

Introduction

The concept of depreciation is relatively simple – the allocation of the cost of an asset over its useful life – but the failure to apply some simple concepts, including accounting standards, in a pragmatic manner has led to some convoluted thinking about depreciation.

The aim of this paper is to dispel some of the myths and to return the focus to the role of assets in providing services to organisations and communities. Although this paper is written from a public sector perspective, the principles apply equally across all sectors. This paper will discuss:

- What an asset is;
- What depreciation is;
- Accounting standards as a framework for allocating depreciation; and
- The nexus between engineering and accounting in the depreciation debate.

The paper defines the terms and concepts used in the paper. However, some of the terms have specific meanings when used in accounting standards and those meanings are included in the attached glossary.

What is an asset?

An asset is something that an organisation owns or controls that provides benefits to the organisation at some future time or over an extended time period. A road is an asset as it provides benefits to road-users for an extended period of time.

This paper is concerned with physical assets such as plant and equipment, land and buildings, road networks, water and stormwater networks, electricity and gas distribution networks, sewerage networks and the like.

An asset has a value (usually its cost) and it provides benefits for a finite period (although some assets, such as land, have an indefinite life). An asset may require periodic or ad hoc maintenance to enable it to continue to provide future economic benefits. Maintenance costs do not add to the value of the asset, but lack of proper maintenance may mean that the ability of the asset to provide services over its useful life is reduced and the asset needs to be replaced or renewed earlier than expected – a shorter useful life. Alternatively, the life of an asset may be extended. For example, a bridge may have the structure strengthened through additional supports and be able to be used for a number of years past its expected useful life. The cost to extend the life is the cost of the additional supports and increases the value of the asset.

What is depreciation?

Depreciation is an accounting concept related to the consumption of assets held by an organisation.

Depreciation is the allocation of the future benefits that the asset provides over the useful life of the asset to the organisation. In the case of the public sector, the useful life of the asset is measured by the time that the asset continues to provide services to the community. Simplistically, depreciation is measured using the cost of the asset and, using this cost to 'measure' the future benefits, allocating the cost of the asset over the time it provides its benefits. So, again simplistically, only two things matter – the cost of the asset and its useful life!

What is the cost of an asset? Usually, it is the 'purchase price' of the asset. However, in some cases, there will be costs associated with acquiring the asset that need to be included in the 'purchase price' as they are effectively part of the 'purchase price'. For instance, (but not exhaustively):

- Import duties and non-refundable purchase taxes;
- Site preparation costs;
- Costs to put the asset in place and in a condition where it can provide services; and
- Initial testing to verify that the asset is functioning correctly and any necessary remedial works.

The cost of an asset is not necessarily the amount to be depreciated. Where an asset will have some value at the end of its useful life which can be recovered or used to reduce the renewal cost of the asset, the cost needs to be reduced by the residual value to obtain the amount to be depreciated over its useful life. Typically, items of plant and equipment will be 'traded-in' on a new model at the end of their life to the organisation. The amount received as a trade-in is the residual value.

Useful life is the time period over which the asset will provide future economic benefits to the organisation or alternatively, the number of hours that the asset will provide service. In the case of an asset which will be used to produce specific items, useful life may well be measured by the number of units expected to be produced over the life of the asset to the organisation. Useful life is a point estimate of the expected time the asset will provide future economic benefits and there is a natural spread of the actual life achieved around this point estimate.

An asset can have more than one useful life. For example, one organisation may purchase a new grader and then sell the grader after seven years to another organisation who uses the grader for a further five years. The useful life of the grader for the first organisation is seven years and its cost, for depreciation purposes, is its purchase cost less the amount received for its sale after seven years. For the second organisation, the useful life will be five years and its cost will be the purchase price paid for the second-hand grader, less any proceeds from its disposal five years later. It is important to note that the receipts on sale or disposal will have been estimated at the time of its purchase.

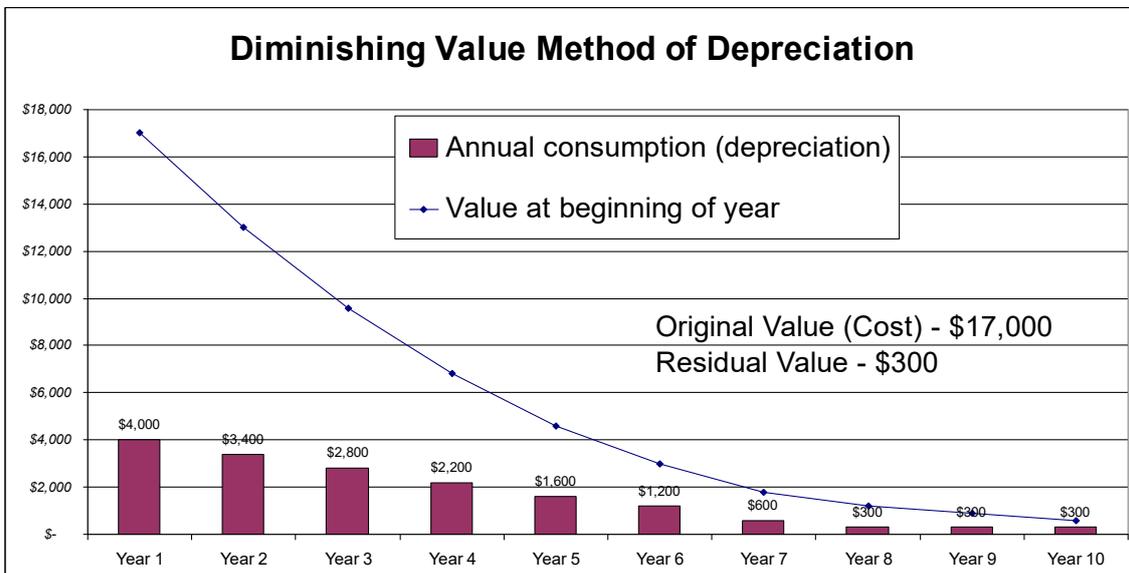
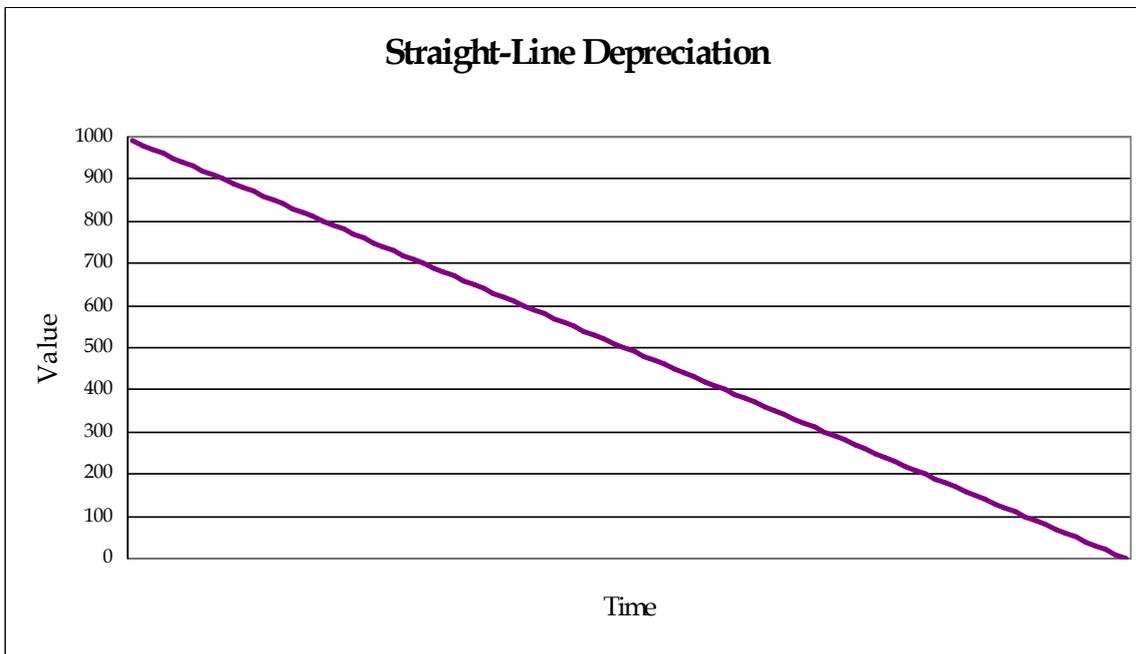
There are three fundamental approaches to depreciating the value of the asset. They are:

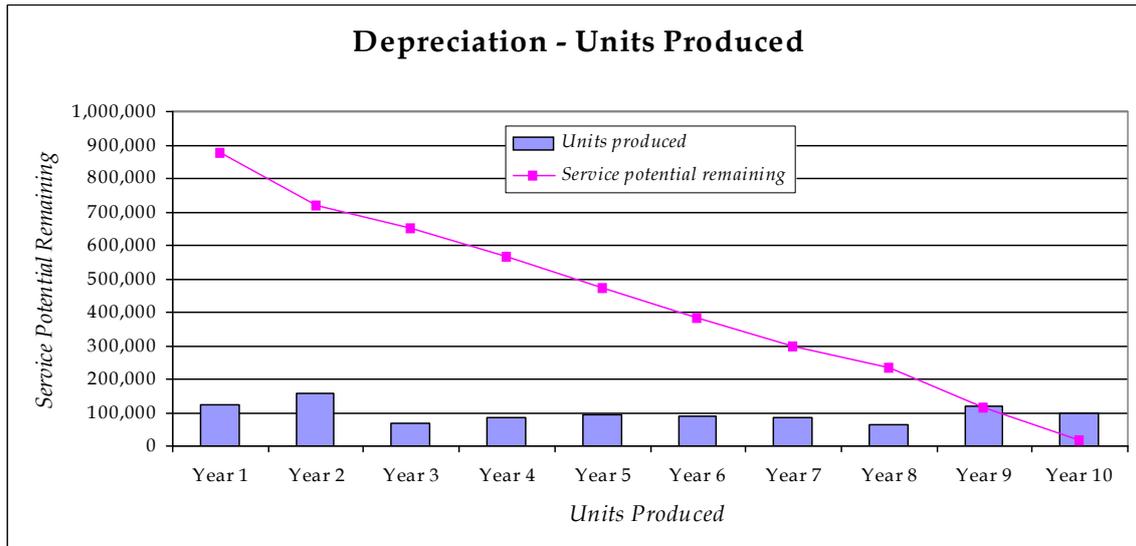
1. Straight line depreciation – where it is estimated that the future economic benefits of the asset will be used up uniformly over its useful life.

2. The diminishing balance method – where the depreciation charge is highest at the beginning of the asset’s life and reduces over its life. This method is often used where the benefits of the asset are obtained early in its life. For example, technical equipment which quickly becomes obsolescent.
3. Units of production method – where it is estimated that an asset will produce a set number of units and the proportion of units produced in a financial year are used to depreciate the asset. Note: This method can also be used where an item of equipment’s useful life is measured in hours.

The essential requirement is that the method chosen should match as closely as possible to the pattern of consumption of the future economic benefits of the asset.

The following figures illustrate the three approaches.





One more important point about depreciation. Initial estimates of residual value and useful life are made when an asset is acquired. (This may even be the case for the purchase price, where assets are acquired or contributed at no cost. A 'purchase cost' needs to be assigned to the asset which will reflect its market value or its fair value.) These estimates need to be regularly reviewed so that when it becomes obvious that the residual value or the useful life will vary from the initial estimate then they need to be adjusted. There needs to be a consistent process used within organisations to determine estimated values and to ensure their revision over time.

Accounting Standards – A Framework for Depreciating Assets

Australian accounting standards are largely, but not completely based on International Financial Reporting Standards (IFRSs) providing the framework for the preparation of general purpose financial reports by Australian organisations. Australian accounting standards have the force of law for Australian companies and, in the case of public sector organisations, have been adopted by the Commonwealth and each State and Territory for application to the public sector. The Australian Accounting Standards Board (AASB) is responsible for the development and adoption of Australian accounting standards. The thrust of Australian accounting standards is to harmonise with IFRSs, differing only from IFRSs where absolutely necessary. However, the AASB will develop standards separate to the IFRSs, where it is clear that there should be an Australian accounting standard. The process for developing standards is to issue an exposure draft or an invitation to comment and proceed through a process of public consultation.

Australian accounting standards are developed within a framework of Statements of Accounting Concepts to ensure that there is a consistent approach to their development. The impact of those Statements of Accounting Concepts are summarised in the AIFRS "Framework for the Preparation and Presentation of Financial Statements". This standard sets out:

- The objective of financial reports;

- Underlying assumptions;
- Qualitative characteristics of financial reports; and
- The elements of financial statements and their recognition and measurement.

Australian accounting standards are a linked series of standards, with many standards affecting and being affected by other standards. For example:

- AASB 101 – Presentation of Financial Statements is an overarching standard which sets out the form and content of financial statements.
- AASB 116 – Property, Plant and Equipment, which deals with accounting for assets, refers to several other accounting standards.

One of the principal reasons for having accounting standards is to ensure, as far as possible, each organisation prepares its financial statements using the same principles on the same basis. Incorrect interpretation of the standards has the potential to mislead people who use the financial statements to evaluate performance or make judgements about the financial health of an organisation.

The overarching provisions which apply to all accounting standards need to be kept in mind when interpreting the specific provisions of the standards. It is worth considering some particular issues to understand the basis for ensuring that accounting standards are correctly interpreted.

1. Accounting Policies – even though one of the purposes of accounting standards is to get 'uniform' sets of financial statements it is recognised that each organisation is likely to have different accounting policies. The standards recognise this and require that each organisation sets out what its accounting policies are. Note that accounting policies cannot be at variance with the requirements of accounting standards. Where accounting policies change, the standard requires that the impact of the change of the policy must be disclosed in the notes to the financial statements.
2. Accounting Estimates – there is a school of thought that says that accounting is an art and not a science and that all figures appearing in the financial statements, except for cash at bank, are accounting estimates. There is probably a lot of truth in that statement, but accounting standards do permit accounting estimates, and the reality is that many of the 'figures' in financial statements are accounting estimates. Depreciation is certainly an accounting estimate, based on an estimate of useful life as discussed above. However, any accounting estimate needs to be capable of being independently reviewed and, given the same information, the same or a very similar estimate can be independently formed. In addition, every element of the financial statements needs to have a cost or value that can be reliably measured. When better information comes to light, the accounting estimate must be changed as set out in AASB 108.
3. Materiality – the inclusion or exclusion of financial information into the financial statements is material if its omission from the financial statements will cause users to be misled about the financial performance of the organisation. This is an important concept and works hand in hand with the concept of accounting estimates. This concept recognises that even though

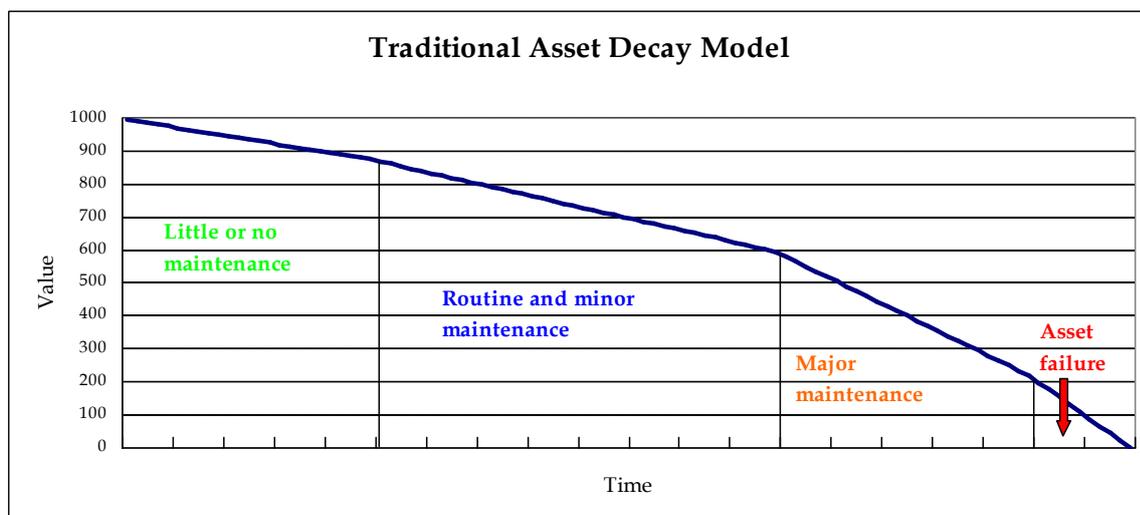
the intent is to provide a 'true and fair' view of the financial situation of an organisation it is not possible to provide this with complete accuracy.

Australian accounting standards create a framework for providing accounting information:

- in the form of a standard set of financial statements;
- recognising that much of the information is the best accounting estimate;
- stating the policies used to derive the financial information (consistent with all Australian accounting standards);
- ensuring that information is reliably measured.

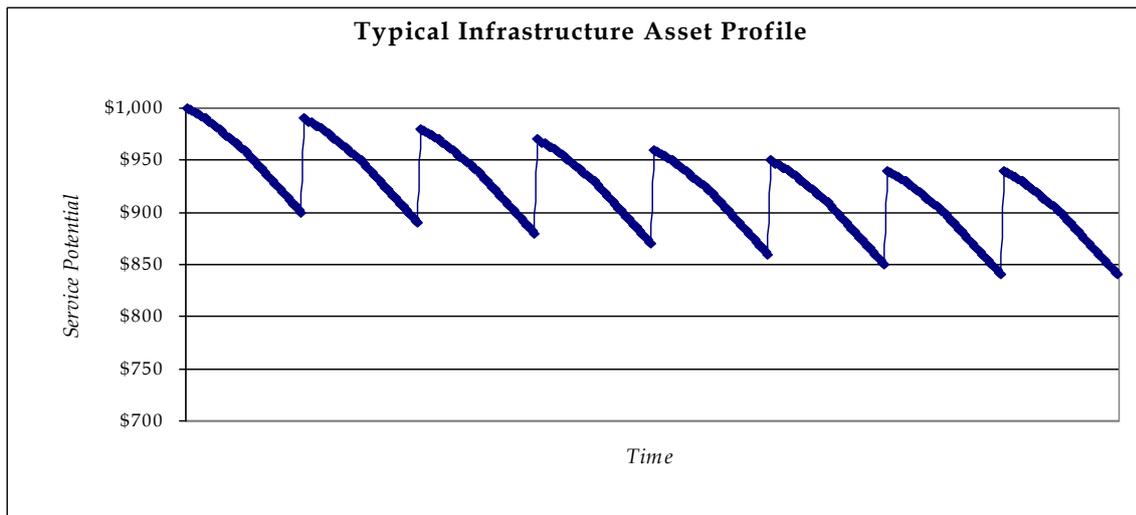
Engineering meets Accounting

Engineers and other professional and technical specialists with the responsibility for acquiring, operating, maintaining, refurbishing, renewing and disposing of assets need a significant amount of information to assist them in their tasks. It is important in planning for the proper care of an asset that the life cycle of the asset is well understood and, in particular, that there is a good understanding of when the asset will require maintenance so that it can continue to provide service. Many assets follow a degradation curve as shown in the following figure.



The degradation curve provides a guide to those responsible for maintaining the asset. The degradation curve shows that the asset, at the beginning of its life, stays in new or near new condition for a significant time period, then, during the course of its life, more rapidly deteriorates. Over the course of its life the asset will require maintenance to enable it to achieve its expected economic life.

Typically, with long-lived infrastructure assets, the asset can undergo many cycles of refurbishment and renewal where a substantial portion (but probably not all) of the assets service potential is restored periodically. This produces the typical 'saw-toothed' curve shown in the following figure.



From an accounting perspective, this is akin to the asset having a series of lives and residual values, with the asset being restored to near new at the end of each life, with a new value.

An allied method used to make decisions about asset maintenance is to determine the 'condition' of the asset, typically on a 5-point scale such as:

- 1 – new or near new, requiring no maintenance;
- 2 – very good condition, requiring only minor maintenance;
- 3 – good condition, requiring routine maintenance;
- 4 – fair condition, needing major maintenance or refurbishment;
- 5 – asset has failed and needs renewal.

The engineer's regular determination of asset condition is like the accountants regular review of useful life and residual value – the systematic monitoring of the asset to ensure that future actions, whether physical or reporting of value, are made in the light of sound knowledge.

Asset value is not determined by condition of the asset but by the future economic benefits the asset will provide. So, if the useful life of the asset is 40 years and the asset is 10 years into its life the value of the asset will approximate 30/40ths of the total future economic benefits – even if the asset condition is 95% of new. When it comes to future economic benefits, the key is time in use, not asset condition. It is important to not confuse the engineer's perspective, condition, with the economic perspective, value of future economic benefits.

If the engineers degradation curve and asset condition are used to 'value' the asset we get the perverse outcome that those taxpayers who use and pay for the asset when it is new or near new, i.e. when it provides the best service, pay less than those taxpayers who use it when the service is worst, towards the end of the asset's life as its condition is changing quickly. This is inequitable.

AASB 116 requires that the consumption of the future economic benefits of the asset (its value) be systematically allocated over the life of the asset. The amount to be

depreciated each year is determined as a measure of the future economic benefits of the asset consumed during the year. If the asset provides the same service year after year the consumption of the economic benefits is linear and the amount to be depreciated is a simple function of:

$$\frac{\text{Net cost of the asset}}{\text{Life of the asset in years}}$$

Where the engineer's measure of condition becomes important is in determining whether the asset will achieve its expected useful life. Condition of the asset tells the engineer if the asset is tracking along the degradation curve as expected. If asset condition is lower than expected this may mean that the asset will have a shorter useful life and the useful life should be adjusted down. Where condition is better than expected this may mean that the asset will have a longer useful life and a corresponding increase in useful life should be made.

Appendix A

Glossary of Terms (including Accounting Standard Definitions)

Note: Where a definition is derived from Australian accounting standards, reference is made to the relevant standard. If the definition is in **bold type** this indicates that the definition has the force of law in terms of the Corporations Law.

Accounting policies are the specific principles, bases, conventions, rules and practices applied by an entity in preparing and presenting financial reports. (AASB 108 - Accounting Policies, Changes in Accounting Estimates and Errors – Para. 5)

A change in accounting estimate is an adjustment of the carrying amount of an asset or a liability, or the amount of the periodic consumption of an asset, that results from the assessment of the present status of, and expected future benefits and obligations associated with, assets and liabilities. Changes in accounting estimates result from new information or new developments and, accordingly, are not corrections of errors. (AASB 108 - Accounting Policies, Changes in Accounting Estimates and Errors – Para. 5)

An asset is a resource controlled by the entity as a result of past events and from which future economic benefits are expected to flow to the entity. (Framework for the Preparation and Presentation of Financial Statements – Para. 49)

Cost is the amount of cash or cash equivalents paid or the fair value of the other consideration given to acquire an asset at the time of its acquisition or construction or, where applicable, the amount attributed to that asset when initially recognised in accordance with the specific requirements of other Australian Accounting Standards, for example, AASB 2 ***Share-based Payment***. (AASB 116 - Property, Plant and Equipment – Para. 6)

Depreciable amount is the cost of an asset, or other amount substituted for cost, less its residual value. (AASB 116 - Property, Plant and Equipment – Para. 6)

Depreciation is the systematic allocation of the depreciable amount of an asset over its useful life. (AASB 116 - Property, Plant and Equipment – Para. 6)

Fair value is the amount for which an asset could be exchanged between knowledgeable, willing parties in an arm's length transaction. (AASB 116 - Property, Plant and Equipment – Para. 6)

The *future economic benefit* embodied in an asset is the potential to contribute, directly or indirectly, to the flow of cash and cash equivalents to the entity. The potential may be a productive one that is part of the operating activities of the entity. It may also take the form of convertibility into cash or cash equivalents or a capability to reduce cash outflows, such as when an alternative manufacturing process lowers the costs of production. (*Framework for the Preparation and Presentation of Financial Statements – Para. 53*)

In respect of not-for-profit entities, whether in the public or private sector, the *future economic benefits* are also used to provide goods and services in accordance with the entities' objectives. However, since the entities do not have the generation of profit as a principal objective, the provision of goods and services may not result in net cash inflows to the entities as the recipients of the goods and services may not transfer cash or other benefits to the entities in exchange. (*Framework for the Preparation and Presentation of Financial Statements – Para. Aus 54.1*)

Material – omissions or misstatements of items are material if they could, individually or collectively, influence the economic decisions of users taken on the basis of the financial report. Materiality depends on the size and nature of the omission or misstatement judged in the surrounding circumstances. The size or nature of the item, or a combination of both, could be the determining factor. (*AASB 101 - Presentation of Financial Statements – Para. 11*)

Recoverable amount is the higher of an asset's net selling price and its value in use. (*AASB 116 - Property, Plant and Equipment – Para. 6*)

The ***residual value*** of an asset is the estimated amount that an entity would currently obtain from disposal of the asset, after deducting the estimated costs of disposal, if the asset were already of the age and in the condition expected at the end of its useful life. (*AASB 116 - Property, Plant and Equipment – Para. 6*)

Useful life is:

- (a) the period over which an asset is expected to be available for use by an entity; or
- (b) the number of production or similar units expected to be obtained from the asset by an entity.

(*AASB 116 - Property, Plant and Equipment – Para. 6*)

About the Author

This paper was prepared by David Hope, Principal Consultant, Skilmar Systems Pty Ltd. David has spent some forty plus years working in the public sector, twenty eight years in Commonwealth, State, Territory and Local government organisations as diverse as the Auditor-General's Department of South Australia, the Commonwealth Department of Works and the City of Marion and fourteen years as a consultant to the public sector. David was the Chief Financial Officer of three medium-sized South Australian public sector organisations and has worked and lived in South Australia, Victoria, Queensland, the Australian Capital Territory and the Northern Territory. David is a fellow of CPA Australia and has had an active role in the accounting profession as Divisional Councillor (in SA and Queensland), member, Deputy Chairman and Chairman of CPA Australia's Public Sector Centre of Excellence (1993-2003) and an organiser of state, national and international accounting conferences, workshops and training sessions. David is an adjunct lecturer at the graduate level for the Flinders Institute of Public Policy and Management of South Australia and has spoken at local, state, national and international conferences on public sector issues, with a focus on strategic financial management and asset management. David has conducted consulting and training assignments in Afghanistan, Indonesia, Laos, Malaysia, Mongolia and Sri Lanka.