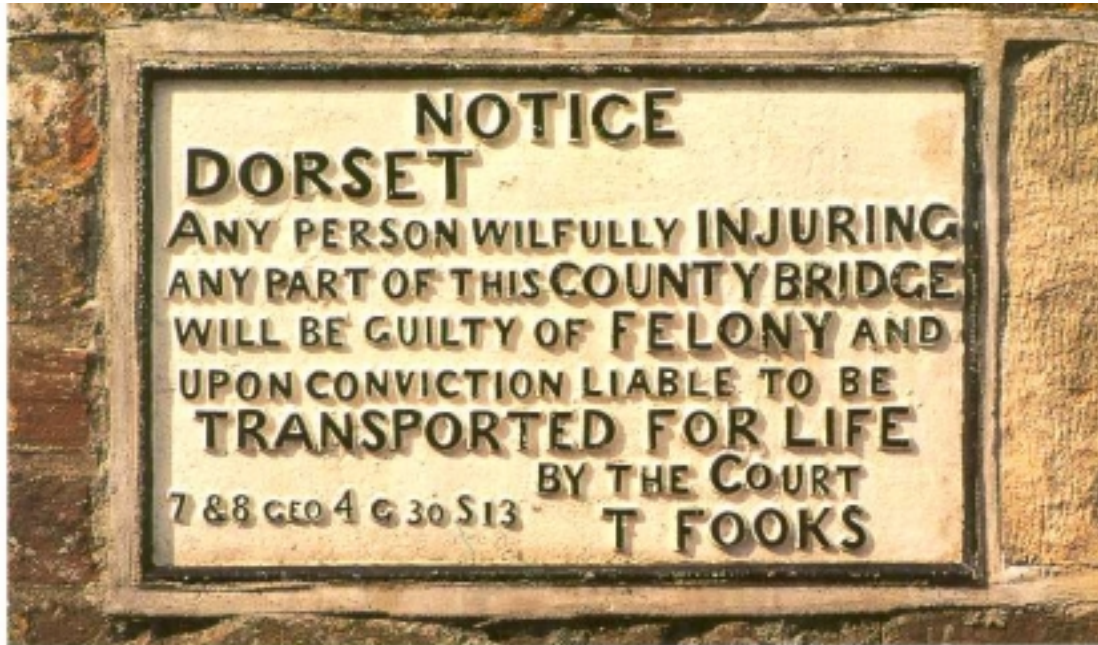
REPORT

Asset Management in a Competitive Environment



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Asset Management, Dorset Style

REPORT TO TRUSTEES

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EXECUTIVE SUMMARY

This report documents findings in research into 'Asset Management in a Competitive Environment' undertaken in 1998. The Author was awarded the National Foundation for Local Government Engineering Fellowship Award to attend the 1998 American Public Works Association Congress in Las Vegas and visit councils in the United States. Devonport City Council provided additional funding to extend the research to councils in England and Scotland.

The research included visits to the following councils in US and UK.

- City of Costa Mesa, California, USA
- City of Scottsdale, Arizona, USA
- City of Lenexa, Kansas, USA
- City of Indianapolis, Indiana, USA
- City of Charlotte, North Carolina, USA
- Dorset County Council, Dorchester, England
- Hampshire County Council, Winchester, England
- Perth & Kinross Council, Perth, Scotland
- Bedfordshire County Council, Bedford, England
- Hertfordshire County Council, Hertford, England
- London Borough of Hillingdon, Uxbridge, England

The author attempted to identify councils where infrastructure assets were managed under a long-term contract with a consultant managing the contract. The research topic was to look at how the client manages infrastructure networks under these conditions, including provision of asset performance data and how this data is provided.

Most councils visited were undertaking capital works by contract, with many using an external project manager. Maintenance works were either carried out by day labour organisations in US and in house and external contractors in UK with work directed by the client on a schedule of rates.

Australian local governments are generally ahead of the councils visited, in asset management practices. This is mainly due to the introduction of Australian Accounting Standard AAS27 and the involvement of local government engineers in the implementation process. The initiative of the IMEA to produce the IMEA National Asset Management Manual and conduct training programs for engineers was a critical success factor in this area.

Some examples were found of a formal asset management system, as we know it in Australia. Local governments in US and UK do not have an accounting standard similar to AAS27 requiring condition assessment and valuation of infrastructure assets.

Despite high quality technical reports on road conditions, condition projections and funding needs, funding for roads and road condition has declined, in most areas visited. All councils were relying on technical systems for asset management. Most organisations had little or no success in maintaining or increasing funding for assets. Some were in a disastrous position.

The conclusion was that technical reports have little impact on decision makers. More effective methods of communication on asset condition, funding levels and projected changes in condition/service levels are needed, including financial reports prepared under AAS27 to demonstrate asset conditions and projected changes to the community and decision makers. The accounting standard now gives us the opportunity to apply a business management approach to managing Australian infrastructure assets that should not be missed.

Two cities in the US, Indianapolis and Charlotte, were implementing competition policies. The Indianapolis experience is an interesting example. The Indianapolis Chamber of Commerce prepared a report in 1991 titled. 'Getting Indianapolis Fit for Tomorrow', calling for a massive increase in spending on infrastructure.

The present Mayor was elected on a platform of overcoming two major financial liabilities facing the City, due in ten years time, by privatising services. He presented a program, 'Building Better Neighbourhoods', that addressed the Chamber's report and began the infrastructure upgrading and renewal program. Indianapolis City has established a separate Department of Capital Asset Management for this purpose. Their focus is on addressing deficiencies, prioritising projects and management of new capital works. They are aiming towards the philosophy outlined by David Sonnenberg, City Engineer of Minneapolis in a paper to the 1998 APWA Congress Urban Forum, that is more centred on strategic asset management as we know it in Australia.

Charlotte is undertaking a process of 'Managed Competition'. It is slower version of the Victorian Government's Compulsory Competitive Tendering legislative requirement, at the Council's pace, hence the term, managed competition. Both Indianapolis and Charlotte claim to be delivering better services at lower cost.

Councils in the UK are suffering from a severe reduction in capital and operating funds. Asset Management is mainly limited to pavement management system network analysis and inspections for safety. The inspections are driven by the need to comply with recommendations in the UK Local Authority Association's Code of Good Practice for Highway Maintenance. This requires cyclic inspections for various purposes for different levels of road hierarchy. The Courts have interpreted the recommendations as the 'standard'. Many councils are unable to comply with the inspection recommendations, because of funding constraints.

There is ample evidence to show that road funding in the UK was well below that, which is required to sustain the road network.

Many UK councils are bidding for Private Finance Initiative (PFI) funds for Design, Build, Operate (DBO) schemes to overcome capital budget cutbacks. DBO is similar to the Build, Own, Operate, Transfer (BOOT) schemes in Australia.

In asset management terms, PFI schemes have forced life cycle costing to be adopted for these projects, as the contractors bid a monthly fee to provide and operate the infrastructure service for the life of the contract, typically 30 years. The contractor accepts many risks including cost overruns. He is responsible for all costs over the 30 year project life and minimising life cycle costs is a major incentive to him.

There is a realisation that present funding levels can only support a limited number of PFI projects. All of the UK road funds for the next 30 years can be tied up in seventeen PFI projects similar to Angus Council's £38M A92 highway upgrading project. Even though PFI appears to be a way for governments to fund capital works now and pay later, with PFI the true life cycle costs are identified up front and funded.

Two UK councils, Bedfordshire and Hertfordshire Counties have sold their engineering services and works organisations to the private sector with a five year workload. Works are undertaken on a schedule of rates and not as a lump sum. Rates have been reduced by between 10 and 15 percent under the contracts. The councils have retained a strong client staffing structure for inspections and commissioning of works.

It appears inevitable that competition and outsourcing of local government service delivery will increase in popularity in Australia. If governments reduce capital funds, major infrastructure provision will most likely be by BOOT schemes. It is expected that there will be an increasing trend for maintenance of infrastructure under long term maintenance contracts as governments and councils strive to obtain better value for money for infrastructure funds. To obtain the required economies of scale, and attract the larger contractors, infrastructure provision and maintenance may be pooled by regional groupings by councils.

The implications for Australian local government engineers are that future local government engineering positions may not be in councils but with a consultant or a contractor. They may be required to prepare bids for a 30 year BOOT scheme or long term maintenance contract for local government infrastructure and manage the infrastructure under the contract.

I thank the Trustees of the National Foundation for Local Government Engineering for the 1998 Fellowship Award to research the award topic in the US, the Mayor, Aldermen and General Manager of Devonport City Council for funding to allow the research to be extended to the UK, and staff of Devonport City Council for their support during the period of the research project.

1. INTRODUCTION

The Author was awarded the National Foundation for Local Government Engineering 1998 Fellowship Award to attend the 1998 American Public Works Association (APWA) Congress and visit two areas to investigate and report on a specific topic.

The topic selected was *Asset Management in a Competitive Environment*.

Local government in Australia is starting to realise benefits from the introduction of accrual accounting in local government through Australian Accounting Standard AAS27. This standard requires infrastructure assets to be valued and their condition and annual rate of consumption shown in financial terms in a Council's financial report.

The value of infrastructure assets in most Councils is several hundreds of millions of dollars. The use of AAS27 gives engineers the opportunity to have the value of their management and engineering skills displayed to the community.

In many cases, the rate of consumption of infrastructure assets (depreciation expense) is a high proportion of a Council's income from rates. Greater demands are placed on the engineer to improve the management of assets to reduce life cycle costs and to refine the methods used for and to increase the frequency of condition assessment and valuation of assets for financial reports.

There is a need to identify and apply best practice management to infrastructure assets if engineers are to continue to be seen as the best persons to manage the community investment in infrastructure.

In many States, a competitive environment is being forced onto local government. In Victoria, Councils are required to meet Compulsory Competitive Tendering of up to 50% of operating expenditure. Federal and State Governments have agreed on National Competition Policy that will result in separation of client and provider roles of Councils and review of commercialisation/corporatisation of service delivery roles.

The implications for engineers are that the traditional role of the engineer controlling the asset management, project management and operation of infrastructure assets will be split into two or three separate roles. In some cases, the roles will be held by different corporatised organisations.

The future task for the asset manager is to ensure that assets are providing the level of service required by the community at a cost that the community is willing to pay from a position possibly at arms length from the service delivery position.

This will require adequate asset performance data being specified and supplied by the service deliverer to the asset manager in the most cost-effective manner.

2. STUDY TOUR OBJECTIVES AND OUTCOMES

The objective of the study tour was to identify and review best practice asset management in organisations operating in a competitive environment overseas, identify similarities with Australian conditions, identify how best practice examples can be applied to Australian local governments and disseminate this information to Australian local government engineers

Organisations operating in a competitive environment were defined as those with a small Client (program management) staff with engineering services provided under contract and operations and maintenance services for infrastructure provided under long term contract.

The outcomes of the Study Tour were expected to be:-

1. Documented examples of best practice asset management in local government authorities operating in a competitive environment.
2. Examples of how best practice asset management in a competitive environment can be applied to Australian conditions.
3. Recommendations for enhancement of the IMEA National Asset Management Manual

3. SPECIFIC STUDY TOUR ISSUES

The study tour was to address the following issues:-

1. What are the asset management practices adopted by local governments operating in a competitive environment?
2. What are the organisational structures adopted by local governments operating in a competitive environment?
3. How are service levels and costs assessed for infrastructure assets?
4. What performance indicators do local governments operating in a competitive environment use?
5. How does the local government client obtain asset performance data from the service providers?
6. What is best practice in supplying asset performance data from the service deliverer to the client?
7. How is the client's requirement for asset performance data provided in specifications for service delivery?
8. How does the community perceive asset management in a competitive environment?

4. THE COMPETITIVE ENVIRONMENT

The competitive environment in the Cities and Counties I visited was different to that in Australia. Many Australian local governments are moving towards long term maintenance (including management) contracts for infrastructure asset networks. Most US local governments were very well organised for Capital works as they were experiencing growth problems.

The City of Indianapolis had let two contracts for long term operations of infrastructure assets, for its sewage treatment plants and sewer mains maintenance. The City of Charlotte has reorganised its 26 departments into 9 key businesses and 4 support businesses. Most other examples of competition were related to contract provision of specific services and not operation of a network of assets.

Local Governments in the UK have had a longer history of competition due to the British Government's Compulsory Competitive Tendering Policies. These had been extended to include the white-collar divisions of Councils. Most organisations have established their day labour and engineering services as 'business units' and in two County Councils, Bedfordshire and Hertfordshire, the business units had been sold to the private sector.

The United States and United Kingdom do not have an equivalent accounting standard to AAS27. There is no requirement to report the value of infrastructure assets in Councils' General Purpose Financial Reports in the US and UK

Examples of organisations operating infrastructure assets in a competitive environment are:

Indianapolis City's White River Advanced Treatment Plant and sewer maintenance contracts.

Dorset County's Bridport School Private Finance Initiative (PFI) Project

5. ASSET MANAGEMENT PRACTICES ADOPTED BY LOCAL GOVERNMENTS OPERATING IN A COMPETITIVE ENVIRONMENT

5.1 Asset Management Practices within a Competitive Environment

The main difference between strategic and operational asset management relates to the 'ownership' of the assets. Ownership of assets indicates who has accepted the value of the assets and accompanying depreciation expense in their financial reports

I did not find any examples of organisations in the US or UK showing current cost valuations of infrastructure assets in their financial reports or recognising current cost depreciation of infrastructure assets as an operating expense.

5.1.1 Asset ownership retained by the Client

There were many examples of a network of assets being operated under contract where the Client retains the asset ownership. In these cases, the operator is focused on minimising direct costs and on compliance, efficiency and customer services issues and has little incentive to be pro-active in strategic asset management.

Examples of assets operated under these conditions include

- Indianapolis White River Advanced Water Treatment Plants
- Indianapolis maintenance of sewers
- Charlotte-Mecklenberg Utilities Department
- Hertfordshire maintenance of street lighting

5.1.2 Assets ownership 'transferred' to Operator

The UK Private Finance Initiative (PFI) projects have seen a 'transfer' of assets to the operator for a period of up to 30 years. In this case the operator has the incentive to minimise the life cycle costs of the project over its life (30 years) as he is responsible for all costs including amortisation of capital costs and operation and maintenance costs over the life of the asset.

Dorset County Council has a \$12M PFI project for the Colfox Secondary School at Bridport under construction. The asset created by the project will become an asset of the County. 'Transfer' of the asset to the contractor has been effectively achieved by the County granting a license to the contractor to operate the asset as a school on County property

5.2 Good Asset Management Practices

There were many examples of good asset management practices found during the study tour. Most organisations had implemented technical systems for managing infrastructure assets, usually focused on road pavements. These organisations and examples are shown below.

5.2.1 Orange County Transportation Authority (OCTA)

Orange County is located in southwest Los Angeles, California. There is no CBD, nor public transport system equivalent to the major Australian cities in Los Angeles. The City is dispersed and highly dependent on the motor car for transport. The Authority¹ projects a 40% increase in traffic in the County by 2020. The County's overall Pavement Condition Index (PCI) is 81 which is rated Fair. Backlog repairs are estimated at \$800M. Estimated cost to maintain PCI at 81 is \$150M per annum. Estimated annual maintenance expenditure is currently \$50 - \$60M. Funding required to maintain the County streets at minimum PCI levels over a 20 year period is estimated at:

Rating	PCI range limits	Funding Required pa
Poor	60 – 72	\$80.6M
Fair	73 – 83	\$122M
Good	84 – 89	\$160M
Very Good	90 – 100	\$178M

Table 1. Estimated Expenditure Required to Maintain Streets at Minimum PCI Levels for Orange County, California. Source OCTA 1998, p 4.

Consideration is being given to revising the PCI Condition ranges for condition limits and suggested treatments for condition reporting by member authorities to OCTA, as follows.

Pavement Quality	Original Threshold	Revised Threshold	Treatment
Very Good	90 – 100	86 – 100	None proposed
Good	84 – 89	75 – 85	Slurry Seal
Fair	73 – 83	60 – 74	Thin Overlay
Poor	60 – 72	41 – 59	Thick Overlay
Very Poor	0 – 59	0 – 40	Reconstruction

Table 2. Recommended Changes to PCI Condition Ranges for Reporting to Orange County Transportation Authority. Source Nichols Vallergera & Assoc. 1998, Table 6, p 13

OCTA allocated \$22.3 million in Federal and local funding to its 32 member agencies for the County Master Plan for Arterial Highways (MPAH) for the two fiscal years 98/99 and 99/00. OCTA commissioned a report² recommending standardisation of Pavement Management Systems throughout the County for collection and assessment of data for determining pavement condition and reporting by agencies. The recommendations included the adoption of a 0-100 scale of pavement condition reporting with agencies allowed discretion in determining how the pavement condition index is calculated. (ie allow inclusion of factors other than surface distress such as ride quality). The 0-100 range is to be used for reporting pavement quality to OCTA.

5.2.2 City of Scottsdale, Arizona, USA

¹ OCTA, 1998.

² Nichols Vallergera & Assoc, 1998

Scottsdale is a fast growing City. Emphasis is on capital projects to cope with servicing the City's growth including roads, drainage, water supply and sewerage.

The City has implemented a Project Peer Review (PPR) of selected major projects. "A Project Peer Review is a separate step in the design process for selected projects that provides a totally independent evaluation of design concepts or management procedures. Such added perspective, while considering the value and integrity of design, will also generally enhance the life-safety aspects of the project"³

The City called for proposals for Independent Cost Management, Value Engineering and Constructability Review (PPR) for a \$40M stormwater diversion channel and 3 stormwater detention basins project, as follows.

- | | |
|-----------------------------|--|
| 1. Cost Management | Provide independent second opinion of all aspects of the project costs at various project milestones (10%, 30%, 60% & 95%) as determined by the City. Develop cost estimates based on current design information prepared by the project engineer. |
| 2. Value Engineering | Provide formal 2 day Value Analysis (VA) facilitation/partnering services at project milestones (10%, 30% and 60%) as determined by the City. VA team facilitators are recommended to be certified as Certified Value Specialists (CVS) by the Society of American Value Engineers (SAVE). |
| 3. Constructability Reviews | Provide independent, technical reviews of the plans, specifications, and project phasing in order to minimise field changes orders and receive more competitive bids |

A Contractor or Sub-Contractor has an incentive to reduce costs for capital works by "Cost Reduction Incentives" provided within the City's contract documentation. This provides the contractor with 50% of the estimated net savings amount being the contractor's cost of work and developing the value engineering joint proposal, less the Principal's cost of investigation and evaluation including ascertainable collateral cost. Collateral costs include increased maintenance and/or operation costs, related or additional work.

USEPA Guidelines for a "construction incentive change proposal" (CICP) require a net capital cost reduction, while meeting all of the following conditions:

- (i) The total life cycle cost of the project will not increase
- (ii) The required functions, reliability and safety of the project will be maintained.
- (iii) The proposed change will not result in any contract re-bidding
- (iv) The proposed change will not cause undue interruption of the contract work.
- (v) The proposed change will be in compliance with all Federal, State and local permits and regulations⁴.

The USEPA Guidelines define net capital savings as the "initial construction cost less revised construction cost and less CICP implementation costs. CICP implementation costs include the Principal's cost of redesign, net increases (but not decreases) in inspection and testing costs and the present value of the net increases (but not decreases) in operation and maintenance costs during the useful life of the project". The contractor's cost for developing the CICP is not an

³ Project Peer Review Guidelines, American Consulting Engineers Council (ACEC), American Society of Civil Engineers (ASCE).

⁴ USEPA, 1989, p 11

allowable cost but is offset by a portion of the contractor's share of the new capital savings. The contractor receives 55% of the net capital savings.⁵

The County of San Diego has achieved over \$7M in savings since 1991 in its Capital Improvement Program by a Value Engineering Review⁶. They have found that "the programming stage of a project is where the most significant savings can be realised"⁷.

5.2.3 City of Lenexa, Kansas

The City of Lenexa adopted 'Lenexa Vision 2020' on 19 August 1997⁸. The Vision was the result of a Community Strategic Planning Process undertaken by a volunteer Task Force who gave over 2500 hours to the project. The Vision recognised that by the year 2020, the City will be on its way to being built out and it must keep its attention on maintaining the infrastructure that has been put into place over the years. Strategies identified for existing infrastructure included:

- Institute a comprehensive inventory, condition analysis and predictive management information system for all infrastructure elements. With this preparation in place, it will be possible to retain the original ambience of each of the neighbourhoods as they age and mature.
- Conduct all such ongoing maintenance programs with the aim of preserving property values throughout the City.

The City has prepared a 5 year Capital Improvement Program 1998-2002⁹. Many projects are required to provide, in advance, for growth in industrial and residential estates. This was referred to in several cities as 'build it and they will come'.

5.2.4 City of Indianapolis, Indiana, USA

Indianapolis is undergoing resurgence with a major program to restore its infrastructure. This arose from a report by the Indianapolis Chamber of Commerce in 1991 titled "Getting Indianapolis fit for Tomorrow"¹⁰. The report included 52 recommendations and stated that the City should focus **only** on **repair or rehabilitation of existing infrastructure systems, base funding on critical need**, invest \$1.1B over 10 years with the burden being equally shared between businesses and individuals.

The present Mayor was elected in 1992 on a privatisation platform to overcome an unfunded bond debt of \$220M and unfunded police and fire pensions that will amount to \$55M by the year 2000. The privatisation platform was changed to competition after consultation with unions. The competition program has seen City employees bid for contracts. The reduction in costs through competition have saved Indianapolis \$350M in its operating budget.

The Department of Capital Asset Management (DCAM) was established as the asset owner and to manage the capital works program.

DCAM is responsible for an annual capital works program of approx 160 projects with a value of over \$100M (USD). DCAM has developed a range of priority ranking methods for capital works projects. They have a detailed method of project scoping and pre-investigation of potential projects prior to construction. Design and construction services are contracted to the private

⁵ *ibid*, p 15

⁶ Rising, 1995 p 188.

⁷ *ibid*, p 193.

⁸ City of Lenexa, 1997.

⁹ City of Lenexa, 1998.

¹⁰ Indianapolis Chamber of Commerce, 1991

sector. The project scoping system is claimed to have kept project costs to within 1½% of overall budget. Project scoping reports are funded by a budget line item.

The DCAM “Needs Statement/Scope Analysis” is a very comprehensive project planning document. The cost of a project scoping report for a \$365,000 intersection improvement (widening and installation of traffic signals) project was \$4,000. A typical scoping report¹¹ covers the following sections.

- Project identification
- Project team
- Funding source
- Project need
- Project alternatives
- Project recommendation
- Early co-ordination
- Public input
- Project costs
- Benefit/cost analysis
- Project schedule
- Measure of success or failure
- Capital outputs
- Construction plans
- Priority code
- Appendices
 - Location map
 - Traffic data
 - Level of service reports
 - Accident data
 - Engineering study for traffic signals
 - Benefit/cost analysis
 - Correspondence letters
 - Culvert inspection report
 - Typical section
 - Utility early co-ordination
 - Site photographs
 - Proposed project sketch
 - Cost estimate – breakdown
 - Utility coordination process
 - Digital data submission standards
 - Needs statement/scope checklist

Operations and Customer Service is the responsibility of the Department of Public Works (DPW). DPW use Activity Based Costing and Performance Indicators¹² to hold the workforce accountable for work performance. They are undertaking a process of improving effectiveness and efficiency through Activity Based Costing (know your costs) and performance measures while educating managers and supervisors to use ABC and performance measures to manage the process.

Some four years ago, the City privatised the operation of its White River Advanced Water (Sewage) Treatment Plant. The contract let to the international White River Environmental Consortium has just been extended for a further 10 year period. The City is extremely satisfied

¹¹ DCAM, 1998

¹² Simpson et al, 1996.

with the results being achieved. The contractor is required to submit a comprehensive monthly report on operation of the treatment plants to the City.

This report covers conformity with operating license conditions, operating conditions, effluent inflow and outflow details, maintenance work undertaken, capital works undertaken, capital works proposed, capital works proposals, training of staff and comparison with programs.

The contractor is operating the treatment plant with significantly fewer staff, (34) than the City (110). He operates a planned and predictive maintenance system to identify assets and components likely to fail before failure. Mechanical and electrical equipment is subject to predictive maintenance including vibration analysis and thermographic analysis by a specialised sub-contractor. Reports are prepared showing what requires attention at four levels:-

1. Notation.
2. Inspection.
3. Action.
4. Crisis.

Another contract has been let for maintenance of the City's sewer mains. The City claims that privatisation of the management of these operations is providing a better service at significantly lower costs.

DCAM has two supervisory staff at the treatment plant, one for technical matters and one for contract matters. There are four supervisory staff on the sewer maintenance contract, one technical staff auditing pump station and dams operations, one technical staff for auditing of sewer maintenance and Closed Circuit Television (CCTV) monitoring, one for auditing day to day work including maintenance and one staff member for contractual matters.

The City is on the third stage of its privatisation/competition process.

The first stage was the formation of a board of businessmen to identify area suitable for privatisation. These areas were then investigated by the Enterprise Development Section in the Mayor's Office and if found suitable, subjected to competition.

The second stage was the "Initiative Management Review". This was a process of analytical review of the competition process asking the question, "Did we get what we wanted?"

The third stage in the competition process is a review of the contract process itself. This identified several issues including skills in managing contracts for staff and whether the specifications were correct and delivering the required outcome. The City is currently addressing these issues.

5.2.5 City of Charlotte, North Carolina, USA

The City of Charlotte commenced a "Managed Competition" program in 1991. The program has profoundly changed the way the City does business, increased the efficiency and effectiveness of City services and resulted in significant cost savings. Managed competition describes a planned approach for service delivery, whether the service is outsourced (no public sector competition) or private sector firms are invited to compete against the public sector for the right to provide a particular service.

It is part of a larger strategy designed to address the problem of balancing scarce resources, little or no new revenue and no property tax rate increases against escalating costs of and demands for City services. The managed competition program is claimed to have developed a more

entrepreneurial style of management and operation, incorporating strategic business plans into its overall operations and adopted private sector costing and bidding methods.¹³

In September 1993, the City's 26 departments were reorganised into 9 "key businesses" and 4 "support businesses". Key businesses were required to develop business plans. Decisions about human resources, budget, finance and purchasing, formerly made by central administrative staff, were delegated to key business executives (formerly department heads).

Each key business has a five year competition plan, which includes:

- (i) a list of the services provided by the key business that are also available in the private sector;
- (ii) a schedule for subjecting the services to competitive bidding, and;
- (iii) strategies for making the key business more competitive¹⁴.

Support key businesses have established new working relationships with the key businesses, some entering into formal service agreements with the key businesses they serve.

Three measures of program success are cost savings, ability to fund high-priority service areas without new taxes and establishing five year competition plans.

To 30 June 1998, recurring annual savings from managed competition totalled \$4.7 million. A further \$4.4 million has been saved through re-engineering processes and service delivery methods, applying best practices and controlling operating expenses giving a total saving of \$9.1 million annually.

The cost savings have enabled the City to reallocate resources to fund high-priority areas without raising property tax rates. Since 1992, non-public safety employees have been reduced by 600 and police numbers increased by 550.

Total savings to date are in excess of \$20 million. This equates to \$90 per year in property taxes on a \$150,000 house. "Charlotte citizens are receiving more and better services today than when they were in 1987, the last time the property tax rate in Charlotte was increased".¹⁵

5.2.6 Dorset County Council, Dorchester, England

Dorset County Council established business units, Dorset Engineering Consultancy (DEC) and Dorset Works Organisation (DWO) for its engineering services and day labour organisation. The Council retains a strong client resource. The client's staff manage assets, commission capital works, undertake routine safety and maintenance works and issue work orders to DWO for maintenance works. Capital and major maintenance works are undertaken by contract, either to DWO or a contractor.

Councils in England are experiencing a reduction in capital funds. Dorset's capital budget has reduced from £40M in 1996 to £15M in 1997. This has been due to changes in government policies, a review of local government creating additional unitary local governments, local politics reacting to community concerns for education and public safety and competition pressures.

Dorset County saw unitary Councils created for Bournemouth and Poole in April 1997, reducing its income by almost half and responsibilities by a lesser amount.

¹³ Sizer, 1998 p1

¹⁴ *ibid* p3

¹⁵ *ibid* p4

The former Tory government issued a Transport White Paper several years ago proposing a greater balance between economics, the environment and social engineering. The result was that the priority list for new road projects was significantly reduced. The Trunk Road network, formerly managed by local government on behalf of the National Government was withdrawn some 2-3 years ago from the Councils and maintenance contracted to the private sector.

The present Labor government has issued a Transport White Paper in July 1998, "New Deal for Transport in England". This reviewed new road projects and further reduced the priority list.

The County delegates and funds management of local roads to some Borough and District Councils through agency agreements.

The County has a very good Pavement Management System (PMS) for its major road system, but only limited condition data for local roads.

WDM Ltd of Bristol supplied the PMS used by Dorset County. A SCRIM survey and data collection is undertaken annually for skid resistance. A high speed road monitor survey is carried out 2 yearly for texture, rutting, inclination, grading and cross-fall. A deflectograph survey is undertaken 5 yearly to produce estimates of remaining life. The PMS has only been undertaken for the major roads and not for the local and minor roads. Overall, the condition of trunk roads is declining.

The quality of output from the PMS is excellent. The GIS display includes a map of a County road with the image of a vehicle travelling along the road. A window can be added to the screen showing a video of the road taken from the survey vehicle. Fig 1 shows the location GIS map with video display. Pavement condition scores and remaining life projections can be displayed on a GIS. Fig 2 shows a typical GIS display of remaining life for part of the principal road network near Dorchester.

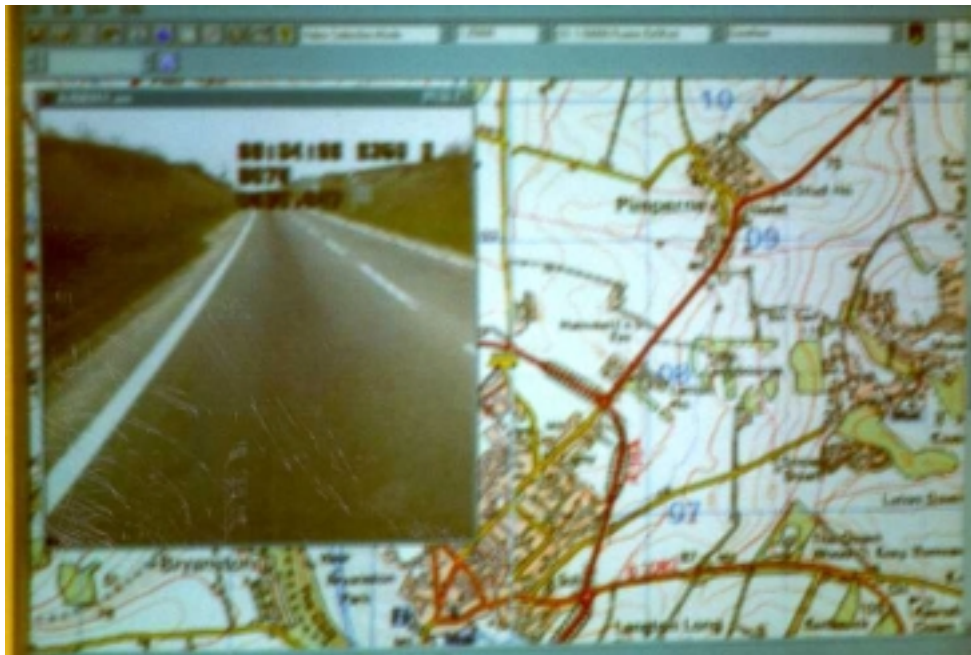


Fig 1. Dorset County Pavement Management System Location and Video Display

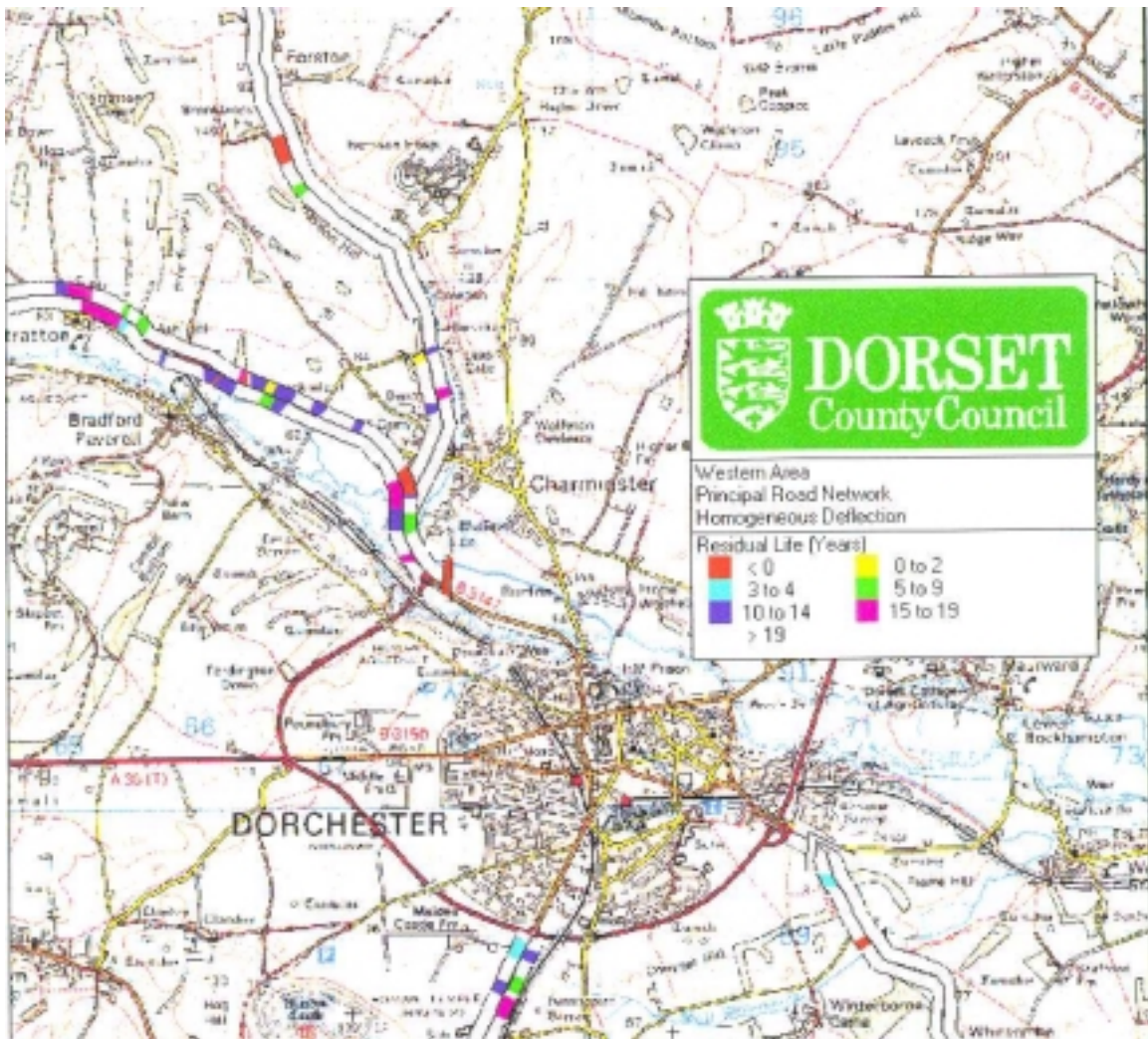


Fig 2. Dorset County, Principal Road Network, Residual Life Estimates

Road safety inspections are carried out by a team of ten maintenance inspectors using hand held data recorders. Inspection sheets are recorded in an ORACLE based data base. Over the last 5 years, 150,000 records of inspections have been generated. The Inspection recording system has a full log of inspections and actions taken.

The main driver for this practice is risk management and liability minimisation rather than proactive asset management practices. The frequency of inspections is governed by recognition by the Courts of an inspection schedule for highways recommended in the "A Code of Good Practice"¹⁶. The inspection schedule is shown in Appendix I. The County is finding it difficult to resource the recommended levels of condition data collection and assessment due to budget constraints.

The limiting of capital works funding to Councils has seen the development of Private Finance Initiative (PFI) projects. Dorset was among the first to have a PFI project approved in UK. This is for a new £12M secondary school in Bridport, approx 30 km west of Dorchester. Under this proposal, the County has let a 30 year contract to a building contractor to provide and maintain

¹⁶ Local Authority Associations, 1989.

the school infrastructure. The County provides the teaching staff and education system. The County will pay a monthly all-inclusive payment after the school is ready for occupation to the contractor. The National Government contributes 70% of the monthly fee through an increase in grant funding. The remainder of the cost comes from government school budget allocations.

The Contractor is responsible for construction, all maintenance, catering, utility costs, heating, lighting, Information Technology supply and updating to current standards, non-domestic rates and delivering the income for rental of school facilities. The County is responsible for risks associated with pupil numbers and changes to the school regulations.

The contract contains 16 performance indicators with 20% of payments able to be withheld for non-performance by the contractor and provides for termination of the contract for a major performance failure. The County retains ownership of the land and has given the contractor a licence to operate the building for 30 years. The contractor's debt to the bank is for a period of 25 years. At the end of the contract period, ownership of the building reverts to the County. If the County does not wish to operate the school, the contractor has right of first refusal for purchase of the land.

The contractor has applied innovative thinking to his proposal, including selection of building materials, furniture and equipment to reduce maintenance, funding for special (language) school status and generation of additional income outside school hours. The capital cost is estimated to be 4% below typical public sector building costs.

5.2.7 Hampshire County Council, Winchester, England

Hampshire County Council has entered into a several contracts for operation of small waste transfer stations and for a Material Recovery Facility (MRF) at Portsmouth. They are proposing an anaerobic digestion of waste project estimated at £19M at Southampton as a PFI project. This plant will produce a composed material suitable as landfill cover.

The specification for the small transfer station is output based requiring a 70% recycling rate. County staff have found that smaller contractors are preferred for this type of operation.

The Government has produced a series of papers on waste management including "Less Waste More Value". Details are available from wastepol@dial.pipex.com

5.2.8 Perth & Kinross Council, Perth, Scotland

Perth & Kinross Council have estimated the replacement cost of their road network at £1.2B. They have set (and are not meeting) targets for road maintenance as follows

Resurfacing	Planned 5% of network length pa	(Actual 1% pa)
Surfacing dressing	Planned 14% of network length pa	(Actual 3.5% pa)

It has been estimated that the Scottish road system requires an additional 70 % funding to meet its life cycle cost.

5.2.9 Angus Council

Angus Council proposes a £38M PFI project for upgrading of 19 km of the A92 trunk road from Dundee to Arbroath under a 30 year Design Build Operate (DBO) contract. 70% of the PFI contract payments are to be received from an increase in Government grants under the PFI project approval. The remaining 30% is equivalent to the Council's current maintenance expenditure on the highway. Under the PFI project, this would be included in the monthly contract payments to the Contractor and become his responsibility.

The PFI initiative forces the life cycle cost of a project to be determined up front, whereas they have been largely ignored in the past. There is now a realisation that many capital projects cannot be afforded. All of the present Scottish road funds could be taken up in 3 PFI projects similar to the A92 project.

In the changing ways of government, PFI is now known as Public/Private Partnerships.

5.2.10 Bedfordshire County Council, Bedford, England

Bedfordshire County is proceeding with the sale of its Highways Consultancy and Day Services Organisation to the Babtie Group consultancy and Raynesway contractors respectively as its Best Value project.

“Best Value” is a strategy to modernise local government in England and Wales outlined in the Labor Governments White Paper “Modernising Local Government, In Touch with the People”. The “Best Value” performance Framework is shown in Appendix II.

Under the contract for Highways Consultancy Services, Babtie will carry out feasibility studies, prepare TPP bid proposals, prepare and design road schemes, tendering, project supervision and management and testing laboratory. The contract includes capital works, structural maintenance surveys, highway openings by utilities under the “New Roads and Streetworks” legislation. 62 staff transferred to Babtie under the sale. 12 staff are retained in the Client’s role. The County expects a 30% saving in hourly rates under the contract. This 30% saving will be used for additional works. Extensive consultation was undertaken with staff involved in the transfer, including tender evaluation, briefings by the successful consultant and a workshop to develop a joint partnership agreement.

Highway maintenance work was contracted out to the private sector approx 2½ years ago with the County’s Day Services Organisation (DSO) winning the contract when the lowest tenderer withdrew his tender immediately prior to the commencement date. Earlier this year, the County offered its DSO for sale to the private sector with a guarantee of work for 5 + 2 years. The successful tenderer offered a 25% reduction in schedule of rates on the existing DSO’s rates. A partnership approach has also been taken to this contract.

A staff committee has been established to benchmark costs and performance indicators with 6 adjacent Counties. Difficulties have been experienced in comparing costs and performance indicators, as the data was not comparable. A review of the data requirements to develop standard methods for benchmarking costs and performance is currently underway.

5.2.11 Hertfordshire County Council, Hertford, England

Hertfordshire has a severe funding shortfall as well as a £70M road maintenance backlog. In 1997/98, the roads budget was reduced by £2M for asset renewal and by 64% for structural maintenance. The County lost its agency for maintaining the motorway network, which was contracted to ‘super agencies’ of consultants. There are now four agencies managing the motorway network formerly managed by the County.

The County has commenced a “Travelwise” program as they have realised that it is not sustainable to keep building roads. They have huge traffic problems from high vehicle usage from commuters and even parents driving children to school. Traffic is increasing by 2.5% per annum compared to the national average of 1.5%. They are addressing the traffic problem in many ways including:

- ‘virtual buses’ where a leader collects children from safe houses and walks the children in a group to and from school,
- home working,
- corporate regional work centres.

HCC estimate they could control their traffic problems if people worked at home 2 (different) days per week.

Hertfordshire has also sold The Shire Consultancy (TSC) to Mouchel Consultants and Day Services Organisation (DSO) to the John Doyle Group. It retains an informed client role, assesses the need, holds the budget, makes decisions and writes a brief to instruct Mouchel to do work. The aim of the contract is to give as much detail work as possible to the consultant. Prior to the sale there was a concerted effort to shift from an engineering design organisation to a service organisation. Maintenance has now become a major issue. Focus has changed from serving the community to going out to see what the community wants and put it into practice.

A performance review of the consultancy contract is being introduced. When a brief is forwarded to Mouchel, they accept the brief and allocate resources to the job. Both parties meet to discuss the brief, resources estimated, performance standards and how performance will be measured. The aim is to answer the question "Did everything we promised get delivered in an acceptable way?" Mouchel have won several motorway management contracts. Talented staff who transferred from the County to Mouchel are reported to have done well.

The John Doyle Group offered a reduction in the schedule of rates for maintenance works of 9.5%. The contract provides for a minimum funding of £5M per annum (£1M for winter maintenance) with variations on rates for variations in workload.

The present client role is to manage the road network to improve its efficiency. Partnership agreements are being negotiated between the County and District Councils for funding and management of local roads within a District Council area.

An example of the network management approach is the street lighting maintenance contract. This is performance based contract requiring the contractor to have 98% of lights in service. There is a penalty for falling between 97% and 98%, default for falling below 97% and a bonus for performance over 98%. The contract has reduced the number of complaints significantly. Opportunity was also taken to negotiate with energy suppliers resulting in a reduction of 17-20% over a 3 year period on their former £2M lighting energy bill. The improvements are due to the competitive market conditions for energy and a more responsive maintenance management system.

A Private Finance Initiative proposal was submitted for the County's winter maintenance operation. Winter maintenance consists of spreading of salt and grit on roads to prevent icing and snow removal. Salt is a source of pollution from the spreading on roads and from salt storage area. The County will maintain demountable truck bodies for spreading salt at a controllable spread rate. In the past, salt was spread over the full road reserve at a rate of 40 g/m². This is now reduced to 10g/m² and is controlled to the actual road surface. Pre-wetting of salt with brine has been tried and adopted to improve the method of distribution of salt. Past storage of salt was in the open on concrete slabs, resulting in threats of prosecution for pollution of watercourses from the Environment Protection Agency. The PFI proposal is for five 'super' salt depots and a salt supply contract. The PFI project was not approved and the County is proceeding with establishment of the 'super' salt depots funded from sale of the former works depot.

The County's bid for the Government's "Best Value" proposal is to subject the whole of road maintenance activities to community consultation. Citizens have been invited to join a series of citizen's panels representative of the community profile. Over 3,000 people responded to the invitation. The project is to have the panel assess all aspects and alternatives of the County's road maintenance activities. At the same time, departmental teams have been set up to conduct a Value Engineering analysis of road maintenance tasks asking; why, what is it designed to achieve, what options do we have and what are the implications of the citizen's concerns.

5.2.12 London Borough of Hillingdon, England

Hillingdon Borough has prepared several 'Long Term Strategic Maintenance Need - Carriageways and Footways' reports. Despite these reports to Council, the budget in 1998-99, for what I would regard as activities essential to sustain the road network, of surface dressing, resurfacing and reconstruction is zero.

Road maintenance management staff estimate that a 100% increase in maintenance funds would enable roads to be kept safe.

6. APWA CONGRESS, LAS VEGAS

The 1998 American Public Works Association International Public Works Congress and Exposition was held at the Las Vegas Convention Centre from 14 – 17 September.

The Congress had a number of papers and presentations on asset management topics. A summary of these papers and presentations is shown below.

6.1 Innovations in Urban Infrastructure 1998 Seminar

A Seminar in Innovations in Urban Infrastructure has been a feature of recent APWA Congresses. The Seminar was sponsored by the National Research Council Canada and the Canadian Public Works Association.

A full index of papers presented at the Seminar is shown on Appendix III. A synopsis of papers relevant to Australian asset management issues is shown below.

6.1.1 "Why we need an IAMS"

This paper by Leo Gohier, Director of Waste Water at the Regional Municipality of Hamilton-Wentworth, Ontario, Canada argued the case for an Infrastructure Asset Management Strategy (IAMS). He stated that "while water and sewer rates may cover today's current costs and those of the next few years, they are simply not sufficient to sustain the service in perpetuity"¹⁷.

He defined the IAMS process as "a multi-dimensional approach, encompassing all aspects of operations, maintenance and management summarised as follows

- (i) Know what you have and what it is worth (ie inventory)
- (ii) Know its condition and remaining capacity (ie assessment).
- (iii) Know what to do to address the problem (eg choosing the most cost effective rehabilitation technique).
- (iv) Know when to do it (business plan: maintain, repair, rehabilitate, replace).
- (v) Have the money available to do what you have to do when you have to do it (pay-as – you-go is the cheapest in the long run)".¹⁸

He proposed the use of Life Cycle Analysis (LCA) stating that the concept is simple: "as soon as you put a new piece of pipe in the ground, you develop programs to maintain it and you start putting money aside to replace it. If you don't take care of the future, it won't take care of you."

¹⁷ Gohier, 1998 p1

¹⁸ *ibid* p2

His Council, Hamilton-Wentworth has supported a policy that would see rates rise a minimum of 3% a year NET (after other increases), over a period of 15 years, in order to reach sustainable levels.¹⁹

6.1.2 "Progress towards Integrated Infrastructure Assets Management System: GIS and beyond"

Andrew Lemer, Chief Executive of the Matrix Group defined assets management as " the process of keeping track of and deploying the public's capital". He stated that the goal of people in public works asset management should be to have something to do with achieving maximum total return on the public's capital.²⁰

He argued the case for an "Integrated Infrastructure Management System" (IIMS), including a Geographic Information System (GIS) and discussed the problem of infrastructure assets. He stated that the income (gross return on invested assets) that might reasonably be attributed to infrastructure is typically indirect. This may include enhanced property values and in turn higher property tax revenues, higher sales tax receipts from development or enhancement of retail or entertainment activities in a downtown or suburban area. He concluded "because none of the income in such examples is clearly defined from infrastructure's development or use, there is no conventional way for the financial returns on infrastructure investment to be recognised by the public sector entity responsible for the infrastructure, eg a public works agency".²¹

Lemur described the failure to recognise the full cost of infrastructure ownership, ie deterioration and depletion costs in excess of the actual expenditure on operations and maintenance, in the day to day operations of government. This means that "excess" infrastructure-based revenues and deferred costs (eg for neglected maintenance) may easily be diverted to a wide range of purposes by decision makers and the public at large. Over the longer term, the government entity and future generations of taxpayers may be left "holding the bag" for previous diversions; the infrastructure facility finally deteriorates to a level that its performance is no longer acceptable and there is no choice but to make massive repairs or retire the facility from service."²²

New York City's Williamsburg Bridge was used as a notorious demonstration of the huge costs that are imposed on the public, both directly (eg to rebuild the bridge) and indirectly (eg extra fuel consumed, time spent and air pollution generated because the most-direct river crossing is closed)²³. Reconstruction of the Williamsburg Bridge was originally estimated to cost \$400M and take 6 - 7 years to complete in 1988. A new bridge was estimated at \$800M and take 10 – 12 years to complete. Up to 1998, \$500M had been spent on reconstruction with a further \$425M required to complete the project.²⁴

A study by Purdue University of the total Indianapolis/Marion County infrastructure asset base estimated its present worth at some \$91 billion or about \$11,400 per capita. This value includes roads, parks, schools, sewer and water systems and other facilities developed or controlled by government or quasi-government in the region. The study estimated that the fraction of total income of the region attributable to infrastructure's services at about \$561 million, a simple return on assets of 6.2 percent per annum.²⁵

¹⁹ ibid p3

²⁰ Lemer 1998, p8

²¹ ibid p13

²² ibid p14

²³ op cit

²⁴ Hevesi, 1998 p3

²⁵ Lemer p20

He proposed a system of “Full-Value Asset Management” including non-financial values of ‘externalities’, ‘scarcity rent’ and ‘social capital’ as essential tools in enhancing asset manager’s abilities to obtain the greatest possible benefit from infrastructure and the public capital that is deployed in or influenced by that infrastructure.²⁶

6.1.3 “Municipal Infrastructure Investment Planning: Asset Management

This paper by Dana Vanier, Senior Research Officer, National Research Council Canada and Norm Danylo, Professional Engineer, Finance Department, City of Montreal, Canada argued the case for innovative decision-making tools to assist asset managers with choices between long term alternatives related to the maintenance, repair and capital renewal of infrastructure assets.

They cited a study²⁷ on Canadian municipal infrastructure comparing the expenditure of between \$12 and \$15 billion each year on maintaining the infrastructure of Canadian cities (bridges, streets, water systems, sewers, tunnels and footpaths) to the estimated accumulated shortfall of \$44 billion to return these infrastructure assets to an acceptable condition. They stated that “in the author’s view, too much emphasis has been placed on new construction for the past three decades, all to the detriment of maintaining the existing facilities. As a result, organisations may have more facilities that they can afford to maintain; and in many cases they are unaware of this situation and their serious predicament”.²⁸

They referenced Siter’s Law of Five developed by the US Department of Construction and Research. The law is; “Repair it now. If you do not get the design right, it is going to cost you five times more during the life of the asset. If you do not get the construction right, it is going to cost you five times more to operate and maintain the asset. If you do not maintain your asset properly, it will cost you five times more in repair”.

The National Association of College and University Business Officers (NACUBO) have developed a ‘Facility Condition Index’ (FCI) to compare facilities. NACUBO propose separating capital renewal costs from that which is deferred maintenance. The asset manager identifies maintenance that has been postponed, phased or deferred and then estimates the cost of the deferred maintenance. The FCI is the amount of deferred maintenance divided by the capital replacement value. NACUBO indicate that facilities with FCI’s greater than 0.15 indicate a problem.²⁹ The FCI does not take into account risk of failure.

They concluded that their investigation did not find any comprehensive solution that addresses the current and future needs for investment planning for municipal engineers and managers.³⁰

The City of Devonport has been using an integrated asset management system similar to that proposed by Vanier and Danylo since 1994³¹.

6.1.4 “Life Cycle Renewal as a Business Process”

Alan Gordon of Physical Planning Technologies Inc. Ontario, Canada presented this paper. He related the need for a comprehensive approach to asset management by consolidating cyclic renewal and major repair activities over the entire life cycle of an asset base to use of RECAPP (Real Estate Capital Asset Priority Planning system) software. He stated that there are three different time groupings of costs that need to be considered in long term asset planning exercises:-

²⁶ ibid pp 21-22

²⁷ FCM 1996, quoted in Vanier et al, 1998 p26

²⁸ Vanier et al, p16

²⁹ ibid p27

³⁰ ibid p36

³¹ Howard, 1995

- Approved Capital Plan (ACP) which includes costs for the first year,
- Tactical Planning Window (TPW) covering costs for the next one to five years, and
- Strategic Planning Window (SPW) which is the costs beyond five years. This is a series of projected Life Cycle Events or projected renewal requirements based on the current condition of an asset and the age of components compared to their estimated service lives.

He refers to an “Asset Condition Index” as a measure of a building’s performance, which is equal to the costs of current year renewal requirements divided by the replacement value of a building³². This is similar to the Facilities Condition Index (FCI) used by NACUBO.

Using RECAPP he demonstrated prioritised renewal requirements (Fig 3), cumulative prioritised renewal requirements with funding level (Fig 4), facility condition index representation (Fig 5) and cumulative backlog funding model (Fig 6).

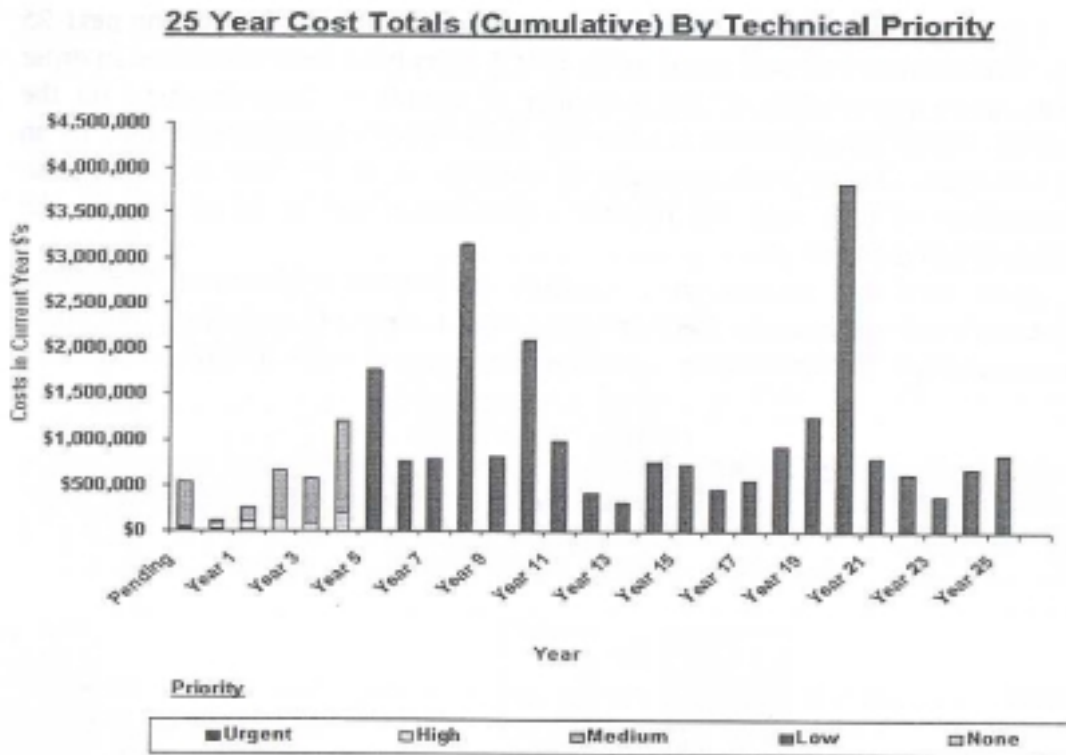


Fig 3. RECAPP Prioritised Renewal Requirements
Source, Gordon et al, 1998, Fig 4, p 47

³² Gordon et al, 1998 p45

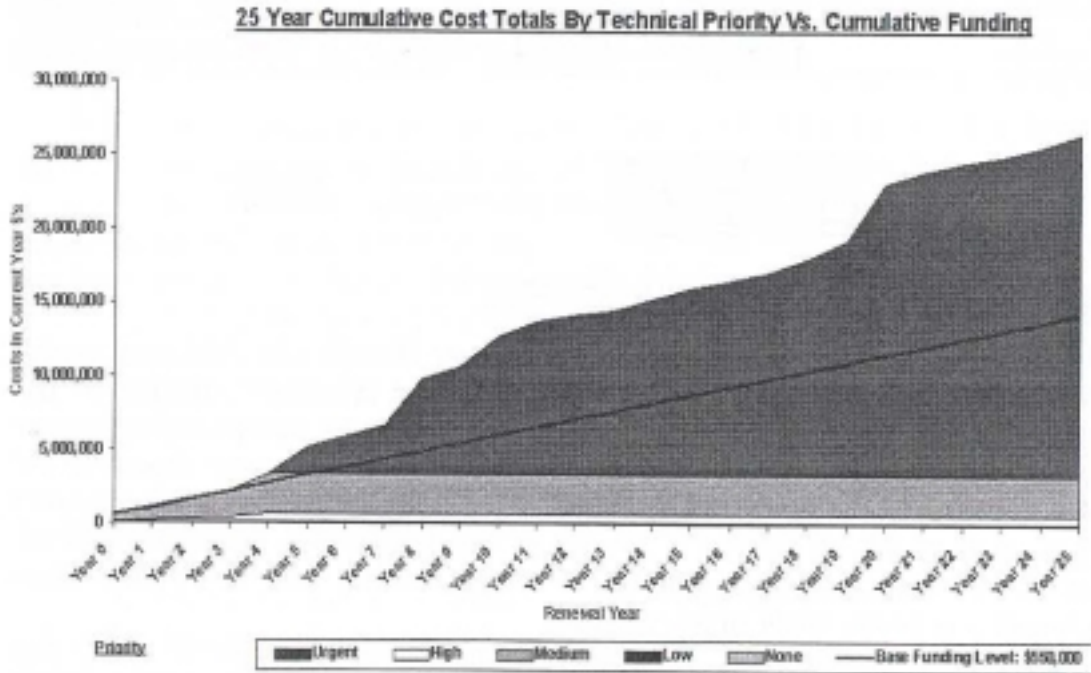


Fig 4. RECAPP Cumulative Prioritised Renewal Requirements with Funding Level
Source, Gordon et al, 1998, Fig 5, p 47

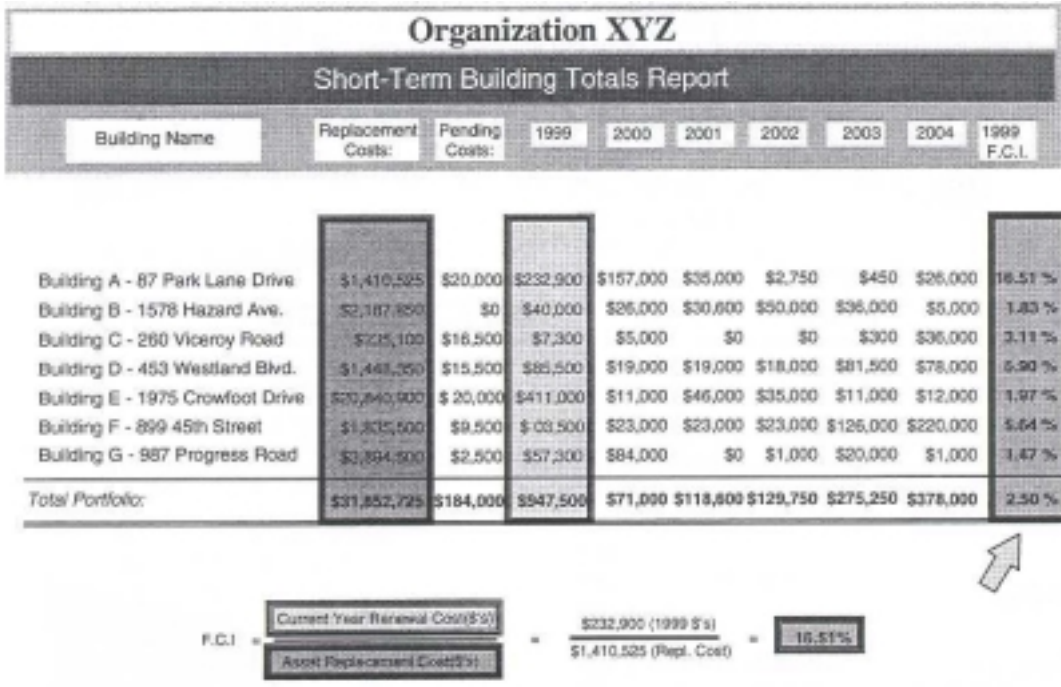


Fig 5. RECAPP Facility Condition Index Representation
Source, Gordon et al, 1998, Fig 6 p48

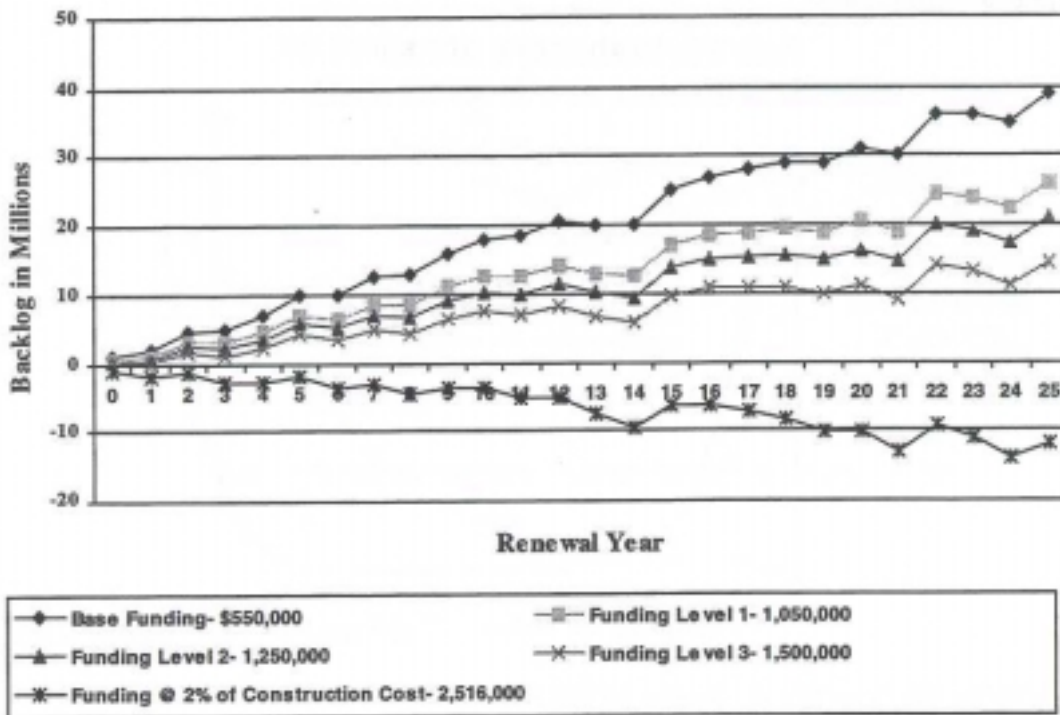


Fig 6. RECAPP Cumulative Backlog Funding Model
Source. Gordon et al, 1998, Fig 7, p 49

Although the software and financial models are developed for building assets, the techniques and method of presentation of the results have the potential to be applied to other municipal infrastructure assets.

6.1.5 City of Minneapolis State of Public Infrastructure

An invitation only Urban Forum session was held on Wednesday 16 September. Ted Rhinehardt, Director Public Works, City of Indianapolis, kindly made a copy of this paper available.

The paper covers a report prepared by David Sonnenberg City Engineer and John Moir, City Finance Officer. It details “the elements of the public infrastructure that are the responsibility of the City of Minneapolis, their condition, current and recommended funding levels to sustain the infrastructure and a financial process designed to correct deficiencies in spending over a relatively short time frame (20 years or less)”.³³

They stated that “the City of Minneapolis is not facing an imminent infrastructure crisis. Infrastructure costs are not limited to the initial capital expenditure but include continuing costs to maintain and replace elements of the infrastructure as they reach the ends of their useful lives. These costs are large and in some cases, may be more that the public is either willing to or able to support.”³⁴

³³ Sonnenberg et al, 1998 p1

³⁴ ibid

This was the best example of strategic asset management that I was able to find. Unfortunately, I did not read this paper until I returned to Australia and was unable to attend the Urban Forum or speak with the authors at the Congress.

7. ORGANISATIONAL STRUCTURES ADOPTED BY LOCAL GOVERNMENTS OPERATING IN A COMPETITIVE ENVIRONMENT?

Traditional organisational structures were used in the Cities of Costa Mesa, Scottsdale and Lenexa.

Varying organisation structures were used in other Cities. Day labour organisations had been established as business units in the UK Councils. Tayside Contracts, established and corporatised by the former Tayside Regional Council, now split into Perth & Kinross, Dundee and Angus Councils provides services to all three Council. Dorset, Bedfordshire, Hertfordshire and Hillingdon had established business units for their Engineering Services and Day Labour Organisations. Bedfordshire and Hertfordshire had taken the step of privatisation of both Day Labour and Engineering Services organisations.

All Councils visited carried out the majority of capital and major maintenance works by contract, either by their Council's business units or external contractors. All Councils had a well-resourced staffing structure to carry out the role of the client.

7.1 City of Indianapolis

The City of Indianapolis established specialist departments of Capital Asset Management and Public Works to act as asset owner/manager and operator respectively. The organisation chart is shown in Fig 7.

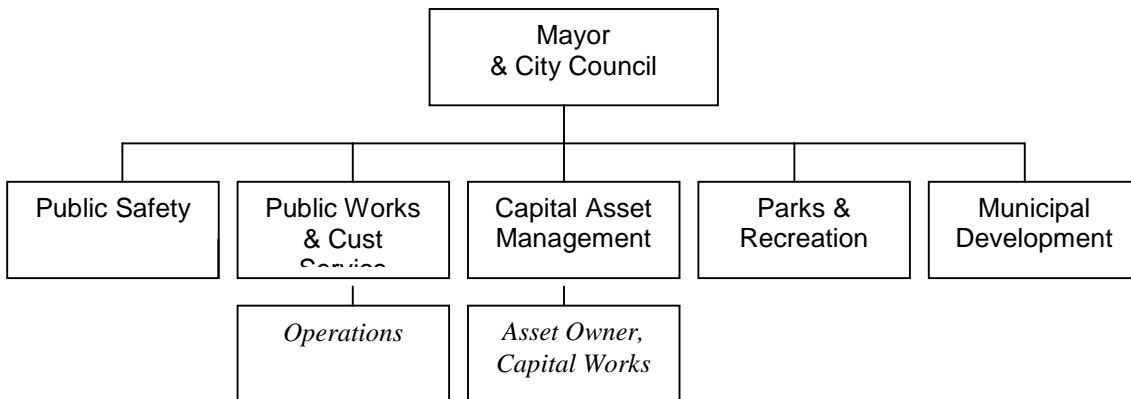


Fig 7. City of Indianapolis Organisation Chart.

7.2 City of Charlotte

The City of Charlotte reorganised its 26 departments into nine “key businesses” and four “support businesses” as shown in Fig 8.

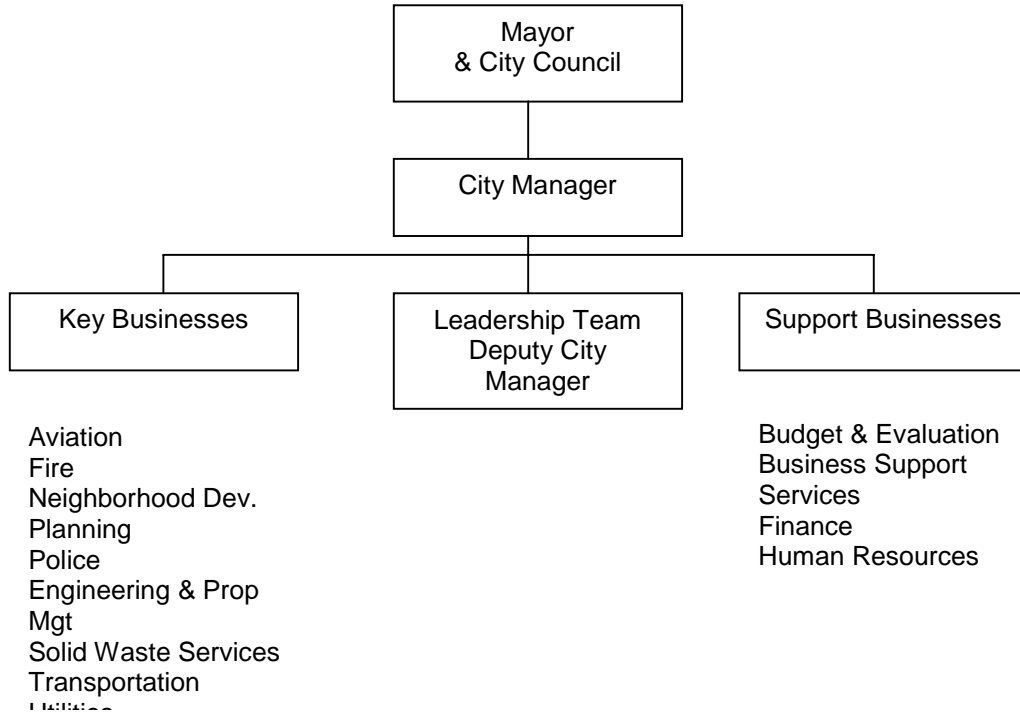


Fig 8. City of Charlotte Organisation Chart.

8. HOW ARE SERVICE LEVELS AND COSTS ASSESSED FOR INFRASTRUCTURE ASSETS?

Orange County is located in south-west Los Angeles, California. Consultants for Orange County Transportation Authority (OCTA) have reported³⁵ on local streets pavement conditions and funding levels required to maintain the network at various condition ranges. The County's overall Pavement Condition Index (PCI) is 81 which is rated Fair. Backlog repairs are estimated at \$800M. Estimated cost to maintain PCI at 81 is \$150M per annum. Estimated annual maintenance expenditure is currently \$50 - \$60M. They have estimated the funding required to maintain the County roads at minimum PCI levels over a 20 year period as

Rating	PCI range limits	Funding Required pa
Poor	60 – 72	\$80.6M
Fair	73 – 83	\$122M
Good	84 – 89	\$160M
Very Good	90 – 100	\$178M

Table III. Estimated Funding Required to Maintain Roads in Orange County, California

³⁵ Nichols Vallerga & Assoc., 1998

9. WHAT PERFORMANCE INDICATORS DO LOCAL GOVERNMENTS OPERATING IN A COMPETITIVE ENVIRONMENT USE?

Performance indicators range from PMS network condition scores for Orange County, Charlotte and Dorset County to percentage of target road resurfacing achieved by Charlotte, Perth & Kinross. Hillingdon Borough compare projected need against actuals for various road maintenance activities. Backlog maintenance needs is used by OCTA, Hertfordshire and building owners.

The Facilities Condition Index (FCI) used by NACUBO³⁶ is a measure of deferred maintenance to asset replacement value. A more detailed description is found in Section 6.1.3.

9.1 London Borough of Hillingdon

Hillingdon Borough produces graphs of length of roads requiring treatment 1993-96 (Fig 9), long term structural maintenance need for carriageways and footways 1992-97 (Fig 10), and for carriageways (Fig 11) and footways (Fig 12). These graphs show an increasing backlog of work over time. This can be attributed to the reducing expenditure in these activities (see section 5.2.11)

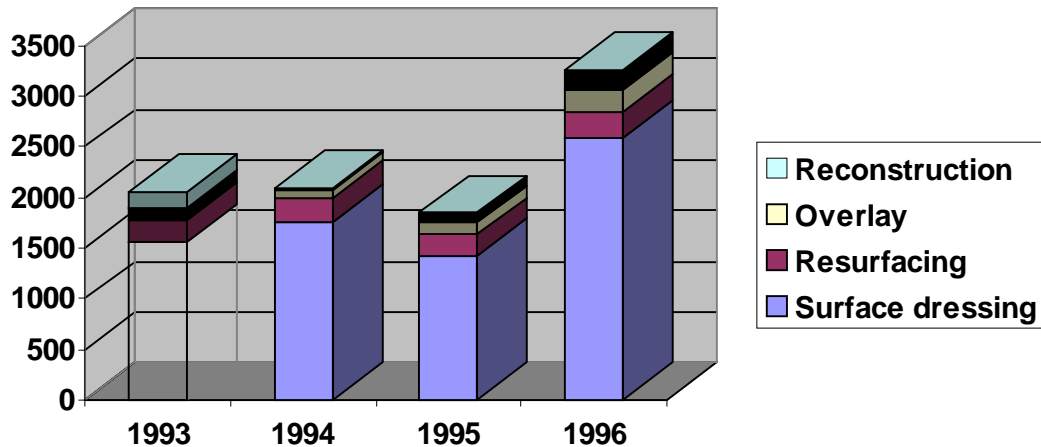


Fig 9, Lengths of roads requiring treatment in km 1993-1996, London Borough of Hillingdon

³⁶ Vanier et al, p 27

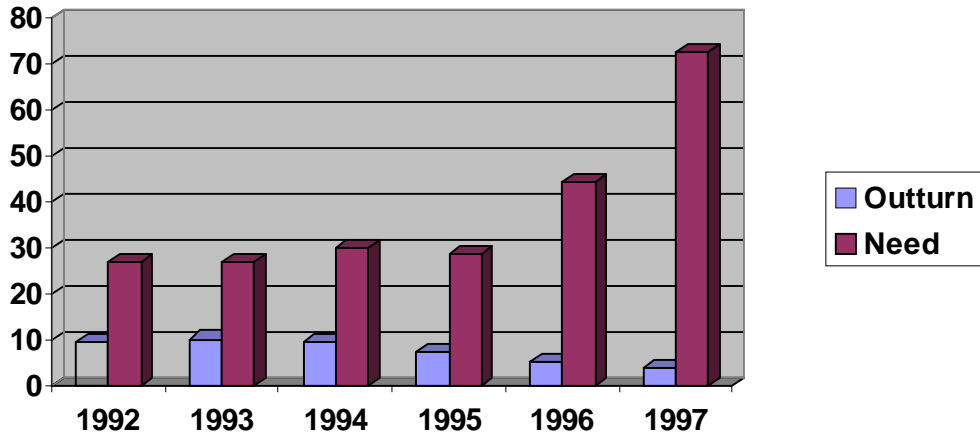


Fig 10. Long Term Structural Maintenance Need, Carriageways and Footways, Outturn (Expenditure) and Need £M, 1992 – 1997, London Borough of Hillingdon.

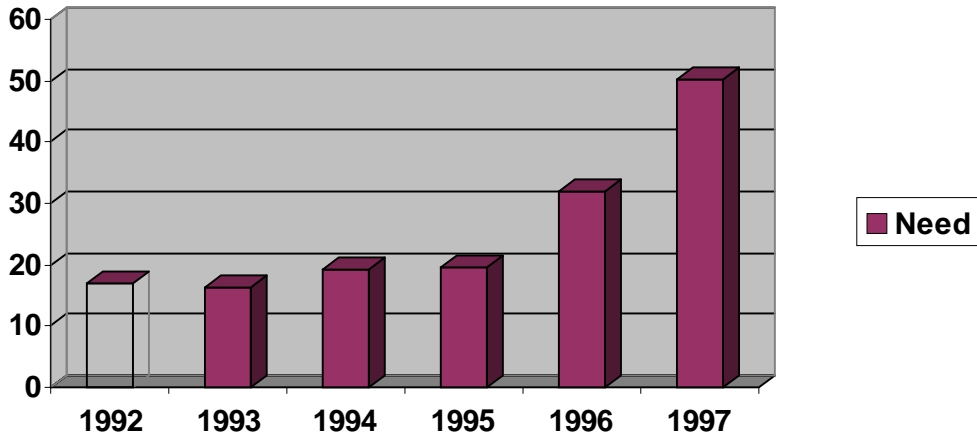


Fig 11. Long Term Structural Maintenance Need, Carriageways, Maintenance Need £M, 1992 – 1997, London Borough of Hillingdon.

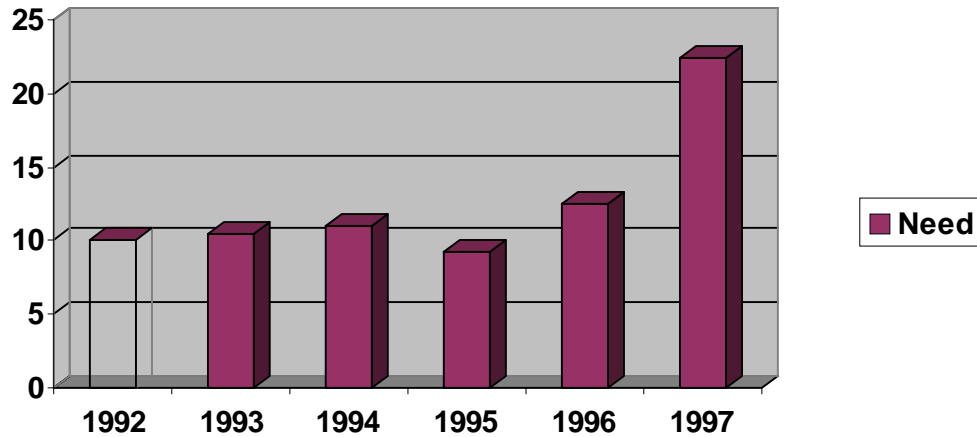


Fig 12. Long Term Structural Maintenance Need, Footways, Maintenance Need £M, 1992 – 1997, London Borough of Hillingdon.

9.2 City of Charlotte

The Charlotte Department of Transport (CDOT) use performance indicators for internal and external measurement. Table IV shows the comparison of resurfacing to a 12 year resurfacing target³⁷. Table V shown comparisons of percent of streets with indicated condition ratings with surrounding cities.³⁸

Year	Actual	Target	% of Target
1990	109.7	125	88%
1991	80.4	133	60%
1992	93.2	135	69%
1993	120.3	140	86%
1994	138.5	140	99%
1995	100.2	142	71%
1996	119.1	146	82%
1997	110.3	146	76%
1998	134.0	160	84%

Table IV. Miles of Streets Resurfaced per Year Compared to 12 Year Average Cycle, Charlotte Department of Transport, Source, CDOT.

³⁷ CDOT, 1997, p 3

³⁸ *ibid* p 2

PCR Score City	Year	0-50 %	51-65 %	66-88 %	81-91 %	91-100 %
Charlotte	1992	0.9	2.3	7.9	14.8	74.1
	1994	0.5	1.5	7.2	14.7	76.1
	1996	1.4	3.3	13.2	16.6	65.5
Greensborough	1991	7.3	6.9	7.0	16.3	62.5
	1993	1.9	5.0	13.1	10.9	69.1
	1995	2.3	3.9	12.7	11.7	69.4
Durham	1986	1.6	1.9	6.5	14.1	75.9
	1991	3.1	3.3	6.2	15.0	72.4
	1995	2.9	4.4	13.6	15.4	63.2
Columbia	1992	2.5	8.1	32.3	10.0	47.1
	1996	6.3	8.2	26.8	12.4	46.6

Table V. Percent of Streets with Indicated Condition Ratings for Charlotte and surrounding Cities

10. HOW DOES THE LOCAL GOVERNMENT CLIENT OBTAIN ASSET PERFORMANCE DATA FROM THE SERVICE PROVIDERS?

Of the organisations visited, it was mainly the UK Councils that are operating in a competitive environment. All UK Councils have a strong client resource and control the work carried out by their service providers by commissioning work to be carried out on a schedule of rates contract.

The exception was the City of Indianapolis's contract with the White River Environmental Consortium to operate the City's White River Advanced Water (Sewerage) Treatment Plant. This contract is a lump sum contract. The City has two Inspectors on site, one for technical matters and one for contractual matters and requires a detailed monthly report on operations of the plant from the contractor.

Similar arrangements apply for the sewer maintenance contract. Three staff audit technical matters of pump station operations, sewer maintenance/CCTV monitoring and day to day sewer maintenance work. A fourth staff member covers contractual items.

11. WHAT IS BEST PRACTICE IN SUPPLYING ASSET PERFORMANCE DATA FROM THE SERVICE DELIVERER TO THE CLIENT?

The City of Indianapolis' White River Advanced Treatment Plant and sewer maintenance contracts were the only example of a contractor providing asset performance data to the client.

The monthly report by the White Rivers Environmental Partnership to the City covers the following sections

Section 1 Project Highlights and Status

Section 2 Facilities Operations

- Non-standards operations
- Sewer and plant overflows
- License compliance
- Solids Handling Performance
- Process removal efficiencies

- Section 3 Facilities/Pump Station Maintenance
Maintenance program status
Completed maintenance projects for each treatment plant
Predictive maintenance vibration analysis status against February 1994 baseline
Preventative maintenance
Pump station maintenance completed
Pump station predictive and preventative maintenance status
- Section 4 Sewer Maintenance
Progress on grease problem mains
Asset location by GPS
Cleaning and Closed Circuit TV inspections
Major repairs completed
Planning/scheduling status
- Section 5 Laboratory/Industrial Pre-treatment
Number of samples analysed in laboratory
Industrial pre-treatment compliance report
Industrial permits issued
Industrial samples analysed
Wastewater hauler permits issued
Hauled wastewater qualities received
- Section 6 Safety and Training
Manhours of safety training
Topics of safety training
Safety inspections
Accidents and injuries
Plant training activities
- Section 7 Information Management Systems
Status on conversion of maintenance system to new computer system

12. HOW IS THE CLIENT'S REQUIREMENT FOR ASSET PERFORMANCE DATA PROVIDED IN SPECIFICATIONS FOR SERVICE DELIVERY?

The City of Indianapolis specifies the information required in monthly reports from the White River ATP contractor as described in section 11. I was unable to obtain further details on this item.

13. HOW DOES THE COMMUNITY PERCEIVE ASSET MANAGEMENT IN A COMPETITIVE ENVIRONMENT?

I was unable to locate any precise data on community perceptions of asset management in a competitive environment. The Cities of Indianapolis and Charlotte claim to be delivering better services at a lower cost.

14. PLACES VISITED

The itinerary included the following organisations

- City of Costa Mesa, California, USA
- City of Scottsdale, Arizona, USA
- City of Lenexa, Kansas, USA
- City of Indianapolis, Indiana, USA
- City of Charlotte, North Carolina, USA
- Dorset County Council, Dorchester, England
- Hampshire County Council, Winchester, England
- Perth & Kinross Council, Perth, Scotland
- Bedfordshire County Council, Bedford, England
- Hertfordshire County Council, Hertford, England
- London Borough of Hillingdon, Uxbridge, England

A detailed itinerary is attached as Appendix IV

The Cities and Counties were much larger than Australian local governments. US Councils are responsible for the traditional engineering services of roads, transportation, traffic, water supply, sewerage, recreation and waste management. They also have responsibility for Police and Fire services. The US system of government comprises four levels, Federal, State, County and local. Indianapolis and Charlotte have a joint County/City administration. Income is received from property taxes and in some States, a percentage of the State sales tax.

UK Councils are part of a three-tier government system being National, County and local administrations. The Counties are responsible for roads, local transportation, traffic, recreation, waste management, police, fire, education and social services. District Councils provide recreation services and under agreement with the counties, road maintenance. Private water companies provide water and sewerage services.

14.1 City of Costa Mesa, California www.cityofcostamesa.com

The City of Costa Mesa is part of the urban area of Los Angeles. It is located within Orange County in the southwestern sector of Los Angeles. The population is approx 105,000. Costa Mesa receives \$28M per annum from its share of State sales tax from transaction at South Coast Plaza, a major shopping centre.

14.2 City of Scottsdale, Arizona www.ci.scottsdale.az.us

The City of Scottsdale is part of the greater Phoenix area in Arizona. It was selected as a 'most livable City' in the United States by the US Conference of Mayors. Scottsdale's population is 185,000. It is a high growth area with high class residential estates usually centred around a golf course and golf club, with a manned security system to control entry into the estate. It has one of the highest per-capita incomes in the US.

14.3 City of Lenexa, Kansas www.ci.lenexa.ks.us

Lenexa is part of the greater Kansas City area, located on the western side of the City. It has a population of 40,000 and a day time population of over 100,000 due to the presence of large high-technology industries.

14.4 City of Indianapolis, Indiana www.ci.indianapolis.in.us

Indianapolis is the capital of the State of Indiana. It is located in mid Indiana with a population of approx 720,000. The City has implemented a major capital renewal program and a competition program that has saved \$350M in its operating budget.

14.5 City of Charlotte, North Carolina www.charmeck.nc.us

Charlotte is the largest City in North Carolina with a population of 522,000. It is a fast growing city with the headquarters of many of the largest banks in the US located in the City. Charlotte commenced a program of *Managed Competition* in to improve the efficiency of the City's operations.

14.6 Dorset County Council, England www.dorset-cc.gov.uk

Dorset County Council is headquartered in Dorchester; a city of 15,100 located 200 km south-west of London. Dorset County has a population of 233,000. A review of local government in 1996 saw the creation of two new unitary Councils, Bournemouth and Poole leaving a much reduced County, both in area and funding.

14.7 Hampshire County Council, England www.hants.gov.uk

'The Castle', Winchester is the headquarters of Hampshire County Council. Winchester is 100 km south-west of London. I was looking forward to seeing how a local government authority could operate in a castle. In fact, "The Castle" is a series of 1960's glass and aluminium buildings that now stand on the site formerly occupied by a historic castle. The population of Hampshire County is 1.7 million.

14.8 Perth and Kinross Council, Scotland www.pkc.gov.uk

Perth is located approx 50 km north of Edinburgh. It was created in 1996 following the review of local government in UK by splitting the former Tayside Regional Council into Perth & Kinross, Dundee City and Angus Councils. The three councils have retained 'Tayside Contracts' as their service provider for road construction and maintenance. Winter maintenance including snow removal, salting and gritting of major roads prior to a forecast snowfall, is a major component of roads maintenance.

The population of the Council area is 115,000 with 45,000 living in the City of Perth.

14.9 Bedfordshire County Council, England www.bedfordshire.gov.uk

Headquarters of Bedfordshire County is in Bedford, a city of 65,000 located 100 km north of London. Following the 1996 review of local government, a Unitary local government was established for the City of Luton, formerly contained within the County. The population of Bedfordshire County is 288,500.

14.10 Hertfordshire County Council, England www.hertscc.gov.uk

Hertford approx 42 km north of London is the location of the County Hall. Hertfordshire has a population of 1 million. The County includes the Garden Cities of Letchworth and Welwyn and New Towns of Stevenage, Hemel Hempstead and Hatfield established to control the urban sprawl of London.

14.11 London Borough of Hillingdon, England www.hillingdon.gov.uk

Hillingdon is on the western outskirts of London, located just within the M25 Orbital Motorway. Its area includes Heathrow Airport. Hillingdon Borough has a population of 245,000 and has its Civic Centre at Uxbridge.

15. CONCLUSION

Local governments in the US and UK do not have the driver of an accounting standard to implement asset management systems. All organisations visited had engineering management systems in varying levels of sophistication and effectiveness. Most systems were focused on prioritising capital works programs. There were no examples encountered, of engineering management systems for infrastructure assets at a network level that had delivered better management and funding for infrastructure assets. The conclusion was that the traditional engineering management systems were not able to produce meaningful information to decision makers to justify appropriate funding levels for infrastructure

There were some Councils visited where the continuing decline in funding for infrastructure had reached the stage of a pending disaster. As funding for infrastructure maintenance and operation has declined, public risk levels and future funding liabilities for renewal and reconstruction have increased.

Examples of best practice were found in three councils.

The City of Scottsdale AZ has an excellent project pre-planning process designed to deliver a higher quality service an lower capital and/or life cycle costing.

The City of Indianapolis IN has a well developed project scoping system designed to improve project definition, scoping and justification.

Dorset County Council, UK has let a 30 year Build, Own, Operate, Transfer (BOOT) contract for delivery of infrastructure for a secondary school. The BOOT contract has forced the development of life cycle costing over a 30 year cycle and the minimisation of the life cycle costs. A BOOT contract for infrastructure provision can be seen as the ultimate in life cycle costing.

Competition to reduce operating costs is a continuing process in UK and is developing in the US. The Cities of Indianapolis IN and Charlotte NC have let contracts for infrastructure management. Both Cities claim to be delivering better services at lower cost.

Engineering services are being privatised in the UK with cost savings of 10 and 25%.

The UK 'Best Value' process requires Councils to justify the services they provide to the people who pay the bills. It is highly likely that governments in Australia will require local governments to implement a version of 'Best Value' in the future.

The future for local government engineers will be vastly different to the present. Privatisation will see most engineers working for a consultant or contractor. Engineers in the contracting industry will be managing long term maintenance contracts or delivering infrastructure services under BOOT schemes of up to 30 year periods. There will be a greater focus on infrastructure decay prediction, preventative maintenance systems and economic analysis in a competitive, profit driven environment.

There is no reason that local government engineers cannot lead the process and continue to provide infrastructure services in accordance with ever-changing community desires and needs.

16. ACKNOWLEDGMENTS

I wish to acknowledge and thank the Trustees of the National Foundation for Local Government Engineering and the Mayor, Aldermen, General Manager and engineering staff of Devonport City Council. Without their confidence and support the study tour could not have been undertaken.

Jim Henshelwood provided assistance in selecting the study tour topic and preparing the application.

The following people provided the initial contact and hosted my visit to their organisation and arranged meetings with their staff. The study tour could not have been undertaken without their generous assistance and the support and time of their staff.

Mr Al Dreska, General Manager City Services, City of Scottsdale, AZ, USA

Mr Ron Norris, Director Public Works, City of Lenexa, KS, USA.

Mr Mark Jacob, Administrator, DCAM, City of Indianapolis, IN USA.

Mr Ed Sizer, Contracts Administrator, City of Charlotte, NC, USA.

Mr Mike White, Head of Transportation Services, Dorset County Council, UK.

Mr Bob Lisney, Head of Management Resources, Hampshire County Council, UK

Mr Jim Valentine, Area Roads Engineer, Perth & Kinross Council, Scotland.

Mr Steven Potter, Assistant Director (Highways & Transport), Bedfordshire County Council, UK

Mr Mike Palmer, Assistant Director (Network Management), Hertfordshire County Council, UK

Mr Keith Robinson, Contracts Manager, London Borough of Hillingdon, UK

There were numerous other people who responded to initial e-mail or fax requests for assistance in identifying suitable contacts, including Mr Mark McCain, Mr Ken Haag, Mr Norm Danylo, UK Local Government Management Board, UK Audit Commission, Mr Lucien De Sa and Dr Penny Burns.

I thank Rosemary Lynd, my Secretary for transcribing my dictated notes into a readable form and Bob Boscoe for proofreading the draft report and making many valuable comments to improve readability of the report.

And finally to my wife, Carole for encouraging me to submit an application for the fellowship award, for her loving support and patience prior to, during the five weeks of the study tour and later at home cataloguing documentation and completing this report.

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APPENDIX I

'Surveys and Inspections', Sec 4 A Code of Good Practice
Recommended frequency for survey and inspections

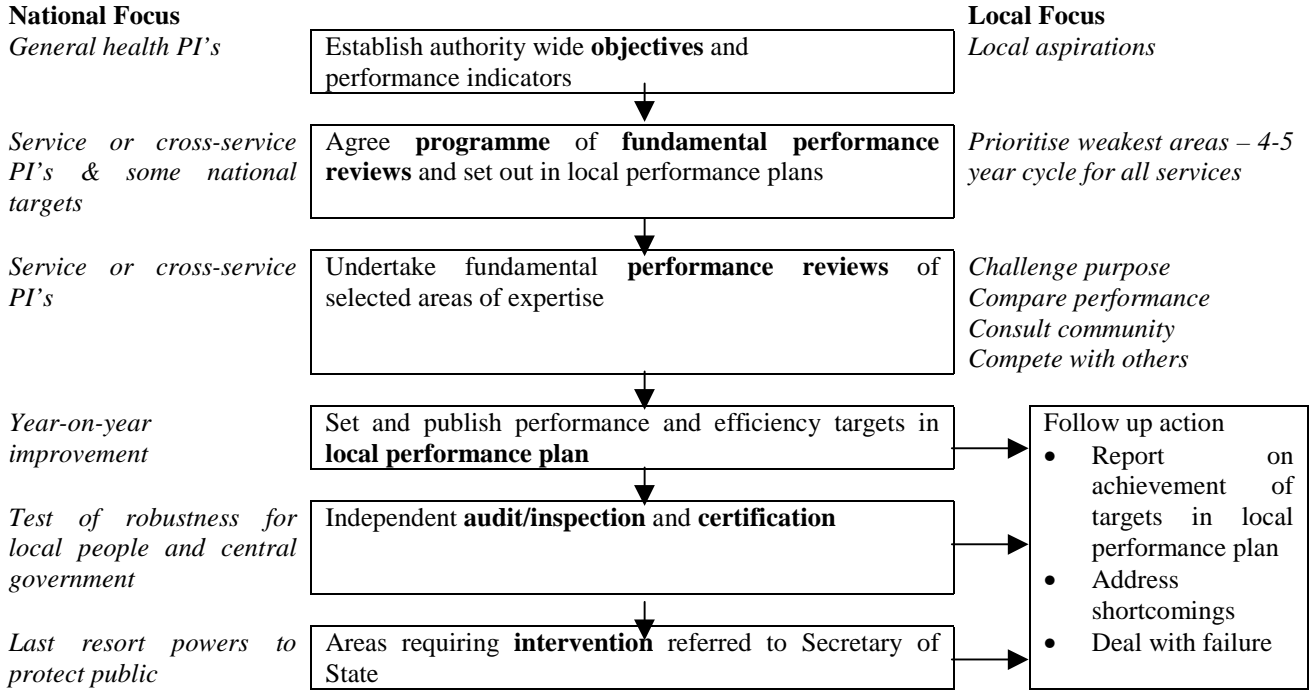
Category	Inspection/Survey Interval			
	Condition	Detailed	Safety	
Road				
S				
2	Strategic Routes	1 year	6 months	1 month
3(a)	Main Distributor	1 year	6 month	1 month
3(b)	Secondary Distributor	1 year	1 year	1 month
4(a)	Local Interconnecting Roads	<i>depends on findings of detailed safety inspections</i>	1 year	3 months
4(b)	Local Access Roads		5 years	1 year
Footways				
I	Main Shopping Areas	N/A	12 months	1 month
II	Busy Urban Area	N/A	12 months	3 months
III	Other Urban and Busy Rural	N/A	3 years	6 months
IV	Little Used Rural	N/A	5 years	1 year
Cycleways				
I	Part of Carriageway	As for Roads	As for Roads	As for Roads
II	Remote from Carriageway - Surfaced	N/A	1 year	6 months

Note

1. Where inspections are deemed N/A this assumes that any necessary information is collected with other surveys
2. Where there are long intervals between safety inspections, action will be necessary immediately following any public complaint

APPENDIX II

UK “Best Value” Performance Management Framework



Source. “Modern Local Government, In Touch with the People”, UK Government White Paper, CI 7.3 (p 37)

APPENDIX III

1999 APWA Congress, Seminar Series “Innovations in Urban Infrastructure”,
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APPENDIX IV

Itinerary

Tuesday 8 September 1998	Travel Devonport to Los Angeles
Wednesday 9 September 1998	Travel Los Angeles to Anaheim
Thursday 10 September 1998	Visit Disneyland
Friday 11 September 1998	Visit City of Costa Mesa
Saturday 12 September 1998	Travel Los Angeles to Las Vegas
Sunday 13 September 1998	Visit Grand Canyon, APWA Congress
Monday 14 September	APWA Congress
Tuesday 15 September	APWA Congress
Wednesday 16 September	Tour to Hoover Dam, APWA Congress
Thursday 17 September	APWA Congress
Friday 18 September	Travel Las Vegas to Phoenix Visit City of Scottsdale
Saturday 19 September	Tour Scottsdale and Phoenix
Sunday 20 September	Travel Phoenix to Kansas City
Monday 21 September	Visit City of Lenexa
Tuesday 22 September	Travel Kansas City to Indianapolis Visit City of Indianapolis
Wednesday 23 September	Visit City of Indianapolis
Thursday 24 September	Travel Indianapolis to Charlotte
Friday 25 September	Visit City of Charlotte
Saturday 26 September	Travel Charlotte to London
Sunday 27 September	Travel Charlotte to London, Heathrow Travel Heathrow to Dorchester
Monday 28 September	Visit Dorset County Council
Tuesday 29 September	Travel Dorchester to Winchester Visit Hampshire County Council Travel Winchester to London, Heathrow
Wednesday 30 September	Travel London Heathrow to Edinburgh Travel Edinburgh to Perth

Thursday 1 October	Visit Perth & Kinross Council
Friday 2 October	Visit Perth & Kinross Council Inspect Killiekrankie Water Treatment Plant
Saturday 3 October	Travel Perth to York
Sunday 4 October	Travel York to Bedford
Monday 5 October	Visit Bedfordshire County Council Travel Bedford to Hertford
Tuesday 6 October	Visit Hertfordshire County Council Travel Hertford to Hillingdon
Wednesday 7 October	Visit London Borough of Hillingdon
Thursday 8 October	Travel London Heathrow to Melbourne
Friday 9 October	Travel London Heathrow to Melbourne
Saturday 10 October	Travel Melbourne to Devonport

Author Biography



John Howard was awarded the Australian 1998 National Foundation for Local Government Engineering Fellowship Award to attend the American Public Works Association Congress and visit councils in US and UK, researching 'Asset Management in a Competitive Environment'.

John is employed by Devonport City Council as Manager Technical Services. He has been heavily involved in the development of asset management systems at Devonport, the IMEA National Asset Management Manual and the application of business principles to the management of infrastructure assets.

He is Chairman of the Institution of Engineers Australia National Committee on Local Government Engineering and represents the Australian Local Government Association on the Austroads Asset Management Reference Group.

John and his wife Carole live in Devonport. They spend their leisure time touring and bushwalking in the scenic Tasmanian countryside.

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