Has the management of infrastructure assets (IAs) improved with the use of the accrual method in local government?

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Abstract

Purpose – The purpose of this study was to investigate how senior accounting staff in Victorian local authorities are recording and reporting infrastructure assets (IAs) with their relevant depreciation in General Purpose Financial Reports (GPFRs) and the decisions made from this information. IAs are long-lived assets such as roads, drains and bridges. The introduction of Australian Accounting Standard No. 27 Financial Reporting by Local Governments (AAS27), which applies to all Australian local authorities require IAs to be reported in the balance sheet and depreciation to be charged in the operating statement in order to reflect the loss of service potential in the operating period concerned. Before AAS27, the purpose of public sector accounting was to demonstrate that funds have been raised and expended strictly within the authority of the annual budget on a cash basis. The efficiency and effectiveness of decision-making by users of this cash-based information was impaired with this short-term charge/discharge objective. The study was carried out to determine if information provided in an accrual accounting environment would be more efficient and effective for decision making by users than cash-based information.

Design/methodology/approach – The study included a comprehensive literature review then interviews with 15 chief financial officers from Victorian local authorities. These authorities represented inner metropolitan, outer metropolitan, rural city, large rural and small councils.

Findings – The study reported the implications for change to accrual accounting method in accounting for IAs and the efficiency and effectiveness for decision making by both internal and external users. The question answered is whether the information provided by accrual accounting is used in the management of IAs. In some areas, it has been used and the benefits show from both an efficiency and effectiveness perspective. Concerns with this issue were identified by academics, parliamentary inquires, accounting authorities and local government interest groups.

Originality/value – This study is a comprehensive review of how senior local government accounting management are using the information generated from AAS27 on IAs and what value it has in their decision making.

Keywords Assets management, Accounting, Financial reporting, Australia

Paper type Research paper

Introduction

This paper considers accounting for infrastructure assets (IAs) using the accrual accounting method. A report, *Facing the Renewal Challenge* (Burns *et al.*, 1998, p. 1), revealed some startling statistics on IAs. Only 8 out of the 78 Victorian councils were

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spending the amount required to maintain their IAs beyond the next decade; the total value of these assets was estimated to be $23.3 billion or $13,000 per Victorian household. Since that report in 1998, it has been estimated that in 2006 local roads and bridges have a depreciated replacement cost (DRC) of $16.04 billion but the worry is that the renewal gap (what is needed to being these assets up to the required service levels) is $54 million (Victorian Office of Local Government – VOLG, 2006, p. 1). The problem lies with how IAs are identified, valued and depreciated for proper decisions to be made on the funding required for maintaining these assets at the service levels required. Also, funding of depreciation through charging ratepayers with IA depreciation will ensure user pays principles and intergenerational issues will be addressed.

Another article forecasts that the worsening state of Victoria's infrastructure has caused higher maintenance and depreciation costs which would result in higher rates for ratepayers. The President of the Municipal Association of Victoria, Geoff Lake, suggested that some councils' rates may increase over 10 percent because of costs associated with roads, servicing the increasing IA network (maintenance costs) and what is lost to maintain services (depreciation costs) (Mitchell, 2006).

Observation and anecdotal evidence from local government suggests that the adoption of full accrual accounting procedures for all Australian Local Governments as required under the standard Financial Reporting by Local Governments (AAS27), presented and still does present, a number of challenges to councils even though it has been over 15 years since the standard was introduced. A significant challenge has been the identification, measurement and depreciation of IAs.

One of the objectives of AAS27 was the preparation of local government financial reports that would provide information relevant to the management of resources by both internal and external users. This was expected to lead to more-informed management of those resources and to improve accountability.

Thus, the objective of this study is to review senior local government managers for the effects on their efficiency and effectiveness of AAS27 in managing these resources.

Literature review

Accrual accounting of IAs including depreciation has been cited as an efficient and effective method which results in reliable decision making for maintenance programs and reporting (Perrin, 1998; Torres, 2004; Blondell, 2004; Lye *et al.*, 2005; Barton, 2005; Carlin, 2005). Some authors, however, have argued that accrual accounting should not be used in the government sector. The main objection is that the private and public sectors have different motives and ideas on recording either surplus or deficit and that private and public sectors should not report under the same principles (Gowland and Aiken, 2005; Firth, 2006; Carnegie, 2005).

The basis of local government accounting changed from cash or modified accrual accounting in 1992 to full accrual accounting procedures through the implementation of the Australian Accounting Standards (AAS) Board, Financial Reporting by Local Government (AAS27) and, in Victoria, the Local Government Act. Under the previous Victorian accounting regulations, realisable non-current assets were written-off and then capitalised in the balance sheet as equity and assets. As most IAs were not realisable, they were not recorded in a municipality's financial statements.

Depreciation of these assets was not recorded and there was very little, if any, knowledge of the consumption in the reporting period, that is, the cost of providing the

services for which those assets were originally acquired. The record of IAs in asset registers was inadequate or had not been completed under the modified accrual accounting method. This situation continued for a very long time and has resulted in both the absence of IA records and inappropriate attitudes to recording these assets by senior local government accounting and engineering staff members. There also appears to be differences of opinion among accounting authorities, auditors-general, local government authorities, engineering authorities and local government staff in how to apply the concepts contained in AAS27 and how they will help in the management of IAs and be an efficient and effective guide to maintaining these assets (Molland, 2005).

In 1984, the Public Sector Accounting Standards Board established a sub-committee to investigate existing practices and problems in the area of local government accounting. Financial Reporting by Local Government Discussion Paper No. 12 was released by the Australian Accounting Research Foundation – AARF (1990, 1996, 1997, 2000) in 1988. One of the recommendations in the discussion paper was that the presentation of financial reports by local authorities be more in the nature of private sector reporting, involving full accrual accounting, with the inclusion of previously omitted IAs in the financial statements of local authorities (Greenall and Paul, 1988, p. 55).

Academic studies in Australia and overseas on this issue had been very limited in the early 1980s and 1990s but increased in the late 1990s and early 2000s especially in Australia. In the 1980s, Lapsley (1986) and van Daniker and Kwiatkowski (1986) carried out studies that indicated that accounting in local government was not adequate and did not provide useful information for decision making. Burns *et al.* (1998) carried out a study of the 78 local authorities in Victoria and concluded that even if they were using accrual accounting (AAS27) they still were not producing the information that was required under this method. Lee *et al.* (1999) studied whether there was enough information in General Purpose Financial Reports (GPFRs) to make informed decisions and concluded that there was not. More information was needed on maintenance of IAs in notes to accounts. Walker *et al.* found anomalies in how IAs were recorded in GPFRs. These anomalies were the condition disclosures for IAs and their relevance to users to make informed decisions. van Daniker and Harris (1999) indicated that IAs could be the largest balance-sheet item and should be recorded using accrual accounting even if this was going to be at a substantial cost initially. The benefits, according to these academics, would far outweigh the costs.

Connolly *et al.* (1999) tried to use two theories to relate IA accounting to accrual accounting but, these, costly contracting and public choice theories, did not produce any relevant results. Pilcher's (2000) study in New South Wales found that there were inconsistencies with how councils were reporting under accrual accounting. The author suggested that there could be certain manipulation of the figures with depreciation being mentioned. Ryan *et al.* (2000) found that the local authorities were progressing well with the identification, valuation and depreciation of IAs.

A report on The Valuation and Reporting of Cultural, Heritage and Infrastructure Assets, (Public Accounts and Estimates Committee, 2002) was strongly supportive of accrual accounting for IAs but acknowledged some practical problems associated with valuation and depreciation. The committee's inquiry was initiated because of the concerns of some agencies (local government groups and engineers) about the appropriateness of applying aspects of accounting standards to IAs. The committee believed that the adoption of a new strategy would lay the foundations for a more

consistent, reliable and cost-effective valuation and management approach for the future. To implement this strategy successfully, continuing commitment from senior management within agencies would be crucial.

These studies indicated that the annual results and other information in GPFRs were sending out confusing signals to internal or external users.

Identification of IAs

Public investments in IAs, for example, roads, reticulation systems and bridges, are significant. The identification of these assets needs to be comprehensive to enable effective and efficient asset management. There were many issues that needed to be addressed by municipalities in the identification process in accounting for IAs to meet AAS27 requirements.

Identification involved two problems: discovering what assets were held; and selecting a consistent and theoretically defensible basis for deciding whether to record "systems" or the components of those systems. This decision has implications for valuation and for the selection of depreciation policies. The literature continues to reflect the existence of the two problems (Ellwood and Newberry, 2007).

One of the issues encountered was the varied definitions people used in accounting for IAs. This led to a situation where, depending on the definition used, identification and values for IAs varied significantly. Most definitions were very broad and did not give a good basis for consistency. Currie's definition was very complex but consisted of very general examples of IAs. Pallot's (1990) definition provided the best example of how to account for IAs. IAs were divided into components with separate useful lives which allows for separate values for each component which can be depreciated to indicate the level of consumption for that IA network in the financial year.

There was a reluctance to account for IAs because they were: not assets but liabilities, that is, as the initial cost was irrelevant, the liability lay in the duty to maintain them; different to other physical assets for reporting purposes and had different values than the private sector for IAs reporting purposes. These opinions were often expressed by both academics and practitioners within local government (Rowles, 1992; Pallot, 1990). Even though it appears that over the past 15 years since AAS27 was released the level of concern has considerably reduced and most academics and practitioners now accept that accountability for IAs has increased, there is still some reluctance.

Valuation of IAs

One of the most significant issues arising from AAS27 is the measurement of IAs for financial reporting purposes. Several bases have been used or advocated: historical cost; current replacement cost; realisable value; fair value; and DRC.

The historical cost of an asset is the original cost of purchase and its installation cost. Newly acquired assets (after 1 October 1992) were recorded at the cost of acquisition (AAS27 para 39). For IAs acquired before 1 October 1992, historical cost may not be appropriate. If this applies the current cost method should be used (AAS27) written down replacement cost calculated.

Under the current cost method a value estimated for the current cost by reference to the cost of replacing the asset by the modern replacement facility. It applies where the asset being valued would be replaced at balance date by a different asset (in terms of scale and/or technology) having a similar service potential (Churchill, 1992, p. 32).

Where the service potential of an asset could not be replaced or has already been replaced by some other asset, the asset should be brought to account at its realisable value or at the net cash inflow that would be realised from its continued use, whichever is higher (Churchill, 1992, p. 33).

Balding (1991, p. 4) stated:

> RTA Financial Statements for the last financial year reflected, for the first time, the value of *all* RTA assets which now include $42.4B of infrastructure assets. Capitalisation of the road infrastructure by the RTA is a very first in Australia and I am not aware that it has been done anywhere in the world.

It was claimed that matching Balding's target would not be a difficult task because some government agencies had already completed the change-over from modified to full accrual method for recording and reporting IAs. Vicroads, for example, have the policies given below:

> [. . .] the best measure of current cost for most IAs is current replacement cost. This method establishes the *going rate* for the replacement of existing assets and will reflect characteristics such as condition, supply and demand, and remaining service life and current dollar values.

A manual prepared by the VOLG (2006) indicated that the best form of fair value for roads, drains and bridges is DRC (VOLG, 2006). The concepts of Greenfields and Brownfields have been identified as the best methods to account for the renewal cost to an IA. The concepts relate to the assumptions made about the replacement such as starting out with a completely unencumbered open field.

Depreciation of IAs

Depreciation of IAs in particular is covered by AAS27 (para 45), which requires that although such assets are long-lived, they still need to be depreciated:

> [. . .] it is sometimes argued that depreciation should not be recognised in respect of long-lived assets such as buildings, monuments, roads, bridges and underground pipes, because they do not wear out. The view adopted in this Standard is that, with rare exceptions, the service potentials of long-lived assets do expire over time, not withstanding proper maintenance.

Relatively recent reports for Victorian local government authorities have highlighted the need for accurate and reliable information on IAs for financial decision making. There appears to be mounting pressure on government and accounting bodies to provide defensible methods in depreciating IAs.

> [. . .] ordinary depreciation methods are not useful for an asset that is not replaced. It is recommended that the Office of Local Government explore the infrastructure option of Condition-Based-Depreciation method which is more accurate and provides a better management tool (Burns *et al.*, 1998, p. 79).

Another relatively recent indication that this debate is still current is a ruling from the Urgent Issues Group (AARF, 2000), which as at year 2000 effectively prohibited the use condition-based depreciation (CBD).

Methodology

The research study, which was primarily descriptive in nature, included:

- literature review;
- data collection (interviews);
- data analysis;
- deduction; and
- conclusion.

The first stage was a comprehensive review of the Australian literature on the recognition, measurement, recording and depreciating of IAs. The second stage was interviews with chief financial officers (CFOs) from a cross-section of 15 Victorian local authorities. Those selected were deemed to be representative of the following groups: inner metropolitan, outer metropolitan, rural-city councils, large rural councils and small rural councils. CFOs were selected because they could be assumed to have the relevant knowledge and the authority to answer questions The third stage involved the analysis of the interviews. The final stages involved discussion and conclusions.

Findings

Identification

The interviewees were asked a wide range of technical questions involving AAS27. These questions included: definition of assets; purpose of AAS27; reporting requirements for IAs; and comparison of the public and private sectors in reporting IAs.

Knowledge of the International Accounting Standards and of the IASB conceptual framework was very limited. The majority of interviewees found AAS27 useful in accrual accounting for IAs (information in accounts). There was no consensus among interviewees whether there was a difference between the public and private sectors in accounting for IAs. However, some did indicate that there was a difference between IAs and other non-current assets. About 12 interviewees thought that ASS27 accounting requirements were a real improvement on previous fund accounting requirements for IA reporting and accountability.

All interviewees found identifying IAs difficult and existing asset registers were inadequate. Different IAs such as roads, drains and bridges caused difficulties in identifying the different components of IAs. One interviewee said:

> [...] at first we tried to put every single cost of the IA network into the Pavement Management System (PMS) but the cost of inputting this information was too costly for the relevance and materiality in GPFRs. Over a short period our policies on thresholds has improved with experience and more knowledge on the systems' capabilities, also what was involved in recording and reporting an infrastructure network.

When asked what benefits this information would have for accountability, decision making and internal management, interviewees were positive and suggested that the reporting requirements of AAS27 enable more efficient asset management than under fund accounting. The councils reported that having IA records with current condition, age and value has heightened awareness of spending and maintenance requirements. Accountability for IAs has improved for ten councils but resistance still remains. As one interviewee suggested:

> [...] who needs this level of information when the council cannot sell a road.

Whereas another interviewee said:

> [. . .] it is about time a council knew the condition and value of a road so the cost of using that road can be properly recorded in the councils GPFRs and in budgets.

Valuation

The valuation of IAs in all 15 councils was undertaken using the written-down replacement cost method. The identification and valuation processes had been very costly, for example, measurements of length and width of roads with different depths and layers being taken into account for valuation and depreciation purposes. Otherwise a council's financial statements may under- or over-state asset values and depreciation calculations. This could cause problems in asset management. The interviewees acknowledged that this may occur with insufficient asset records and valuations.

One interviewee indicated that the auditors had suggested using the deprival valuation method which, in the auditor's opinion, was more relevant for IAs. One approach using this method is called Greenfields optimisation based on the cost of replacing IAs in an open field with no traffic. The alternate method Brownfields, has been disallowed by the auditor general. According to this interviewee and others, this was not the situation for councils and the valuation was confusing and misleading. The interviewees felt that replacement cost was more relevant for both internal and external decision making. The majority of interviewees indicated that calculating the written-down value of these assets was a problem.

Depreciation

Has depreciation of IAs been a problem? For the majority of interviewees, the charging and calculation of depreciation on IAs had caused and continue to cause problems. Most interviewees lacked knowledge of the theory of depreciation and the purpose of depreciation in IA accounting. In particular, interviewees had limited knowledge of the following issues: CBD method; the relationship between maintenance and depreciation; user-pays and ratings calculations using depreciation instead of capital expenditure; the difference between reserves and depreciation; depreciation and internal decision making for these assets; and the relevance of straight-line depreciation calculations. Problems included: estimating the remaining economic life on pre-1992 IAs; the decision as to whether to depreciate the aggregate assets or separate components (simple or comprehensive approaches); the rates used; and whether depreciation of these assets should be included in the financial statements. Three councils indicated that depreciation would be very useful in asset-management decisions. An interviewee said:

> [. . .] straight-line depreciation properly understood which it appears is not at this stage in a council environment can be very helpful in making decisions on the future needs of that IA.

Depreciation and accounting for IAs was very contentious for treasurers, municipal accountants, auditors, town councilors, engineers, ratepayers and academics. Coombs and Edwards (1992) point out that in presenting their arguments, these individuals were naturally influenced by their backgrounds and experience, with some being extremely stubborn. This position may not have improved for the issues being debated in the 1990s and early 2000s for the depreciation of IAs in GPFRs for local government reporting. As one interviewee said:

> [. . .] why report infrastructure asset information when only a small number of ratepayers read the GPFRs.

Whereas another interviewee said:

> [...] the information on the valuation and depreciation of IAs is in the GPFRs that may be useful in helping ratepayers understand where the council is spending their money.

This highlights the issues being faced by local government in trying to achieve accrual accounting.

Discussion

Identification of IAs

These results for the identification of IAs show that there has been significant improvement in the information collected and recorded. There still, however, remains resistance and questions about the reasons why this information is collected and used in GPFRs. A simple example of this is the level of information collected and the difference this information makes to the reporting of IAs in GPFRs. There were two methods of collecting this information: simplistic and comprehensive. However, this has now changed in terminology to vertical and horizontal identification. In a road network, the horizontal components are the top seal, sub-grade seals, pavements and sub-structure with the vertical section being the different sections of age, wear and tear. As can be seen, there is considerable difference between the two methods when a value is sought for financial reporting purposes. This will have significant results in raising revenue when determining the cost of using the road network and the amount of maintenance to be spent. Local government accounting and engineering staff should be aware of the requirements needed for GPFRs under AAS27 requirements.

Valuation of IAs

The total value of local government infrastructure in Victoria was estimated at $20 billion at June 2002. This equates to approximately $4,100 per head for each of the estimated population of 4.8 million (VOLG, 2003). These are the most recent figures available.

The figures given above from the early 2000s indicate a difference to the figures in the introduction section which came from the valuations in the late 1990s period. In this time, significant refinement has been achieved which has resulted in more reliable valuations. This shows that a reliable value can be obtained for IAs for GPFRs. Critics of valuing IAs often use the argument that the values under CCA lack any value that can be used for decision making. The examples given above show that the values given for IAs under CCA can be used in GPFRs for efficient decision making by either internal or external users. Calculations under CCA are reliable using DRC for valuing IAs. Most of the literature used in this section is from the 1990s, when there was considerable discussion on the measurement of IAs. It appears from the lack of literature on this topic since that the issue may or has been resolved. Some other issues with terminology and application such as Greenfields and Brownfields remain problems.

Depreciation of IAs

Depreciation is a major component of accrual accounting and the amount needs to be known for several reasons. For ratepayers to be charged correct rates the cost of services needs to be known, depreciation of IAs is a major cost when calculating these rates.

Also expenditure on maintenance will affect the depreciation of IAs. This information needs to be available so reliable and accurate decisions can be made.

The consumption or loss of service potential must be probable and be able to be measured with reliability. The consumption or loss of service potential from IAs needs to be recorded as depreciation under AAS27. Earlier it was mentioned that before AAS27 was introduced, depreciation was a non-funded expense in a council's operating statement and did not impact on rating assessments, which were determined by the cash budget. This situation has now changed with accrual budgets being used and depreciation now being funded. Depreciation is a funded expense in local government which should be managed efficiently. At present, many senior staff are using these funds to increase their IA base or to catch up on renewals and maintenance which should have been completed years ago. There is no requirement on where these funds are spent. Senior managers should not spend these funds immediately: also they cannot be placed in a reserve under AAS27 but should be managed like any other asset and be available to replace certain IA components when required.

It is also claimed that public sector IAs are different from private sector IAs. However, regardless of the sector, maintenance is needed on any physical asset to keep it in good working condition. Maintenance does directly affect the depreciation expense each year because the estimated service life is for a fully maintained asset. Both sectors need to know the value of their IAs and charge depreciation to determine the full cost of the service provided; this is so whether the full cost of the service is recovered or not.

Another area was the use of reserves which should not occur under AAS27 using accrual accounting but did under the previous system. About 15 years since the change of accounting methods for IAs inclusion in GPFRs and there still appears a reluctance or lack of education on the requirements of AAS27. Some local government authorities are still using reserves:

> [. . .] $1 million allocated to start works this year and $2 million to build reserves to fund future works.

Conclusion

The idea that the private and public sectors have different motives and ideas on recording either a profit or loss (Gowland and Aiken, 2005; Firth, 2006; Carnegie, 2005) does not recognise that both sectors are using resources which should be accounted for. The area that can be accepted is that both sectors, no matter how different, should have efficiency and effectiveness as their prime objectives in the allocation of resources. These results should be in GPFRs so the users of these reports can make informed decisions on whether a particular organisation or company has achieved the efficiency and effectiveness required of them. Accrual accounting achieves this objective.

Certain issues did surface which need to be resolved for complete consensus of all those involved with AAS27 benefits. The method of identification used by the different councils in obtaining the written-down replacement cost or depreciated value cost of the asset varied. In the interviews, there appeared to be a significant divergence in estimating the written-down value, ranging from complex site valuation methods to standardisation of ages. This could lead to significant subjectivity within the councils in the calculation of the written-down value that may inhibit good asset management and external users decision making. What type of valuation they used and whether

it led to a more realistic and accurate valuation than the DRC method would need to be considered. The use of certain terminology, such as Greenfields and Brownfields, has not been properly understood in valuation of IAs by council staff.

The municipalities' viewpoint on depreciation was a major area of interest in this study; understanding their attitudes was thought to be important. Discovering the current situation in reporting attitudes from the accounting staff involved in the reporting AAS27 requirements indicated that most staff struggled with the concepts. Depreciation of IAs is often not accepted in the public sector as a cost of using an IA service. Accrual accounting is essential because without depreciation the full cost of using a particular IA service is not known. Depreciation of IAs is a significant cost in the operating statement. Without this information, rates could be set too low and future funding for the replacement of IA components may be strained.

Before the introduction of AAS27, IAs were controlled and recorded by engineers. Now that they need to be valued and depreciated, accountants need to work with engineers to obtain reliable and accurate valuations and depreciation of these assets. It appears from interviewees that engineers have the major influence and in a number of councils accountants do not have any input in determining this information. The change to accrual accounting has been very positive and benefits are certainly being achieved. Attitudes to certain former methodological procedures continued to be followed by a minority of staff which need to change to achieve greater benefits.

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