



*Typical drainage assets – much less volatile than roads,
but harder to measure*

4 STUDY METHODOLOGY

4.1 Data collection

4.1.1 Survey Form

A comprehensive survey form was developed to gather data on a consistent basis. The survey form was developed with the help of:

- A Roads Reference Group;
- A Recreation and Culture Reference Group; and
- Ten Pilot Councils. (Refer Appendix 2 for the composition of the groups.)

The Reference Groups and Pilot Councils were instrumental in determining:

- The scope of the data collection;
- The level and aggregation of the data collected;
- Advising on data availability; and
- Ensuring that the terminology used was understandable to local government.

The survey form was developed in Microsoft Excel and was made available to councils, on disk, in the Office 97 version and in the previous version, 5.0. A feature of the Office 97 version was the use of ‘drop-down’ list boxes which were used to obtain consistent responses to a number of the questions in the survey. A copy of the survey form is attached as Appendix 3.

Accompanying the survey form was a detailed instruction manual for its completion. A copy of the instruction manual is attached at Appendix 4. The

instruction manual provided a clear set of guidelines for completing every field of the survey form. For councils using the previous version of Microsoft Excel, the content of each of the ‘drop-down’ list boxes was displayed to maintain the consistency in responses.

Five regional meetings were held across the State. Technical and financial people responsible for completing the survey form attended the meetings, from 71 of the 78 councils. There was a detailed briefing on the nature and purpose of the data collection and each field (or set of fields) of the survey form was discussed. There was a high degree of interaction at each meeting and many of the questions that were asked helped the council staff to gain a better understanding of the purposes of the survey and the requirements of the data collection.

The survey forms and the instruction manual were released at the meetings. Those councils who did not attend the regional meetings received their forms through the post, with six of the seven councils requesting a briefing on the survey.

4.1.2 Council Visits

Every council in the state was visited to retrieve the information requested in the survey form. The visits provided an opportunity for both the council and the consultants to clarify the data collection. An initial validation of the data was achieved by checking and comparing completed parts of the survey form, e.g. estimated annualised life cycle cost approximates total maintenance plus depreciation; current replacement cost is greater than written down current cost. A checklist was used by the consultants to prompt the councils for other information and clarification of the data provided. A copy of the checklist is attached as Appendix 5. Part of the checklist was a pro forma to assist councils to tell the ‘good news’ stories about the ‘best practice’ approaches being taken to provide council services.

In many cases, the completed disk was retained by the council for modification of the data.

As well as assisting in ensuring a ‘good’ data collection and helping the consultants to view the local area of each council, a number of councils expressed their pleasure at being visited in their own environment. There were a number of comments on the perceived benefits of the visits and the following list provides a summation of those comments:

- i. Technical and financial people working together to obtain the data.
- ii. A solid understanding of the project aims and objectives.
- iii. A new way of looking at asset management.
- iv. The realisation that some of the data is not available and yet it is important data in the strategic and management contexts.
- v. The knowledge that other councils are doing similar things.
- vi. The knowledge that other councils face similar problems – ‘we are not alone’.
- vii. The knowledge that they are doing some things that are ‘best practice’ (the ‘best practice’ stories).

- viii. A raised awareness about the importance of strategic planning.
- ix. An understanding that there is no best (or one) way to do things, but that each council has unique problems as well as common problems on some basis.
- x. A raised awareness about asset management issues.
- xi. Networking – other people to talk to and discuss issues - see also v. above. (This was a major benefit of the regional meetings, with people saying that they got an opportunity to meet their counterparts in neighbouring councils.)
- xii. Seeing the big picture by getting out of the detail.
- xiii. Suggesting strategies to overcome the problems – further amalgamations, asset rationalisation, changed asset ownership, using the local community.
- xiv. Understanding and articulating the political dimension of the problem.
- xv. The need for a continuing data collection.

The survey form was generally forwarded a few days after the site visit. In most cases the form was sent via email, demonstrating local governments ability to adopt new technology quickly.

4.1.3 Follow Up With Councils

In some instances, further clarification of the data supplied was required. This was generally achieved through either a telephone call or a fax. Responses took the form of a fax, if there was only a small amount of information being transmitted. Data clarification requests resulting in significant changes to the survey form usually were handled through email.

4.1.4 CEO's Sign-off

At a late stage in the study it became apparent that, despite efforts to clarify data discrepancies, there were some survey returns that contained poor quality data. After discussion with the Office of Local Government it was decided to return completed survey forms, with any amendments included, to every council for the CEO to sign-off on the reasonableness of the data. This exercise resulted in 45 of the 78 councils making changes to the supplied data. A brief summary of the changes is contained in Appendix 6.

Typically, the changes made included:

- Revised economic lives for some assets (generally extended);
- Changes in the categorisation of capital expenditure; and
- Changes in the age profile of assets.

4.1.5 Draft Report – Feedback

A draft report was prepared and issued to all councils, inviting feedback on the contents of the report. A number of councils (about 10) took the opportunity to further revise the data they had supplied. The changes were mainly in relation to economic lives and some budget information.

4.1.6 Other Data Sources Used

At the outset of the project, councils were advised that the amount of data they would have to supply would be kept to a minimum. In particular, where the data was available from another source, that source would be used. The following data sources were used to collect information relevant to the study:

- Victoria Grants Commission
 - ™1995/96 and 1996/97 broad revenue and expenditure information;
 - ™1995/96 and 1996/97 rates information; and
 - ™disability factors used in assessing councils for financial assistance grants.
- Department of Infrastructure – Research Unit
 - ™Population and household statistics
 - ™Dwelling composition
- Australian Bureau of Statistics
 - ™Household income information from the 1996 census.

4.2 Data Analysis

4.2.1 Definitions

The Instruction Manual which accompanied the survey form provided a number of definitions (refer to Appendix 4.) It is known that a number of councils have used their own definitions of maintenance and capital. This reflects the lack of uniformity of treatment of infrastructure asset expenditure by councils. It should be noted that there are a number of viewpoints on what is maintenance and what is renewal, causing genuine misunderstanding. In terms of this study, the differing interpretations only affect the data analysis when it is conducted at a disaggregated level. It does not affect big picture analysis.

However, it would be useful in any future data gathering exercise if common definitions were developed and used by all councils.

A glossary of a number of terms used in this report precedes Section 1 of the report.

4.2.2 Assumptions

Some assumptions have been made to provide a basis for analysing the data. While the assumptions may not be completely correct it is important to make them to assist data analysis. The assumptions may not always hold at the individual council level, but they will generally hold at the aggregate level because of the ‘swings and roundabouts’ effect of the data collection.

- i. *Economic Lives.* Councils have used a range of economic lives for the same type of asset. There are valid reasons (e.g. topography, climate, quality of construction materials) why this should be the case. It has been assumed that the economic lives used by individual councils are a genuine reflection of the factors which differentiate between councils and the level of maintenance applied to the assets by the council.
- ii. *Maintenance Costs.* It is not possible, given the nature of the study, to analyse the maintenance effort of individual councils. This is particularly the case with longer lived or buried assets, which may

- require little or no maintenance expenditure for considerable periods of time. Nor would it be correct to say that maintenance expenditures are a certain percentage of current replacement costs of a council's assets. It is assumed that the current level of maintenance expenditure is appropriate.
- iii. *Asset Renewal Profile.* In the absence of a clear policy direction to the contrary it has been assumed that the current asset base of each council will be maintained for the purposes of determining the future liability for renewal of assets.
 - iv. *Age Profile of Assets.* The age profile of a council's assets may be based on the age of the assets, some surrogacy for the exact age such as the date of construction of surrounding assets or the condition of the assets. In the absence of any other data the age profile provided by councils has been accepted.
 - v. *Current Costs.* The data was supplied using current costs, i.e. no allowance was made for the effect of future cost increases or inflation. This provides for a substantial level of consistency in the data.
 - vi. *Current Management Practices.* Although each council may well deal with its assets differently from its neighbours it has been assumed that the management practices are appropriate to the council and no attempt has been made to adjust figures to 'standardise' for those different practices. Further comment on management practices is made in Section 5.12 of this report.
 - vii. *Backlog Maintenance ("Past Due").* Nearly every council has assets that are shown as being past their economic life. This is to be expected as the concept of economic life is the average age at which the assets will no longer provide a useful service. Some assets will fail early and some later. However, a number of councils have reported a substantial number of assets as being "past due" for replacement. In generating the future renewal profile for each council assets past due have been scheduled for replacement at the next cycle. For example, a road asset with an economic life of 50 years which is now 75 years old has been scheduled for replacement at 100 years.

4.2.3 Data Constraints

The data survey collected a broad range of data about each council. There are a number of constraints which apply to the data, its use and the analysis of the data. They are:

- i. *Nature of the Study.* This is a high level study of some macro areas of asset management. It provides a 'helicopter' view of the challenges faced by Victorian local governments. It is not intended to provide for a detailed analysis or understanding of individual councils asset management practices or data.
- ii. *Economic Lives.* Councils were asked to provide a single economic life for each sub-category of assets. This necessarily adds an 'averaging' aspect to the data as some assets will be subject to further sub-categorisation (e.g. arterial roads, collector roads, local roads) which have differing economic lives.

- iii. *Use of the Data.* The data was collected purely for the purposes of the Infrastructure Study. It was not collected for cost comparison or benchmarking purposes and the specification and rigour that is associated with such data collections has not been applied to this data collection. Tables of councils with varying percentages or other measures are not rankings – they are simply sets of information which may be useful to provide an indication of areas for further study. **It is dangerous, and indeed inappropriate, to use the data for purposes other than the Infrastructure Study.**
- iv. *Time.* The Infrastructure Study has a tight timeframe for its completion. This impinged on the data as it was not possible for councils with poor data to spend significant amounts of time improving the data.
- v. *Interpretation of Requirements.* The briefings on the study and the site visits to councils have gone a long way to ensuring that a uniform interpretation of requirements has been made. However, there may be some inconsistencies in the way in which the requirements have been interpreted. This needs to be taken into account in relying on the data.
- vi. *Errors.* The size of the data collection and the number of fields to be completed tend to increase the chances of incorrect or missing data.
- vii. *Nature of Council Data Holdings.* The data held by councils is not homogeneous. Council amalgamations have resulted in the combination of disparate systems, which may or may not result in some loss of data integrity or a blurring of the system controls on data entry and update. Data has been collected using different assessors and staff and it is likely that dissimilar standards have been used.

4.2.4 Data Validation Issues

In any data collection it is useful to take steps to validate the data received. The outcome of the study is enhanced if valid data is analysed. There were three data validation stage in this project – the site visits, data entry and CEO sign-off. **Despite these validation steps it is unrealistic to believe that all the data is validated – this is not the case.** Data validation has been possible to the following extent:

- i. *Internal Comparison Checks.* A number of comparison checks were made of the data, e.g. Was the total replacement cost of the age distribution of the assets consistent with the current replacement cost? Was the depreciation charge consistent with the stated economic life of the asset? Was the annualised estimated life cycle cost equivalent to the sum of depreciation and maintenance? Fax and/or telephone follow-up with councils, as necessary, was made to clarify any significant variations.
- ii. *External Comparison Checks.* Where data was available from another source, e.g. Victoria Grants Commission; Australian Bureau of Statistics; Department of Infrastructure, a comparison of the data sources was made.

- iii. *Reasonableness Checks.* Each survey form has been reviewed for reasonableness, on more than one occasion. Typically, the questions posed were: Are the survey answers or figures consistent or reasonable for a council of this size or nature? Is the maintenance figure consistent with the asset base? Are the economic lives consistent with the age profile of the assets? Is the data consistent with data from other sources? Again, telephone and fax contact was made with councils to clarify potential anomalies.
- iv. *Correct Additions.* Where additions were required the survey form was designed to total the individual amounts automatically.
- v. *Data Magnitude.* Dollar amounts were required to be entered in thousands, but there was a lack of consistency applied by councils in observing this rule and a careful analysis of all dollar amounts was undertaken to ensure that the correct magnitude was observed. Errors of this type became more apparent when the data was converted into table format. Incorrect data was readily converted to the correct magnitude, with little reference to councils.
- vi. *Percentage Amounts.* The survey form was not sufficiently stringent in accepting percentages. A careful review of percentages, again using data tables, was required to ensure that the correct magnitude was applied.

4.2.5 Environmental Factors

Victoria is a compact state compared to the other Australian states. Despite its compactness there is a significant amount of variation across the state. While there are many similarities between councils, there are many differences. The Australian Classification of Local Governments (ACLG) acknowledges the differences by providing twenty-two different classifications. The classifications relate to land use (urban or rural), population density and remoteness, with a separate classification for capital cities. Victorian councils are represented in fifteen of the twenty-two classifications.

As well as the distinctions identified in the ACLG system there are a number of other factors which distinguish councils, both natural and man-made. They include:

- i. *Topography.* The physical characteristics of the council area, e.g. hilly terrain, open plains, coastal areas, natural forests, rivers and watercourses. The predominance of particular physical characteristics will affect the councils cost structure. For instance, numerous watercourses increase the cost of building and maintaining roads because of the increased need for bridges and culverts and the degradation of road pavements from water in flood-prone areas.
- ii. *Climate.* There are potentially four climates experienced by Victorian councils. Temperate (mild winters, warm summers, moderate rainfall), arid (cold to mild winters, hot summers, low rainfall), wet temperate (mild winters, warm summers, high rainfall) and alpine (cold winters, warm summers, significant snowfalls). Each of those climatic conditions has different effects on infrastructure assets, in terms of economic lives and maintenance costs.

- iii. *Built Environment.* The extent of the built environment, particularly transport and drainage infrastructure, and its age have a significant effect on maintenance and renewal expenditure levels of councils.
- iv. *Distance between Urban Centres.* A council with a large geographical area will have more difficulties, and probably increased costs, in delivering services to its de-centralised community compared to a compact metropolitan council. This is likely to be offset to some extent by the provision of fewer services and the self-reliability of rural communities.

The effect of these environmental factors differs for each council and contributes to the differences between councils both in terms of the demand for services and the capacity, and extent, of service delivery.

4.2.6 Summary

While councils have made a significant effort to provide good quality data it must be kept in mind that the data is:

- Largely unaudited;
- Subject to a set of assumptions which may not always hold true;
- Subject to varying interpretations;
- Subject to some inconsistency;
- Useful as a guide and a ‘first cut’ for aggregate analysis; and
- Gathered for the purposes of this study and not other purposes which might require a more rigorous approach – e.g. unit cost analysis, benchmarking.

Despite the limitations and constraints of the data it is of sufficient accuracy to provide the ‘helicopter’ view.