UNIVERSITY OF NEW ENGLAND

ACCOUNTING PROBLEMS IN THE VALUATION OF INFRASTRUCTURE ASSETS IN NEW SOUTH WALES LOCAL GOVERNMENT

A Dissertation submitted by

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ABSTRACT

Local government authorities in NSW manage a significant pool of infrastructure assets in order to serve community needs. These assets usually comprise roads, bridges, the water and sewerage network, stormwater drainage, buildings, and other infrastructure. Infrastructure assets represent a major proportion of the total asset base of every NSW council.

All local councils in NSW are required to measure their infrastructure assets at fair value and revalue them every five years. However, there are many problems with the valuation of infrastructure assets in local government. Problems arise mostly as a consequence of the unique characteristics of public sector infrastructure assets; in particular, the assets have long and sometimes uncertain lives, there is no market into which they can be sold and - unlike commercial assets - local government urban infrastructure is not operated to make a profit. This makes the valuation and revaluation of these assets for financial reporting purposes a technically complicated exercise.

The aim of this study is to (a) investigate whether NSW local government councils comply with the Australian Generally Accepted Accounting Principles (GAAP) in performing the revaluation of their infrastructure assets and (b) to assess any consequences for the reliability of financial reporting in NSW local government. Using road assets as an example, we analyse the results of revaluations of road assets undertaken by 89 NSW councils as reported in their financial statements during the period from 2013 to 2016. In this analysis we focused on the effect of a change in accumulated depreciation as a percentage of the gross replacement cost of the revalued assets. The analysis revealed that in most cases this effect is significant: 36 councils reported a decrease of between 10% and 53%; 5 councils reported increases of between 10% and 31%; and others fell within a 10% range. In absolute terms, these are substantial changes. However, the accounting and reporting of this effect is strikingly inconsistent between the councils. This forms the rationale for this thesis.

Based on the analysis of revaluation of roads, the study finds that the main reason for these significant changes arises from the change in the estimates of the remaining useful life of the assets at the time of revaluation. It is most unlikely that asset condition can have such a significant effect on many councils all at the same time. Furthermore, we concluded that the changes in estimates of the remaining useful life is the result of non-

compliance with the requirements of AASB 116 to have the useful life reassessed at the end of each reporting period (i.e. each year). Instead, councils wait five years and undertake the next reassessment of the useful life at the time of the comprehensive revaluation. This leads us to a conclusion that, if material, the effect should be treated as an error based on the requirements of AASB 108. If councils did follow requirements of AASB 116 by assessing the useful life at the end of each year, then the effects would be unlikely to be material at the time of the comprehensive revaluation. Only 12 councils out of 89 reported this effect as an error. However, even these did not fully comply with the requirements of AASB 108 in presenting the effects of the error in the financial statements. All other councils did not report or disclose anything about this effect in their revaluation adjustment, regardless of the significance of that effect.

There are two main conclusions of the thesis. First, most councils did not comply with the Australian GAAP in accounting, reporting and disclosing the effects of their asset revaluations. Second, there is a high risk that depreciation expense, operational results and financial ratios were materially incorrect in the years preceding each comprehensive revaluation. The latter makes the financial reporting in NSW local government unreliable for decision-making purposes for the users of financial reports.

Our study has examined only roads assets in detail. If similar deficiencies in procedures were to exist in the treatment of other local government assets, then summed over all assets, the unreliability of the financial reports could be significantly greater.

Certification of Dissertation

I certify that the ideas, experimental work, results, analyses, software and conclusions reported in this dissertation are entirely my own effort, except where otherwise acknowledged. I also certify that the work is original and has not been previously submitted for any other award, except where otherwise acknowledged.

Signature of Candidate Date

ENDORSEMENT

Signature of Supervisor Date

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Contents

CHAPTER 1: INTRODUCTION

1.1 Introduction

Local government authorities in NSW control and manage a significant pool of infrastructure assets in order to serve community needs. These assets usually comprise roads, bridges, the water and sewerage network, stormwater drainage, buildings, and other infrastructure. Infrastructure assets represent a major proportion to the total asset base of every NSW council. According to Pilcher (2005), the carrying value of infrastructure assets in NSW local government constitute an average of 60% of total depreciable assets. Depreciation expenses of those assets is, on average, the second largest item in the operating expenses after employment costs. TCorp (2013) reports that around 23 per cent of total operating expenses in NSW local government comprise depreciation, and most of this pertains to infrastructure assets. Given the significance of the asset portfolio under management and control of local government, it is critical to ensure that the accounting and reporting of these assets is accurate and complies with Australian Accounting Standards. This will give users of financial reports the confidence to rely on the annual financial statements for decision-making purposes.

In this thesis we focus on problems related to accounting for depreciation and the valuation of infrastructure assets at fair value in NSW local government. Depreciation and valuation of infrastructure assets has been a problem area since the adoption of accrual accounting in Australian public sector in 1991. All infrastructure assets in NSW and other states in Australia have to be measured at fair value. The problems with the valuation of infrastructure assets in local government arise mostly because well-established commercial accounting principles cannot be applied because of the unique characteristics of public sector infrastructure assets. For example, these assets have long and sometimes uncertain lives, there is no market into which these assets can be sold, and most local government assets do not operate to earn profits. The academic literature on this subject is mostly focussed on conceptual problems with depreciation and with fair value valuation of infrastructure assets. Australian examples are the inconsistency in the application of depreciation rates (Drew and Dollery, 2015) and the high level of judgement involved in revaluation which makes this matter “un-auditable” (Johnstone,

2003, p. 11). These inconsistencies lead to a potential for management manipulation of financial reporting (Drew and Dollery, 2015), inaccuracy of the financial ratios (Pilcher, 2005) and unreliable financial statements. One gap in the literature appears to be a lack of research on the technical aspects of how the accounting of this matter should be done and the impacts of non-compliant procedures. This study seeks to contribute to closing this gap.

We investigate in particular the effect of changes of the accumulated depreciation and impairment loss component as a fraction of gross replacement cost. We focus on the reasons for this change when it is at a rate different to the rate of the change in the gross replacement cost. This effect can be significant and requires close investigation. A common answer would be that the effect is primarily driven by changes in the condition of the asset. However, in local government, condition may not be the primary factor resulting in significant changes in the value of the assets. Change in estimates of the remaining useful life not affected by the condition may be a primary reason. The main technical problem we are seeking to resolve here then is how to account for the change in the estimate of the remaining useful life of an asset and the effect on the fair value of that asset.

1.2 Outline of Thesis

The thesis is structured as follows. Chapter 2 provides a synthesis of the academic literature on the recommended procedures to use for the revaluation and depreciation of infrastructure assets. It defines local government infrastructure assets, fair value, valuation methodology and depreciation in regard to infrastructure assets. Chapter 2 concludes with a summary of the problems experienced by local governments in accounting for revaluation and depreciation of infrastructure assets, and foreshadows four questions to be tackled in the empirical analysis of this thesis, namely:

1. What is the current accounting framework for revaluation and depreciation of infrastructure assets in Australian local government in general and NSW in particular?
2. In practice, how do NSW councils account for the results of the revaluation of infrastructure assets, and whether they comply with the Australian Accounting Standards?

3. What are the consequences of the current accounting practice on the reliability of the financial reports by NSW local councils?
4. What would be the compliant accounting approach considering the requirements in the NSW local government sector and the Australian Accounting Standards?

Chapter 3 critically reviews the current revaluation and depreciation accounting principles in the Australian Accounting Standards and the *NSW Local Government Code of Accounting Practice and Financial Reporting*. For completeness, we also look at the local government accounting regulations relating to the accounting of infrastructure assets in other Australian state local government systems. Chapter 3 concludes with a summary of the analysis of the current accounting framework and considers the extent to which the first question one above was answered. Chapter 3 draws particular attention to the effect the reassessment of the remaining useful life can have on the value of an asset and how this should be accounted for.

Chapter 3 reveals a lack of clarity and guidance for the revaluation of infrastructure assets. It was thus paramount for this thesis to see how the revaluation is undertaken in practice in NSW. Chapter 4 thus sought to understand the practical application of the accounting framework to the revaluation and depreciation of infrastructure assets by NSW local government authorities (question two above). Based on an analysis of the latest revaluation of roads performed by 89 NSW councils, we examine the consistency of the approaches used and address the question as to whether the councils' road asset revaluation accounting actually complies with the Australian Accounting Standards. Chapter 4 concludes with a synoptic account of NSW current accounting practice, assesses potential non-compliance with the accounting standards and notes the effects on the reliability of the financial statements (questions two and three above).

Chapter 5 summarises the research findings of this study and then addresses research question four as to what the accounting approach should be under the current accounting framework for the effect of a change in the accumulated depreciation and impairment loss component as a fraction of replacement cost. This is followed by the recommendations to policymakers and councils on how to improve the current accounting practice in this area. Chapter 5 concludes by noting the limitations of the empirical analysis in Chapter 4 and suggests some avenues for future research.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

Accrual based accounting was introduced into the public sector in the 1980's. Until then local government authorities used traditional cash-based accounting. Across the latter part of the twentieth century, developed countries have adopted accrual based accounting as noted in Table 2.1. The change to accrual accounting was made because of the potential managerial, reporting, and valuation advantages it offered over cash-based accounting. However, it poses significant challenges for public sector authorities. In particular, the best procedures to use for the revaluation and depreciation of infrastructure assets have been the subject of much debate (Barnes and Beverley, 2017, p. 132). Chapter 2 provides a synthesis of the academic literature on this problem for local government authorities.

Table 2.1: Selected Country Adoption of Accrual Based Accounting

Adoption	Country	Reference
1989	New	(Pallot, 1997, p. 225)
1991	Australia	(Howe, 2004, p. 48)
1995	Italy	(Berit, Mussari, and Jones,
1999	United	(Fickes, 2002, p. 44)
2003	Germany	(Berit et al., p. 112)

Implementing different models for valuing and depreciating infrastructure assets in local government raises many practical questions. Most scholars (see, for example, Bond and Sakornvanasak, 2006; Johnstone, 2003; Pallot, 1997) agree that the commonly used method for revaluation of infrastructure assets in local government is the Optimised Depreciated Replacement Cost (ODRC). Every element of this method is problematic requiring assistance and guidance. One problem seems to be common for all models: this is the calculation and accounting treatment of the change in the accumulated depreciation and impairment loss as a result of asset revaluation. This aspect of the value of an infrastructure asset appears not to have been adequately covered in the empirical literature. Problems with inconsistent practice for the calculation and recognition of depreciation, and different views on this matter between accountants and engineers, can significantly affect the reliability of valuations of infrastructure assets and of financial reporting in local government more generally (see,

for example, Drew and Dollery, 2015; Pilcher, 2005). Chapter 2 seeks to clarify these problems and contribute to solving them.

Chapter 2 is divided into three main parts. Section 2.2 outlines theoretical perspectives on revaluation and depreciation in local government by defining local government infrastructure assets, fair value, valuation methodology and depreciation in regard to infrastructure assets. Section 2.3 reviews the international and Australian empirical analysis. Chapter 2 concludes in Section 2.4 with a summary of problems experienced by local governments in dealing with accounting for revaluation and depreciation of infrastructure assets, and foreshadows the questions that will be tackled in the empirical analysis of this thesis.

2.2 Conceptual perspectives on revaluation and depreciation of infrastructure in local government

The theory behind revaluation and depreciation of infrastructure assets rests on the definition of infrastructure assets in local government. It is universally agreed that infrastructure assets in local government are the long-lived assets (sometimes with uncertain lives), which cannot be sold and are used to provide services to the community at zero or a nominal fee (Barnes and Lord, 2017, p. 130; Drew and Dollery, 2015, p. 30; Fickes, 2002, p. 46; Pallot, 1997, p.228). Based on guidelines prepared by the New Zealand Society of Local Government Managers, infrastructure assets (cited in Pallot, 1997, p. 232) are "stationary systems . . . [which] intend to be maintained indefinitely at a particular level of service potential by continuing replacement and refurbishment of its components". Pallot (1997, p. 233) also suggests the term 'community assets' because of the public significance for the community. Typical examples of these assets are roads, bridges, tunnels, drainage systems, water and sewerage systems, dams and lighting systems (Fickes, 2002, p.46).

Following the introduction of accrual accounting in local government, local authorities faced the problem of calculating the value of such assets for the first time. Previously councils used cash-based accounting which did not recognize assets in the balance sheet (Christiaens and Rommel, 2008, p. 59). Under the accrual accounting principles prescribed by International Accounting Standard 16 *Property, Plant and Equipment* (IAS 16), the asset is measured at cost at initial recognition (i.e. at acquisition or

construction). However, in subsequent years, entities can choose either a cost or revaluation model to measure the value of the asset:

(i) The cost model requires assets to be carried at historical cost less accumulated depreciation and impairment;

(ii) The revaluation model requires assets to be carried at "fair value" at the date of revaluation less accumulated depreciation and impairment (Paik, 2009, p. 74).

In the current context, we are concerned with the accounting for the subsequent measurement of the assets at fair value after initial recognition. According to Barnes and Lord (2017), the measurement of infrastructure assets at fair value is the normal practice. Therefore, the 'fair value' of infrastructure assets is important.

Based on the International Financial Reporting Standard 13 *Fair Value Measurement* (IFRS 13), fair value of the asset (cited in Esen and Perek, 2016, p. 31) is "the price that would be received to sell an asset . . . in an orderly transaction between market participants at the measurement date". Given that infrastructure assets in local government cannot be sold and do not operate for generating profit (as in the private sector), traditional valuation methods, such as market sales and income approaches, are not relevant here (Bond and Sakornvanasak, 2006, pp. 39-40). Consequently, alternative cost-based valuation techniques have been considered by professional bodies and scholars around the world. Salient examples are Optimised Depreciated Replacement Cost (ODRC) (Bond and Sakornvanasak, 2006; Pallot, 1997) (sometimes termed 'Depreciated Optimised Replacement Cost' (DORC) (Johnstone (2003)); valuation using current cost accounting and valuation using condition-based depreciation (CBD) (Walker, Clarke and Dean, 2000). Under any approach the formula for calculating the fair value of the asset will be as follows:

$$FV = RC - AD \qquad (1)$$

where: FV – Fair Value (Written-Down Value, Carrying Amount); RC – Replacement Cost (Gross Replacement Cost, Gross Book Value); AD – Accumulated Depreciation and Accumulated Impairment Loss.

As we shall see in Section 2.3, the most advocated method used to value infrastructure assets in local government is ODRC (Bond and Sakornvanasak, 2006, p. 40) or its less complicated variant Depreciated Replacement Cost (DRC) (Molland and Clift, 2008;

Pallot, 1997). Each element of the term 'Optimized Depreciated Replacement Cost' is a separate field of research.

In this thesis, we are mostly concerned with the 'Depreciated' element, which represents the accumulated depreciation and impairment loss of the asset's value (or class of assets). Asset valuations form the basis for depreciation (Barnes and Lord, 2017, p. 136). By contrast, the depreciation model adopted by a given council will also affect the valuation of the asset. Clearly, the notion of 'depreciation' is central to accounting methodology.

Depreciation can be defined as the allocation of the value of the asset over its useful life (Pallot, 1997, p. 236). Accordingly, the accumulated depreciation is the cumulative amount of the value of the asset allocated up to the reporting date. The greater is the accumulated depreciation, the less is the fair value of the asset. There are two main concepts of depreciation: the Generally Accepted Accounting Practice (GAAP) approach and the engineering (or asset management) approach (Falls, Haas and Tighe, 2004; Howe, 2004; Pallot, 1997). From both perspectives, depreciation is understood as the decline in value, but the main conceptual difference lies in the pattern in which the value declines. In particular, the traditional GAAP approach treats depreciation as a consumption of the asset's service potential. However, the engineering approach mostly claims to follow physical deterioration of the asset (Pallot, 1997, p. 236). The commonly used traditional GAAP approach is the straight-line (SL) depreciation with constant capital charges over the useful life of the asset. By contrast, the engineering approach follows a deterioration curve which reflects the change of value of the asset based on the change in the condition of the asset. As will be shown in Chapter 4, this difference has a significant impact on the accounting of revaluation and depreciation of infrastructure assets in NSW local government. Furthermore, as we shall see in Section 2.3, there is a lack of research on this matter.

In Section 2.3 we will examine research undertaken in Australia and elsewhere on questions related to revaluation and depreciation of infrastructure assets in local government. The major focus of this review will be on the accumulated depreciation and impairment loss and on the accounting treatment of changes in the accumulated depreciation and impairment loss element as a result of the revaluation exercise.

2.3 Empirical evidence on revaluation and depreciation of infrastructure in local government

International and Australian research on revaluation and depreciation problems in local government appears to be focused on highlighting major problems and pointing to the effects procedures may have on government policy-making. However, there is a paucity of research on the technical side of the accounting of those matters and compliance with GAAP.

2.3.1. International perspectives

Table 2.2 presents a summary of different revaluation and depreciation models of infrastructure assets discussed by scholars abroad, which identifies the most commonly-used methods for valuation. It also presents problems local governments experience in applying those models in practice.

Table 2.2: Summary of Valuation and Depreciation Models

Author	Nature of study	Valuation models	Problems afflicting valuation	Most advocated/ commonly used valuation model	Depreciation models	Matters afflicting depreciation
Pallot (1997)	Overall review of accounting practice up to 1997 in local governments in New Zealand.	ODRC, DRC	ODRC is expensive and complicated.	DRC	SL; Renewal Accounting.	SL does not coincide with physical deterioration. Renewal accounting is the cash accounting approach and not consistent with GAAP.
Barnes and Lord (2017)	Analysis of financial and non-financial reports from five New Zealand local authorities.	ODRC, DRC	N/A	DRC	Deferred Maintenance	Different understanding of depreciation by stakeholders; useful life cannot be readily determined; Deferred Maintenance not consistent with GAAP.
Bond and Sakornvanasak (2006)	Postal surveys to 74 New Zealand local authorities.	ODRC, DRC	Lack of specific guidance on "componentization" of the assets, replacement cost calculation, optimization and estimation of total and remaining useful life.	ODRC	CBD	Estimation of the useful life and identification of the depreciation rate is problematic. Lack of guidance for these.

McGeough (1997)	Analysis of the 'resource accounting' concept as prescribed by the UK central government.	DRC	Valuation is likely to be arbitrary due to long or unlimited lives, inability to sell and absence of the alternative use of the assets.	DRC	N/A	N/A
Falls et al. (2004)	Comparison of asset valuation methods and application using the City of Edmonton, Canada pavement database as a case.	Book Value (BV) or Historical Cost (HC), Written-down replacement Cost (WDRC), Net Salvage Value (NSV), GASB 34	WDRC requires good performance modelling. BV does not account for changes in prices, neglects technology and service standard changes, results can be misleading for older assets.	BV, WDRC	N/A	N/A

According to Pallot (1997, p. 235), professional valuers state that the most advocated method of valuation of infrastructure assets in local government is ODRC "which assumes the cost of replicating the asset in the most efficient way possible given the asset's service capability and the age of the existing asset". However, she claims that the method tends to be excessively complicated and expensive, mostly due to inability to determine the reliable level of adjustment for the optimization of the service capability of the replaced asset. As a result, Pallot (1997, p. 235) concludes that DRC would be a best alternative method to value the asset. The major challenge is to determine the level of accumulated depreciation reasonably close to fair value of the asset. Although highlighting the fact that age is one of the factors in determining the value of the asset, Pallot (1997) did not investigate this matter in detail.

In the analysis of the concept of depreciation of infrastructure assets Pallot (1997, p. 236) questioned whether the conventional GAAP approach is the best way to reflect resource consumption. She believes that consumption of the service potential of the asset should be understood from the perspective of the physical deterioration. As a result, she suggests that the traditional straight-line depreciation "may not be an adequate reflection of economic reality" for long lived infrastructure assets where useful life cannot be readily determined (p. 236). Pallot (1997, p. 237) then refers to 'renewal accounting' as an alternative method for recognizing the decline in value of the assets.

The most reliable variant of renewal accounting, as proposed by Pallot (1997, p. 237), assumes recognizing decreases in the condition of an infrastructural asset called "deferred maintenance". Accordingly, as long as the asset is maintained within the

required level of condition or restored to better condition, the level of deferred maintenance (or depreciation) is zero or close to zero. Pallot (1997) notes some problems and consequences which make this approach difficult to achieve. First, when deferred maintenance arises, there must be clear and understandable explanations for this in the statutory accounts. This might be a problem given a lack of understanding of the depreciation concept by councilors and members of the public (Pallot, 1997, p. 236). Second, depreciation is likely to fluctuate significantly from year to year due to the fact that restoration and maintenance expenditure are subject to the funds available to the local authority (Pallot, 1997, p. 238). This will make accounts non-comparable. Thirdly, there must be a robust and adequate asset management plan which is not always the case for many councils.

Falls et al. (2004) claim that the most commonly used methods for asset valuation are Book Value and Written Down Replacement Cost (WDRC) ("Asset Valuation", para. 2). The latter seems to follow the same meaning as DRC because, according to Falls and Haas (2001), it represents "current value based on replacement cost depreciated to current condition of the asset" (cited in Falls et al., 2004, "Table 2 Basic Definitions"). Following the logic of the definition given, it is obvious that the accumulated depreciation is dependent on the condition of the asset. Indeed, Falls et al. (2004) state that an infrastructure asset loses value through "deteriorated condition" ("Value Defined", para. 3). Based on the example of the road class of assets, they contend that the condition of a road is decreasing when the cost to operate the vehicle driving the road is increasing. Unfortunately, Falls et al. (2004) did not provide details on how the decreased condition is calculated and how it should be accounted for. The Book Value (or Historical Cost) approach uses historical costs depreciated to present worth based on the age of the asset (Falls et al., 2004, "Table 2 Basic Definitions").

According to Lemer (1997) (cited in Falls et al., 2004, "Table 3 Asset Valuation Methods"), WDRC approach is commonly used for management accounting purposes, while Historical Cost is the method used for financial purposes. However, the authors noted that the dependency of the value of an asset (under the historical cost approach) on the age of the asset is misleading. Falls et al. (2004) did not provide explanations for the reason for such a conclusion.

With regard to depreciation of infrastructure assets, Barnes and Lord (2017, p. 141) contend that there is a lack of consistency in the determination of useful lives and also

problems with understanding the meaning of depreciation by different stakeholders. They considered depreciation through the prism of 'intergenerational equity' which is defined as "achieving a fair, ethical balance of costs and benefits between present and future generations" (Barnes and Lord, 2017, p. 129). New Zealand local government regulations require local authorities to have a balanced budget (Barnes and Lord, 2017, p. 131). This means that all expenses should be covered by revenues, which in turn means that the depreciation expenses should be funded (Barnes and Lord, 2017, p. 135). As a result, by having a low level of depreciation in its accounts, a local authority may have low rates levied upon the community. This will potentially lead to inequity between generations. Barnes and Lord (2017, p. 128) provided an example of a New Zealand local authority which determined that its water and sewerage infrastructure assets were in poor condition because of lack of capital upgrading in previous years. This put current and future ratepayers into a "penalty situation" requiring extra rates to provide for renewal of the system neglected by the previous generation.

Considering this question of intergenerational inequity - Barnes and Lord (2017) in common with Pallot (1997) - suggest deferred maintenance as an alternative method for depreciation. They define deferred maintenance as "maintenance that was not performed when it should have been or was scheduled to be and which, thus, is put off or delayed for a future period" (Barnes and Lord, 2017, p. 133). Unfortunately, GAAP does not allow for recognition of deferred maintenance (Barnes and Lord, 2017, p. 134).

In their analysis of valuation methods, Barnes and Lord (2017, p. 133) applied the New Zealand equivalent of the International Accounting Standard 16 *Property, Plant and Equipment* (NZ IAS 16) which mandates the use of ODRC which represents the depreciated replacement cost adjusted (optimized) for obsolescence and surplus capacity and assumes replication of service capability in the most efficient manner, also adjusting for the age of the existing asset. Unfortunately, Barnes and Lord (2017) did not provide any details on how this "optimization" should be implemented in practice nor how the age affects the accumulated depreciation and, consequently, the value of the asset.

In their analysis of depreciation of infrastructure assets in local government in New Zealand and United Kingdom, Bond and Sakornvanasak (2006) state that the major issue local authorities experience are estimation of useful life and the identification of a depreciation rate to apply to the assets. They claim that the most advocated method of

valuing infrastructure assets is DORC (Bond and Sakornvanasak, 2006, p. 40). However, there is uncertainty on the correct approach to this method within the literature. They confirm that every element of DORC requires separate calculation, including estimating both useful and remaining useful lives, and determining the decline in value (Bond and Sakornvanasak, 2006, p. 40).

Assuming that the remaining useful life directly affects accumulated depreciation, which in turn results in a change of the value of the asset, these problems are connected to the present study. Based on New Zealand Infrastructure Asset Valuation and Depreciation Guidelines (cited by Bond and Sakornvanasak, 2006, p. 43) the remaining useful life should be based on the current condition and performance data of the assets. However, there is a lack of guidance as to how this principle should be implemented. Given the lack of guidance about useful life determination for infrastructure assets, Bond and Sakornvanasak (2006, p. 43) claim that in practice useful life merely replicates construction standards which may be too broad and not consider individual council's circumstances and the asset's condition. However, in the analysis of the 'decline in value' (or accumulated depreciation) element of the ODRC, Bond and Sakornvanasak (2006, p. 43) refer to age-based determination, which means multiplying the annual depreciation rate by the age of the asset. This is confusing as the age-based calculation of the decline in value and the condition-based determination are two different approaches. Indeed, if the straight-line depreciation is used, then the decrease in value is linear. With the condition-based determination of the decline in value, the condition may be satisfactory during the most of the useful life of the asset. This will mean no decline in value during that time. Bond and Sakornvanasak (2006) did not clarify this.

McGeough (1997) also referred to the New Zealand practice highlighting the fact that DRC is the commonly used method for valuation of the infrastructure assets in local government. He states that:

> Normal rules of valuation and depreciation apply to the operational assets. . . . It is with infrastructural and community assets that there is a major difficulty in relation to valuation; some of the difficulties are that such assets have long or unlimited lives, they are not for sale or are unsellable or they have no alternative use; in these circumstances the valuation and rate of depreciation arrived at are likely to be arbitrary. (p. 36)

The example of 'normal' accounting treatment of revaluation was explained in detail by Esen and Perek (2016). They provided an illustrative example of the accounting journals to be made when the asset is being revalued based on the IAS 16. The first method is when accumulated depreciation is eliminated against the gross book value of the asset, and the result is adjusted to the fair value (Esen and Perek, 2016, p. 32). It is assumed that the outcome of such approach (also called "net approach") will be that the replacement cost will be equal to fair value with the accumulated depreciation equal zero. Based on the second method of accounting ("gross approach"), accumulated depreciation is restated proportionally to the change in the gross book value of an asset and thus the carrying amount is brought to the carrying amount after revaluation (Esen and Perek, 2016, p. 32). In other words, this method involves adjustment of gross book value first, followed by adjustment of accumulated depreciation and written-down value. All elements are adjusted at the same rate. Though both methods will lead to the same fair value, the first method may not be acceptable to the public sector entities as, effectively, it hides the gross cost and remaining service potential as a fraction to the replacement cost. The second method will be more suitable because it separates cost and accumulated depreciation. This information can give an idea of the obsolescence of the infrastructure and expected amount of required cost of renewals and replacements. Though the Esen and Perek (2016) did not focus on public sector assets, the methodology for accounting of revaluation is the same for both public and private sector entities.

Based on the analysis done by Esen and Perek (2016), the following question can be raised: If the revaluation adjustment is driven purely by the change in the replacement cost, then how is the effect of change in the condition treated? We know from the literature review above that the decline in value or accumulated depreciation is affected by the change in the condition of an asset. Obviously, the condition change may result in a change in the accumulated depreciation at a rate different to the rate of the gross book value movement. How is this effect treated? Unfortunately, Esen and Perek (2016) did not consider this in their analysis.

2.3.2 Australian perspectives

Most of the academic research on accounting issues with revaluation and depreciation of infrastructure assets in local government in Australia occurred in the period before 2005. This may be because Australia adopted IFRS in 2005 followed by the introduction

of the new standard Australian Accounting Standard Board 116 *Property Plant and Equipment* (AASB 116) which changed the way revaluation is accounted for.

Table 2.3 presents a summary of different revaluation and depreciation models of infrastructure assets proposed by Australian scholars identifying the most advocated or commonly used valuation methods. It also presents problems local governments experience in applying these models in practice.

Table 2.3: Summary of Valuation and Depreciation Models by Australian Scholars

Author	Nature of study	Valuation models	Problems afflicting valuation	Most advocated/ commonly used valuation model	Depreciation models	Matters afflicting depreciation
Molland and Clift (2008)	Interviews with 15 chief financial officers from Victorian local authorities.	Historical cost, Current Replacement Cost, Realisable Value, DRC	Calculation of written down value of the asset is a problem	DRC	SL, CBD	Lacked knowledge of the theory of depreciation; Estimating remaining useful life is a problem.
Howe (2004)	Analysis of concerns on practical implementation of CBD from the engineers' perspective.	Current Replacement Value	Adjustment of the value under SL to CBD	Current Replacement Value	SL, CBD	SL does not reflect real deterioration; useful life is a guess.
Micevski, Kuczera and Coombes (2002)	Application of a homogeneous Markov model for the structural deterioration of stormwater pipe infrastructure in Newcastle City Council.	N/A	N/A	N/A	SL, models based on the structural deterioration	SL overestimates the deterioration of stormwater pipes.
Malano, George, and Davidson, (2005)	Application of Asset management modelling framework and life cycle cost models in determination of the optimal depreciation and valuation models on the example of the Cu Chi irrigation system, Vietnam.	Condition based valuation models	N/A	Condition based valuation models	SL, CBD	CBD does not follow SL curve.
Johnstone (2003)	Analysis of DORC valuation model based on the Australian energy regulatory industry sector entities.	DORC, DRC	N/A	DORC	SL	N/A

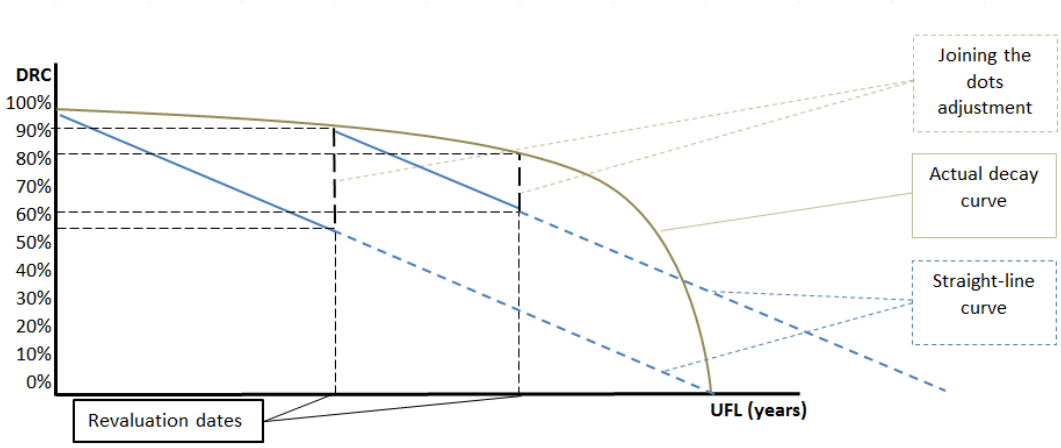
Molland and Clift (2008) in their analysis of the adoption of accrual accounting in local government in Australia interviewed financial managers and chief financial officers from Victorian local government councils. They discussed different valuation models used by councils under the (now replaced) Accounting Australian Standard 27 *Financial Reporting by Local Government*. The models covered by them are historical cost, current replacement cost, realizable value and DRC. The latter was also called

'written-down replacement cost' and seems to be the most reliable. Based on a sample of 15 councils, Molland and Clift (2008, p. 103) found that councils had problems with calculating the written-down value of the assets. This is the problem of calculating the decline in value (or accumulated depreciation and impairment loss).

Regarding depreciation, Molland and Clift (2008, p. 103) considered the problems councils usually face. These include: a lack of knowledge of the theory of depreciation and the purpose of depreciation in infrastructure assets accounting, limited knowledge of the concept of CBD, the relationship between maintenance and depreciation, relevance of straight-line depreciation for decision making, estimating remaining economic life and determining depreciation rates. Considering these issues, Burnes, Hope, and Roorda (1998) (cited by Molland and Clift, 2008, p. 101) claim that CBD is the best option for local government as this is a more accurate method and it also provides tools for better decision making. On the other hand, Molland and Clift (2008, p. 101) conclude that CBD is no longer allowed for financial accounting purposes following the announcement of an Urgent Issues Group in 2000. Unfortunately, they did not give any more details about CBD and how it is accounted for.

Howe (2004) analyzed problems with depreciation of infrastructure assets in local government by comparing CBD and traditional straight-line depreciation. It is assumed that the former is championed by the engineers while the latter is backed by the accountants. Howe (2004, p. 49) claims that "no engineer believes that infrastructure assets decline in a straight-line"; the straight-line (traditional accounting approach) is suitable only for short-lived assets with the estimated useful life of 5-15 years because in this case the difference on capital charges between straight-line and CBD will be not significant. However, with infrastructure assets, which are long lived, using straight-line depreciation can lead to misleading information about the decline of the value of the assets. This is shown in Figure 2.1:

Figure 2.1: Asset decay curves and joining the dots adjustment



Source: Adopted from Howe (2004, pp. 50, 52)

Figure 2.1 compares two depreciation curves: straight-line and condition-based (actual). In the case of the SL curve, the depreciation rate is constant every year over the period of the useful life of the asset, while the condition-based depreciation (deterioration) rate is very low during about the first 80 per cent of the useful life followed by the much higher rate afterwards. Assuming that the replacement cost (or gross book value) of the asset remains the same during the whole life, it is clear from the graph that carrying value (fair value) of the asset based on SL depreciation will be much lower than under CBD at any given time during the first 80 percent of the useful life of the asset. Put differently, the accumulated depreciation and impairment loss will be higher in the SL approach than in CBD at that time. The two models will coincide with each other only in the beginning and end of life.

Accordingly, when it comes to revaluation, councils which use SL depreciation during the periods between revaluations, bring the carrying value of the assets up to the level of CBD by decreasing the accumulated depreciation and impairment loss component. According to Howe (2004), this adjustment will allow a more realistic condition-based trend as demonstrated in Figure 2.1. He named this adjustment "joining the dots" (Howe, 2004, p. 52)).

If we look at the period after 80 percent of the UFL of the asset, the adjustment would have to be opposite in nature. The level of accumulated depreciation and impairment loss in the SL model would be lower than in the deterioration curve. In this case the adjustment would be to increase the accumulated depreciation and impairment loss. Unfortunately, Howe (2004) did not investigate this matter.

As a result, we will have the series of little straight-lines (between each revision to the condition-based valuation increment/decrement or condition-based remaining life/ depreciation rate adjustment). In other words, as Howe (2004, p. 52) concluded, it is the combination of a straight-line and condition based which makes the original concept of a single straight-line "a bit of farce".

Howe (2004, p. 52) notes that the valuation of the assets based on condition and, as a result, the "joining the dots" effect, was allowed by the Accounting Standard AAS 38 *Revaluation of Non-Current Assets* and its successor AASB 1041 *Revaluation of Non-Current Assets*. Unfortunately, he did not show how to account for those "joins of the dots", but his contribution to the topic has been important and has a direct bearing on the subject matter of this study.

In sum, Howe (2004, p. 51) proposed Current Replacement Value (CRV) as the most reliable approach to the valuation of infrastructure assets. The method is similar to the Replacement Cost approach and represents undepreciated value of the asset measured in current prices (Howe, 2004, p. 51). Depreciation would be accrued based on renewal accounting, and this follows the condition based approach to the recognition of depreciation, where expense is recognized only when shortfall in maintenance led to drop in condition. Howe (2004, p. 51) believes this approach best suits the need for benchmarking and forward planning. He referred to the NSW Roads Traffic Authority (RTA) which successfully applied CBD depreciation method for "management purposes" (Howe, 2004, p. 52). Though nothing has been revealed about depreciation for accounting purposes at RTA, we may assume that the 'joining the dots' adjustments should have been done at the time of revaluation if the straight-line depreciation is followed for financial reporting purposes.

Micevski et al. (2002) demonstrated that the traditional straight-line assumptions on consumption of service potential for the stormwater pipe network in the Newcastle area were considerably erroneous. Based on the position that the rational approach to assessing depreciation is to base it on structural deterioration, they found that the GAAP straight-line depreciation curve significantly overestimates the deterioration of stormwater pipes. This confirms the situation described by Howe (2004) when the written down value of the asset under linear depreciation during the most of the life of the asset will be lower than the one under CBD, except for the beginning and the end of the useful life when both models do have the same written down value.

The arguments of Micevski et al. (2002) and Howe (2004) were also confirmed by Malano et al. (2005, p.112) who, with reference to irrigation and drainage assets, roads, reticulation systems and bridges, claimed that a common approach to value an asset is to determine the book value based on the accumulated depreciation. The latter depends on the condition of the asset and normally does not follow a fixed or predetermined rate of depreciation as applied in normal accounting practices. Indeed, a condition is a composite measure of different factors like physical wear and tear, quality of maintenance, age and quality of construction. Malano et al. (2005, p.112) concluded that ". . . the condition of the asset can be periodically adjusted to reflect deviation from the theoretical decay model". Though they did not explain in detail exactly what that meant, it is obvious, that the 'joining the dots' adjustment, as discussed in Howe (2004) above, is relevant here.

Johnstone (2003, p. 11) summarized the issues with the DORC claiming that this approach to valuation is un-auditable because of the high level of judgements involved. Though he analyzed DORC from the perspective of the regulated utilities industries, the conclusion is also relevant to infrastructure assets in local government. This can be partially confirmed by the definition of DORC used by Johnstone (2003, p. 4), which is the "written-down replacement cost of [the asset's] optimal or most efficient replacement (in an engineering or cost efficiency sense)".

In common with the other scholars above, Johnstone (2003, p.12) also pointed to problems in the reliability of the calculation of the replacement cost and level of optimization of the replacement. However, he does not see much of a problem calculating the "depreciated" component of DORC as he believes this is purely an age based calculation of the accumulated depreciation. Thus, if an asset with a useful life of 100 years is of 40 years of age, then its accumulated depreciation should be 40% of the replacement cost (Johnstone, 2003, p. 8).

Considering the significance of the infrastructure assets and problems with accounting for depreciation and valuation, this would affect reliability of financial reports. Thus, Drew and Dollery (2015) raised concerns about inconsistent depreciation practice in NSW local government and the adverse consequences this has on the public policymaking. They suggest that inconsistency may be a result of the genuine differences in the useful life of road assets as a result of climate or topography or as a result of a poor understanding of the purposes of depreciation, the probable life of public

assets or regulatory guidelines (Drew and Dollery, 2015, pp. 30-31). Given the high level of judgement involved here, Drew and Dollery (2015, p. 30) also refer to depreciation as a real tool for "gaming" or "fraud". Intention to misreport the accounts by manipulating the depreciation figures may come from senior management who might be motivated by the desire to project their performance in the best light. The research revealed that inconsistent depreciation practice is also relevant to Victoria. In their recommendations, Drew and Dollery (2015, p. 35) conclude that in order for depreciation accrual practice to be more consistent, guidance and assistance with the re-valuation of public assets is required.

In common with Drew and Dollery (2015), Pilcher (2005) performed analysis of the effect of inconsistent depreciation practice of transport assets within NSW local government on Key Financial Performance Indicators (KFPI). He claims that transport assets form a significant proportion of the total assets of a council, and depreciation expenses – a significant proportion of total council's operating revenue. Pilcher (2005, p. 458) discovered that of the 170 councils in NSW, up to 98 per cent recorded an error in depreciation of some component of transport infrastructure during 1999-2000 and 2002-2003; the error margin ranged from 11 to 73,250 per cent significantly impacting on the three targeted KFPIs. His main conclusion is that having unreliable data behind them, the KFPI cannot be a reliable source of decision making for policy makers and other stakeholders.

2.4 Conclusion

Reviewing the empirical evidence has revealed significant problems in accounting for revaluation and depreciation of infrastructure assets in local government in Australia. The problems began with the implementation of the accrual accounting model in local government around the world in 1980s and the associated new requirement to recognize and depreciate infrastructure assets. The problems arise mostly as a consequence of the unique characteristics of public sector infrastructure assets; in particular their long and sometimes uncertain lives, and the fact that they cannot be sold and do not operate for profit earnings.

Most of the scholars agree that ODRC, or its simplified version DRC, is the most advocated method of valuation of infrastructure assets in local government. However, every element in the ODRC calculation has problem areas. However, this is a separate

field of research in itself. Examples are the calculation of the replacement cost and its optimization to reflect the most efficient way to replace the asset; and calculation of the depreciated part of the value of the asset based on the condition or age of the asset. The literature review in Chapter 2 has shown that the problems in the accounting treatment of revaluation of infrastructure assets in local government have not been covered in detail in the academic literature. This provided the rationale for this thesis.

Following the generally accepted accounting principles, the accounting treatment of the effect of a change in the replacement cost of an asset is straightforward. However, the effect of a decline in value as a result of a revaluation exercise is lacking detailed analysis and review by academics. There is a strong argument among scholars that decline in value is a function of the condition of the asset, yet this contradicts the linear aged base GAAP approach. The latter is represented by conventional straight-line depreciation which is constant during the life of the asset. On the other hand, condition-based depreciation is not the same every year and may be equal to zero if the condition is well maintained at the same level. As a result of this, councils have to perform revaluation adjustment to align the two methods. Regardless of this adjustment, some scholars claim that a CBD approach is not allowed by GAAP.

In this context we have identified the following questions which we will consider in more detail in this dissertation:

1. What is the current accounting framework for revaluation and depreciation of infrastructure assets in Australian local government in general and NSW in particular?
2. In practice, how do NSW councils account for the results of the revaluation of infrastructure assets, and whether they comply with the Australian Accounting Standards?
3. What are the consequences of the current accounting practice on the reliability of the financial reports by NSW local councils?
4. What would be the compliant accounting approach considering the requirements in the NSW local government sector and the Australian Accounting Standards?

These questions are significant for local government accounting practice because, as has been demonstrated in Chapter 2, inconsistent depreciation and revaluation practices in local government make financial reporting unreliable for decision making (Drew and Dollery, 2015; Pilcher, 2005). In the Chapter 3 we will review the current accounting

framework which regulates accounting for revaluation and depreciation in Australian local government in general and NSW in particular. The major focus of our review will be on the accounting treatment for change in the accumulated depreciation and impairment loss as a result of a revaluation exercise.

CHAPTER 3: CURRENT ACCOUNTING FRAMEWORK FOR REVALUATION AND DEPRECIATION IN AUSTRALIAN LOCAL GOVERNMENT

3.1 Introduction

The review of the literature in Chapter 2 revealed significant problems in accounting for revaluation and depreciation of infrastructure assets in local government in Australia. It should be noted that most of the scholarly research on this matter was done before Australia adopted International Accounting Standards in 2005. Accordingly, it is important to understand the current accounting framework in Australian local government and in NSW in particular.

In the end of Chapter 2 we raised four questions which this study will seek to answer. The purpose of Chapter 3 is to respond to the first question: "What is the current accounting framework for revaluation and depreciation in Australian local government in general and NSW in particular".

Chapter 3 is divided into five parts. Section 3.2 defines the accounting framework for NSW local government with a short description of each element of the framework. Section 3.3 critically analyses the Australian Accounting Standards relevant to the revaluation and depreciation of infrastructure assets. Definition of major terms used elsewhere in the Chapter 3 is also included in section 3.3. Section 3.4 covers specific revaluation and depreciation requirements in the NSW local government accounting practice. In Section 3.5 we summarise revaluation and depreciation accounting practice in other Australian states. Chapter 3 concludes in Section 3.6 which provides a summary of the critical analysis of the current accounting framework and concludes on the extent to which the first question from Chapter 2 was answered.

3.2 Structure of the Accounting Framework for NSW Local Government

The easiest way to get an overall understanding of the structure of the accounting and financial reporting framework in NSW local government is to look at the Statement by

Councillors and Management of a General Purpose Financial Statement (GPFS) of a NSW council. This statement refers to the three tiers of legislation under which the GPFS are prepared: the *Local Government Act 1993,* Australian Accounting Standards and the *NSW Local Government Code of Accounting Practice and Financial Reporting*. A summary of these tiers from the top level authority down to the less authoritative is presented in the Table 3.1.

Table 3.1: Accounting regulations in NSW local government

Level of authority	Name of the regulation	Coverage
1	*NSW Local Government Act 1993*	NSW
2	Australian Accounting Standards	National
3	*NSW Local Government Code of Accounting Practice and Financial Reporting*	NSW

The most authoritative legislative act regulating all aspects of any NSW council's activities (including financial reporting) is the *NSW Local Government Act 1993* (hereinafter "LGA (1993)" or "Act (1993)"). Accounting and financial reporting requirements are gathered in Division 2 of Part 3 of LGA. Pursuant to s. 413 of Division 2 of Part 3 of the LGA, a council must prepare a general purpose financial report in accordance with the publications issued by the Australian Accounting Standards Board (AASB). There is nothing else in the Act which can be relevant for our study. It delegated the framework setting power down to the Australian Accounting Standards Board.

Australian Accounting Standards (AASB publications) are the second level of authority and comprise the AASB Standards, Interpretations and Conceptual Framework. These publications prescribe the principles of accounting and financial reporting in Australia nationwide. For simplicity, we will call all these pronouncements elsewhere in the text as Australian Accounting Standards (AAS) or Australian Generally Accepted Accounting Principles (Australian GAAP). Currently used Australian GAAP commenced after Australia adopted the International Accounting Standards Board standards (IASB) on 15 July 2004. In effect, AAS is equivalent to IASB standards with some additions specific to Australian needs. Based on the explanations provided in the AASB (2004) the focus of IASB is for-profit entities. On the other hand, the AASB is responsible for setting accounting standards for all types of reporting entities including not-for-profit. As a result, some of the additional requirements specifically for not-for-

profit entities in the Australian equivalents of the IASB standards may not be in compliance with the IASB standards.

The final level of authority is the *NSW Local Government Code of Accounting Practice and Financial Reporting* (the Code). The Code is managed by the Office of Local Government NSW (OLG). OLG updates the Code every year following feedback from stakeholders and changes in the AAS. The current version of the Code for financial statements ended June 2017 is Code # 25 issued by OLG in June 2017. The Code follows all requirements of AAS, but also includes some other reporting requirements specific to the NSW local government accounting and reporting needs. Those additional requirements are more about presenting disclosures to the General Purpose Financial Statements (GPFS) not required by AASB. For example, Note 2(a) "Functions or activities" or Note 13 (a) "Statement of performance measures – consolidated results".

The above three tiers of legislation comprise the accounting and financial reporting enforceable framework for NSW local government councils. However, as we will argue, the requirements may be not clear enough. In this case, when further interpretations are required, councils may consult other resources for more guidance. For example, councils may refer to the local government accounting practice and codes from other Australian states. We will discuss these publications in the Section 3.5. Councils may also refer to manuals and guidance provided by different professional bodies like the Chartered Public Accountants Australia (CPA Australia) or the Institute of Public Works Engineering Australia (IPWEA). Due to time and coverage limits we will not cover these sources in this study.

Before we proceed to the details of the framework and its application to the accounting for the depreciation and valuation of infrastructure assets, it is important to define the objectives and users of the NSW local governments financial statements. According to paragraph 9 of AASB 101 (2015) the objective of financial statements is ". . . to provide information about the financial position, financial performance and cash flows of an entity that is useful to a wide range of users in making economic decisions." The Code (2017) also adds one more objective of the councils' general purpose financial statements which is ". . . provision information about allocation of scarce resources." (Code, 2017, p. A-2).

Local government councils in NSW exist for the benefit of local community. Thus, according to the Section 8 of the Act (1993), ". . . councils carry out their functions in

a way that facilitates local communities that are strong, healthy and prosperous". It is fair to assume that the main user of the financial statements of an NSW local government council will be the local community. This is also indicated in the Code (2017) which states that financial statements aim is ". . . to provide enhanced accountability of councils to community." (Code, 2017, p. A-2). In fact, local community is not only the recipient of the services from the council, but also is a provider of resources. Indeed, most of councils' revenue is collected through the rates and charges imposed on the community. All the funds collected are then used for the benefits of the community through provision of services (roads constructions and maintenance, waste collection and utilisation, parks and gardens maintenance, etc).

Councils are also heavily dependent on the funding from the government. Both State and Federal governments contribute resources to the local government councils in the form of grants.

It is obvious that these two groups (local community and government) will be the main users of the financial statements issued by the local government councils. Reliable reporting about infrastructure assets would be commonly important for both groups. Indeed, depreciation figure affects many ratios reported by the NSW local government councils in their financial statements. For example, renewal ratio which reflects the extent to which the assets are renewed compared to the depreciation; operating performance ratio which reflects the sustainability of councils' operation.

It is therefore important to ensure that the financial statements can be relied upon by service recipients and resource providers in their decision-making.

In the Section 3.3, Section 3.4 and Section 3.5 we will analyse in detail accounting principles of revaluation and depreciation of infrastructure assets in local government disclosed in the AAS, the Code and Publications from other Australian states. By examining these sources, we will try to answer the first question raised in the end of Chapter 2 as to the nature of the accounting treatment of revaluation and depreciation of infrastructure assets. We should keep in mind that the most important part of that question is the accounting treatment of the effect of the change in accumulated depreciation and impairment loss element of the fair value.

3.3 Australian Accounting Standards

3.3.1 Introduction

Based on the requirements of the *NSW Local Government Act 1993* local government agencies must comply with the Australian Accounting Standards issued by AASB. The following AASB standards and interpretations are relevant for our study of revaluation and depreciation of infrastructure assets in local government:

- AASB 116 *Property, Plant and Equipment* (AASB 116)
- AASB 13 *Fair Value Measurement* (AASB 13)
- AASB 108 *Accounting Policies, Change in Accounting Estimates and Errors* (AASB 108)
- AASB 136 *Impairment of Assets* (AASB 136)
- UIG 1030 *Depreciation of Long-Lived Physical Assets: Condition Based Depreciation and Related Methods* (UIG 1030)

The analysis below will have some similarities with Chapter 2 because, as was mentioned in Section 3.2, AAS represents equivalents of International Accounting Standards issued by IASB referred to elsewhere in the Chapter 2.

Principal issues in accounting for property, plant and equipment, such as recognition of the assets and the determination of their carrying amounts, are described in AASB 116 (2015). It is thus important to define some of the terms used in this standard and applied elsewhere in our study. Paragraph 6 of AASB 116 (2015) provides the following definitions:

- Carrying amount (CA) – amount at which an asset is recognised after deducting any accumulated depreciation and accumulated impairment losses;
- 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;
- Depreciable amount – the cost of an asset less its residual value;
- Depreciation – systematic allocation of the depreciable amount of an asset over its useful life;
- Impairment loss – the amount by which the carrying amount of an asset exceeds its recoverable amount;
- Recoverable amount – the higher of an asset's fair value less cost to sell and its value in use; and

- Useful life is:
    - the period over which an asset is expected to be available for use by an entity; or
    - the number of production or similar units expected to be obtained from the asset by an entity.

3.3.2 AASB 116

3.3.2.1 AASB 116 on depreciation principles

Depreciation of property, plant and equipment is covered in AASB 116. Paragraph 6 of AASB 116 (2015) defines depreciation as the systematic allocation of the depreciable amount of an asset over its useful life. Depreciation method should reflect the pattern in which the asset's future economic benefits are expected to be consumed by an entity (paragraph 60 of AASB 116, 2015). Based on paragraph 62 of AASB 116 (2015) depreciation methods include straight-line method, diminishing balance method and the units of production method. The straight-line depreciation results in a constant charge over the useful life. The diminishing balance method results in a decreasing charge over the useful life, and the units of production method results in a charge based on the expected use or output.

Paragraph 61 of AASB 116 (2015) requires an entity to review the depreciation method at least each financial year-end, and change it if there has been a significant change in the expected pattern of consumption of the future economic benefits. The effect of such a change should be accounted for in accordance with AASB 108.

As demonstrated in Chapter 2 and Chapter 4, straight-line depreciation is the commonly used method to allocate the service capacity of infrastructure assets in the local government. There are two main reasons for this:

a) It is simple to calculate and understandable by most of the stakeholders; and
b) It best reflects the pattern of consumption of the service potential of long-lived infrastructure assets. Take a water pipe, for example. It will transport roughly the same volume of water every year during its useful life. Only closer to the end of its useful life will the physical condition fail to provide the required level of service. Usually councils intervene (renew or replace) earlier than the end of the useful life in order to avoid disasters or complaints from the community.

Many scholars believe that straight-line depreciation is misleading and does not reflect the actual consumption of economic benefits (see, for example, Pallot, 1997; Molland and Clift, 2008). Condition-based depreciation was advocated as one of the major alternatives to the conventional depreciation methods (Howe, 2004). Considering this, AASB responded by the way of an Urgent Issues Group 1030 *Depreciation of Long-Lived Physical Assets: Condition Based Depreciation and Related Methods* (UIG 1030). Based on paragraph 8 of UIG 1030 (2004), AASB prohibited the use of the CBD depreciation method. AASB acknowledged that there might be different interpretations of what CBD is. Accordingly, AASB highlighted particular features of a depreciation method which are not acceptable for the purpose of AASB 116. One of the major negative characteristics is when the depreciation expense is not determined by reference to the depreciable amount of the asset (see paragraph 8(a) of UIG 1030, 2004). This is the case, for example, with the renewal accounting and deferred maintenance methods proposed by Pallot (1997) and Barnes and Lord (2017). However, UIG 1030 (2004) states that:

> Condition assessments are used as a mechanism to determine, and the extent to which, the future economic benefits of an infrastructure or other long-lived asset have been consumed during the reporting period, and to confirm the pattern of consumption of those future economic benefits. The methodologies adopted for condition assessments will often generate reliable measures of the future economic benefits consumed during the reporting period in accordance with the requirements of AASB 116. (paragraph 17)

It is clear from UIG 1030 (2004) that the condition of an asset at the reporting date affects the fair value of the asset. However, it cannot affect or influence the depreciation for the reporting period. There is no clarification in UIG 1030 (2004) on this question, but we can assume that - in situations when the condition of the asset changed significantly - it will result in the change of the accumulated depreciation and impairment loss component of the fair value. We will revisit this question later in this dissertation.

3.3.2.2 AASB 116 and AASB 13 on revaluation principles

Based on paragraph 15 of AASB 116 (2015), entities should measure the asset at initial recognition at cost. In subsequent reporting periods entities can choose either to continue to measure the asset at cost (cost model) or to revalue at fair value (revaluation model) (paragraph 29 of AASB 116, 2015). Under the cost model, after initial recognition, assets should be carried at cost less any accumulated depreciation and any impairment loss (see paragraph 30 of AASB 116, 2015). Under the revaluation model, the assets whose fair value can be measured reliably after initial recognition should be carried at a revalued amount, being its fair value at the date of the revaluation less any subsequent accumulated depreciation and subsequent accumulated impairment losses (see paragraph 30 of AASB 116, 2015).

As we saw in Chapter 2, measurement of infrastructure assets in local government at fair value is the normal practice (Barnes and Lord, 2017). As we will see in Section 3.4, the *NSW Code of Accounting Practice and Financial Reporting* (Code) mandates the use of the revaluation model for infrastructure assets in local government NSW. Accordingly, we will focus on the revaluation model.

For the fair value determination, AASB 116 (2015) refers to AASB 13 (2015). Paragraph 9 of AASB 13 (2015) defines fair value of an asset as "the price that would be received to sell an asset in an orderly transaction between market participants at the measurement date". Appendix B to the AASB 13 (2015) describes three valuation techniques which can be used to calculate fair value of an asset: the market approach, the cost approach and the income approach. The market approach uses prices from the market as a comparison benchmark. The income approach converts cash flows from the operation of the asset (income and expenditure) into a single discounted amount. The cost approach reflects the amount that would be required currently to replace the service capacity of an asset. The latter is also often referred to as current replacement cost (CRC). Based on Chapter 2, we know that infrastructure assets cannot be sold and they are used to provide services to the community at no, or a nominal, fee. This means that the market and income approaches are not applicable to the determination of the fair value of these assets. As we will demonstrate in Section 3.4, the cost approach is the sole method the Code requires all councils to follow in determination of the fair value of infrastructure assets.

According to paragraph B9 of AASB 13 (2015), the CRC approach reflects the cost to a market participant buyer to acquire or construct a substitute asset of comparable utility, adjusted for obsolescence. Obsolescence comprises multiple factors which include physical deterioration, functional (technological) obsolescence and economic (external) obsolescence and it is broader than depreciation for financial reporting purposes (an allocation of historical cost). The important thing about the definition of obsolescence is that it has nothing to do with the concept of depreciation as a reflection of consumption of the service potential. This conclusion is important and will be referred to below.

According to paragraph 35 of AASB 116, when an item of property, plant and equipment is revalued, the carrying amount of that asset is adjusted to the revalued amount. At the date of revaluation, the asset is treated in one of the following ways:

a) the gross carrying amount is adjusted in a manner that is consistent with the revaluation of the carrying amount of the asset. For example, the gross carrying amount may be restated by reference to observable market data or it may be restated proportionately to the change in the carrying amount. The accumulated depreciation at the date of the revaluation is adjusted to equal the difference between the gross carrying amount and the carrying amount of the asset after taking into account accumulated impairment losses; or
b) the accumulated depreciation is eliminated against the gross carrying amount of the asset.

These two methods were discussed in Chapter 2. Esen and Perek (2016) named these methods as "normal" revaluation practice with reference to International Accounting Standard 16 *Property, Plant and Equipment* (IAS 16). Based on that analysis we came to the conclusion that under the second method of revaluation (also called "net" method), the entity comes up with a new depreciable amount with the accumulated depreciation equal to zero. This may not be acceptable by the NSW local government reporting requirements. For example, calculation of a backlog ratio in Special Schedule 7 requires determination of the cost required to bring the assets to a satisfactory condition. Councils will be required to know the level of accumulated depreciation and gross replacement cost. This will be difficult to implement if the second method of revaluation accounting is used. The first method (also called "gross" method) is the most suitable one and should be used in the current replacement cost revaluation

approach. As will be shown in Section 3.4, this way of revaluation accounting is also required by the Code. An important aspect to note about the "gross" method is that in this method, the accumulated depreciation is adjusted after allowing for the accumulated impairment loss. We will discuss this later in Section 3.4. However, we now break up the description of this accounting treatment into simple steps assuming there is no impairment loss:

a) Determine gross carrying amount (GCA) by reference to new available market data of construction or purchase costs;
b) Determine the rate of increase/ decrease of the gross carrying amount as a result of revaluation, by dividing new GCA on GCA before revaluation;
c) Adjust carrying amount (CA) before revaluation proportionally to the change in GCA (at a rate in b above); and
d) Calculate the value of the accumulated depreciation (AD) as a difference between new GCA and CA, effectively applying the GCA revaluation rate as with CA above.

The most important conclusion from this approach in the context of this dissertation is that the accumulated depreciation is calculated as a balancing figure after deducting the new carrying amount from the new revalued gross carrying amount. This means the accumulated depreciation will change at the same rate as GCA and CA. Accumulated depreciation as a percentage to the gross carrying amount will also remain the same as before revaluation (if no impairment loss).

Based on paragraphs Aus39.1 and Aus40.1 of AASB 116 (2015), the effects of the revaluation on the carrying amount are recognised as follows:

- Increase is recognised through other comprehensive income and it is accumulated in equity as revaluation surplus unless it reverses the net revaluation decrease of the same class of assets previously recognised in profit or loss. In the latter case, the increase will be recognised in the profit and loss account.
- Decrease is recognised in the profit and loss account unless there is a credit balance in the equity (revaluation surplus). In that case the decrease will be debited to the revaluation surplus account with the remaining balance through profit and loss.

It is useful to illustrate this by means of an example.

Example 1

Council revalues the pavement of a gravel road. Replacement cost (or Gross Carrying Amount) of the pavement before revaluation is $1,000,000. Council follows a straight-line depreciation model. The asset was 60% into its useful life which means the accumulated depreciation before revaluation is $600,000. As part of revaluation, council determined that the current replacement cost equals $1,200,000 or 20% above the GCA before revaluation. The reason for that is increases in the cost of gravel, pay rates, fuel, etc. compared to the last revaluation. In other words, it will cost council $1,200,000 to construct the same brand-new asset. Assume no impairment loss. In this case, the results of revaluation should be as presented in the Table 3.2:

Table 3.2: Accounting for revaluation increase with no impairment effects

	Before Revaluation	Revaluation index	After Revaluation
Replacement Cost (RC)	1,000,000	1.2	1,200,000
Accumulated Depreciation (AD)	(600,000)	1.2	(720,000)
Accumulated Depreciation as a percentage to RC	60%		60%
Fair Value (FV)	400,000	1.2	480,000

As we can see, the accumulated depreciation as a percentage of the replacement cost has not changed and remained at 60%. This is because - following the principles of the revaluation method in 35 (a) of AASB 116 (2015) - the accumulated depreciation has changed at the same rate as the gross value and carrying amount, i.e. 1.2. In other words, the road should still be 60% into its useful life after revaluation.

The accounting system will record the following:

Dr Replacement Cost	$200,000	
Ct Accumulated depreciation		($120,000)
Ct Revaluation Reserve		($80,000)

The major conclusion from this analysis is that the effect of revaluation according to AASB 116 treats the change in all elements of the fair value of the asset at the same rate. The only reason elements of the fair value may change at rates different to each other would be because of the effect of accumulated impairment losses. Paragraph 6 of AASB 116 (2015) defines impairment losses as the amount by which the carrying amount of an asset exceeds its recoverable amount and refers for more details to AASB 136 *Impairment losses*.

3.3.3 AASB 136

Following Chapter 2 and Section 3.3.1 we know that the carrying amount of the asset equals its gross carrying amount less accumulated depreciation and any accumulated impairment losses. Accumulated depreciation represents that portion of the gross carrying amount of the asset allocated up to the reporting date following the depreciation method adopted by an entity. Accumulated impairment losses are also a part of the fair value of the asset and are covered in detail in AASB 136 *Impairment Losses* (AASB 136, 2017).

Based on the paragraph 6 of AASB 136 (2017) impairment loss is the amount by which the carrying amount of an asset exceeds its recoverable amount; the recoverable amount of an asset is the higher of its fair value less costs of disposal and its value in use; and the value in use is the present value of the future cash flows expected to be derived from an asset.

Paragraph 9 of AASB 136 (2017) states that an entity has to assess at the end of each reporting period whether there are any indications of impairment. Amid examples of those indicators provided in the paragraph 12 of AASB 136 (2017) we highlight the following:

- significant changes in the technological, market, economic or legal environment in which an entity operates; and
- evidence of obsolescence or physical damage of an asset.

From Section 3.3.2.2, we know that these indicators cover the elements of obsolescence referred to in determination of fair value in paragraph B9 of AASB 13 (2015).

In sum, it is clear that impairment of an asset is the result of obsolescence based on AASB 136. Obsolescence, as it is defined in AASB 13 (2015), is also a part of determination of the fair value. The fair value calculation is the major part of the revaluation exercise and should be treated in accordance with AASB 116. If this is the case, then impairment loss, if recognised, should be treated as part of the revaluation adjustment. Furthermore, paragraphs Aus61.1 and Aus120.1 of AASB 136 (2017) prescribe the accounting treatment of impairment loss and reversal of that loss the same way as the revaluation adjustment in paragraphs Aus39.1 and Aus40.1 of AASB 116 (2015). Example 2 will summarise the accounting treatment of the combined effect of revaluation and impairment.

Example 2

The conditions given are the same as in Example 1, but with one addition – impairment loss. Council revalues the pavement of the gravel road. Replacement cost (or Gross Carrying Amount) of the pavement before revaluation is $1,000,000. Council follows a straight-line depreciation model. The asset was 60% into its useful life which means the accumulated depreciation before revaluation is $600,000. As part of revaluation, council determined that the current replacement cost equals $1,200,000 or 20% above the GCA before revaluation. The reason for that is increases in the cost of gravel, pay rates, fuel and other costs compared to the last revaluation. In other words, it will now cost council $1,200,000 to construct the same brand-new asset. Upon inspection, Council found out that the gravel on the road was significantly washed away after recent flooding. It is assumed that it will cost about $100,000 in current terms to restore the level of capacity of the road to the same level as it was before the flooding. It was agreed to recognise impairment loss on that amount. In this case, the results of revaluation should be as presented in the Table 3.3:

Table 3.3: Accounting for revaluation and impairment loss

	Before Impairment	Impairment	After Impairment but before Revaluation	Revaluation index	Final Result	Change b/w final result and before revaluation and impairment loss
Replacement Cost (RC)	1,000,000		1,000,000	1.2	1,200,000	20%
Accumulated Depreciation and Impairment Loss (AD and IL)	-600,000	-100,000	-700,000	1.2	-840,000	40%
AD and IL as percentage to RC	60%		70%		70%	
Carrying Value (Fair Value)	400,000	-100,000	300,000	1.2	360,000	-10%

In the above scenario, the final outcome is that replacement cost (RC) increased by 20%, accumulated depreciation and impairment loss (AD and IL) increased by 40% and carrying value (CV) dropped by 10%. The AD plus IL as a percentage of RC is now 70%. The asset is still 60% into its useful life. However, the remaining service potential as a fraction of RC dropped from 40% to 30% due to obsolescence factor.

The accounting system will record the following:

Dr Replacement Cost $200,000

Dr Revaluation Reserve $40,000

Ct Accumulated Depreciation and Impairment Loss ($240,000)

It should be noted that the previous version of AASB 136 (2015), in regard to public sector entities, referred to the depreciated replacement cost (DRC) as a substitute to the value in use in the process of determination of the recoverable amount of the asset. Paragraph Aus32.2 of AASB 136 (2015) defined DRC as the current replacement cost (CRC) of an asset less, where applicable, accumulated depreciation calculated on the basis of such cost to reflect the already consumed or expired future economic benefits of the asset. In 2017 AASB updated the Standard. Paragraph Aus32.2 was withdrawn on the ground that the DRC and CRC are similar in substance and in practice for specialised infrastructure assets in local government. This means that, in order to calculate the level of decline of value of the specialised infrastructure asset (or consumed level of service capacity), both accumulated depreciation (depreciated element of previously used DRC) and accumulated impairment loss (obsolescence) should be considered.

Furthermore, based on the paragraph 17 of AASB 136 (2017), if there is an indication that an asset may be impaired, this may indicate that the remaining useful life, the depreciation method or the residual value for the asset needs to be reviewed and adjusted in accordance with the Standard [AASB 116] applicable to the asset, even if no impairment loss is recognised for the asset. In the case of Example 2, the impairment loss has been recognised, but Council needs to consider whether the remaining useful life has changed. Council will now have two options:

1) Do not change the remaining useful life; or
2) Decrease the remaining useful life.

In the first option, by not decreasing the remaining useful life, Council might face a problem with not providing the appropriate level of service expected by the community. It is obvious that with less gravel, the road will not be able to serve the planned amount of time at the required level of service. In the second option, by decreasing the remaining useful life of the road, Council acknowledges that it will be able to provide the planned required level of service to the community for a shorter period of time.

Assuming the second option will be more accurate in terms of the lifecycle of the road, Council will have to account for the change in the remaining useful life. This matter is covered in the AASB 108.

3.3.5 AASB 108

Useful life of an asset may change due to obsolescence (where indicators of impairment exist) as noted in the Section 3.3.4 or as a result of reassessment of the pattern of consumption of the economic benefits following principles in AASB 116. Paragraphs 51 and 61 of AASB116 (2015) require entities to review useful life and depreciation method at least at the end of every financial year. If changed significantly compared to previous year, then these changes should be accounted for in accordance with AASB 108.

Paragraph 32 of AASB 108 (2015) states that there might be uncertainties inherent in business activities which cause preparers of financial statements to apply judgements based on the latest available and reliable information. As we know from previous analysis, this is especially relevant to infrastructure assets which are long-lived and for which the useful life cannot be determined precisely. Accordingly, paragraph 32 of AASB 108 (2015) treats changes in the useful lives of, or expected pattern of consumption of the future economic benefits embodied in, depreciable assets as a change in estimate.

Based on paragraph 5 of AASB 108 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. It is important to note that the effect is on the carrying amount of an asset which should be adjusted accordingly. The Standard specifically highlights that change in estimates is not a correction of errors. This is important because the accounting treatment of correction of errors and change in accounting estimates are different. Indeed, correction of errors should be treated retrospectively while change in estimates should be dealt with prospectively.

Prior period errors are defined in the paragraph 5 of AASB 108 (2015) as misstatements for one or more prior periods arising from a failure to use, or misuse of, reliable

information that was available either when financial statements for those periods were authorised for issue; or, they could reasonably be expected to have been obtained and taken into account in the preparation and presentation of those financial statements. Such errors include the effects of mistakes in applying accounting policies, oversights or misinterpretation of facts, and fraud.

Based on paragraph 42 of AASB 108 (2015) retrospective correction of errors involves restatement of comparative amounts for the prior period(s) presented in which the error occurred; or if the error occurred before the earliest prior period presented, restatement of the opening balances of assets, liabilities and equity for the earliest prior period presented. It should be noted that this kind of treatment should be done if the error is material. Furthermore, additional disclosure should be presented explaining the nature of the error. Accordingly, it is a complicated exercise and requires extra time and resources to fully comply with the requirements of the Standard.

In contrast, change in accounting estimates should be treated prospectively. Indeed, paragraph 36 of AASB 108 states that the effect of a change in an accounting estimate shall be recognised prospectively by including it in profit or loss in:

(a) the period of the change, if the change affects that period only; or

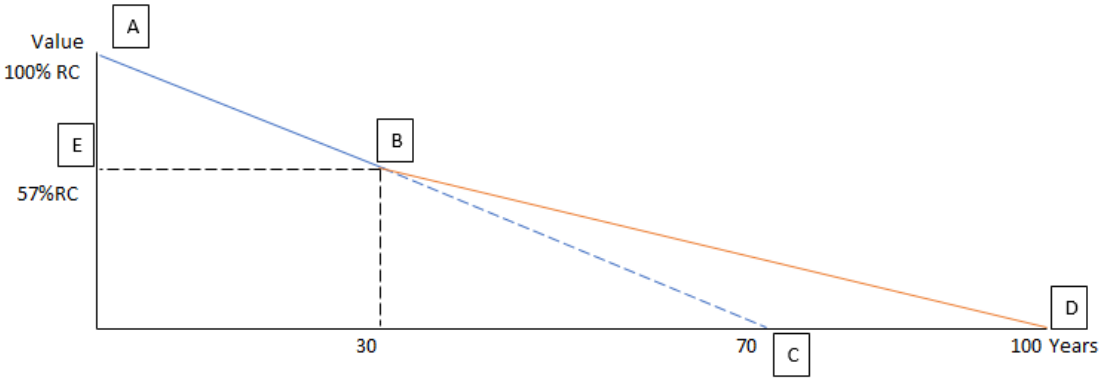
(b) the period of the change and future periods, if the change affects both.

In this regard the question can be raised: how are the above rules applied to a change in the useful life of the asset? If in the end of the reporting period an entity reassesses the remaining useful life of the asset (and total useful life accordingly), then the prospective treatment would probably mean that the depreciation in subsequent years will change. This can be demonstrated on the Example 3.

Example 3.

A water pipe's useful life was originally determined by a council as 70 years. Council follows a straight-line depreciation model. At the end of the year 30, the remaining UFL will be 40 years, but Council made inspection, reviewed historical renewal and replacement internal practice and came up with the conclusion that, effectively, the pipe can serve much longer - up to 100 years. In this case the remaining useful life will be reassessed to 70 years meaning decreased annual depreciation since year 31. Graphically this can be demonstrated in the Figure 3.1:

Figure 3.1: Effect of change in the useful life on depreciation



As at the end of the year 30 the pipe was 43% (30 years/ 70 years) into its useful life meaning that the carrying amount by that date is 57% of the gross carrying amount. This is demonstrated by the decay AB in Figure 3.1. After reassessment of the remaining useful life the subsequent decay will follow the line BD which will result in a lower level of annual depreciation in subsequent years until the end of the useful life of 100 years.

Paragraph 37 of AASB 108 (2015) states that to the extent that a change in an accounting estimate gives rise to changes in assets and liabilities, or relates to an item of equity, it shall be recognised by adjusting the carrying amount of the related asset, liability or equity item in the period of the change. In Example 3, Council has increased the remaining useful life in the end of the reporting period. But the carrying amount of the asset has not been affected so far: it is still on level E as if no change has occurred in the remaining useful life.

Let us extend the conditions in the Example 3 and assume that the replacement cost of the pipe is $100,000. In this case, at the end of year 30, accumulated depreciation will equal $42,857 ($100,000/70 years * 30 years). The carrying amount will then be equal to $57,143 ($100,000 - $42,857). Following the logic of Example 3, the annual depreciation after year 30 up until year 100 will be equal to $816 ($57,143/70 years). In other words, for the purpose of the new depreciation charge, we divided the carrying amount by the new remaining useful life as at year 30. But this approach has two main problems:

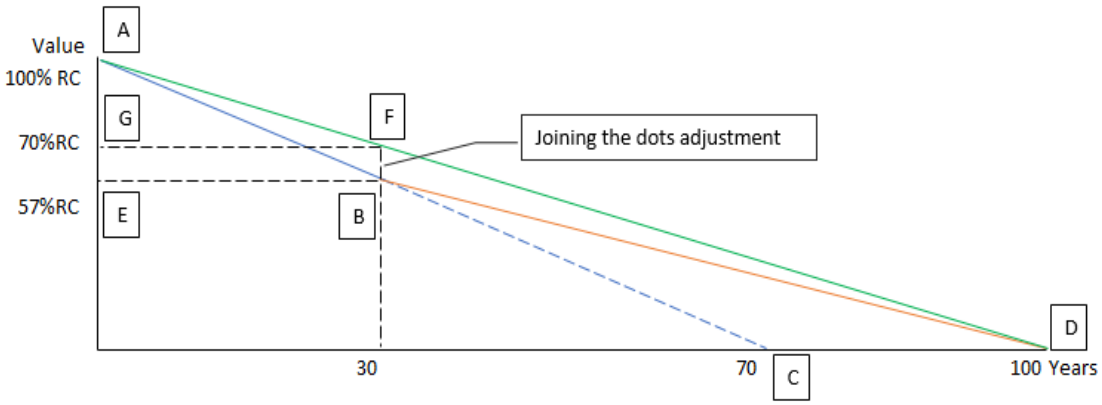
1) It does not align with the principle of depreciation based on AASB 116 and UIG 1030; and
2) It is difficult to implement in practice.

In regard to (1), paragraph 6 of AASB 116 (2015) defines depreciation as the systematic allocation of the depreciable amount of the asset. The latter is the cost of the asset less its residual value. Keeping in mind that long-lived infrastructure assets are rarely sold, we can assume zero residual value. In this case the depreciable amount equals the cost of the asset. In Example 3 the cost of the asset is $100,000 no matter what the remaining useful life. This means that, for the purpose of calculating depreciation, the $100,000 replacement cost should be used as a basis. The same approach is prescribed in 8(a) of UIG 1030 which states that AASB does not accept depreciation methods which are not linked to depreciable amount. In Figure 3.1 it is obvious that for the purpose of calculating depreciation after year 30, the carrying value E was used (equal to 57% of the RC). But value E is not a depreciable amount. Value A is the depreciable amount.

In regard to (2), based on the auditing experience of the author of this study, the asset registers used for keeping financial records of infrastructure assets of local government cannot work this way. No matter how often the useful life is being changed, the depreciation will always be calculated based on the replacement cost of the asset and its total useful life. In the case of Example 3, the annual depreciation for future years will be $1,000 as the result of $100,000 RC divided by 100 years new useful life. In effect, councils will end up in overstated depreciation. Accordingly, in order to avoid this overstatement, councils have to make a current year adjustment to the carrying amount of the assets. This is the "joining the dots" adjustment mentioned by Howe (2004) and covered in Chapter 2.

Based on the paragraph 37 of AASB 108, to the extent that a change in an accounting estimate gives rise to changes in assets and liabilities, or relates to an item of equity, it shall be recognised by adjusting the carrying amount of the related asset, liability or equity item in the period of the change. This can be demonstrated on the Figure 3.2:

Figure 3.2: Increase of the carrying amount adjustment after extension of the useful life of the asset



As will be demonstrated in Chapter 4, the joining the dots adjustment BF in Figure 3.2 can be very significant. What should be the accounting treatment for this adjustment? In effect, the result of the increase in useful life affected the current year (year 30) accumulated depreciation (and carrying amount accordingly) of the asset and will affect subsequent year depreciation charges. For the current year effect, paragraph 36 of AASB 108 (2015) prescribes to recognise the effect in the current year profit and loss. In Figure 3.2 the "joining the dots" adjustment will effectively decrease the level of accumulated depreciation of the asset from 43% before reassessment of UFL down to 30% after reassessment. In dollar value, the effect of the adjustment will equal 13% of the RC or $13,000. The accounting system for joining the dots adjustment will record the following:

Dr Accumulated Depreciation $13,000

Ct Income from reassessment of the useful life ($13,000).

In subsequent years, annual depreciation will be equal to $1,000 ($100,000 / 100 years).

The same type of adjustment should be made in the case when the UFL dropped compared to the initial assessment. In this case the BF line will be the adjustment of the carrying amount down by increasing the level of accumulated depreciation and impairment loss. In Example 3 we decided to use the situation when the remaining useful life increased as this is a common situation in the local government. This is supported by the fact that long-lived infrastructure assets may serve indefinitely as a system due to repetitive renewals of components (Pallot, 1997).

In sum, the effect of a change in the useful life of the asset should be treated as a change in estimate under AASB 108. This effect is treated prospectively with the effect on the

current year accumulated depreciation recognised through the Profit and Loss account of the current period and new depreciation charges in subsequent years. But this position can be challenged as it is still not clear enough.

3.3.6 Critical analysis of the accounting treatment of changes in estimates of remaining useful life

Analysis thus far has revealed that the useful life of the asset may change due to obsolescence or change in condition of the asset (based on the analysis of AASB 136 (2017) in Section 3.3.4) or due to change in estimate of the pattern of consumption of the service potential of the asset (based on the analysis of AASB 116 (2015) in Section 3.3.2.1). In effect, these two factors are interconnected. Indeed, if the condition of the asset deteriorated, it should automatically reflect on decreased useful life by lowering the remaining useful life. This was demonstrated in the Example 2 in Section 3.3.3 where the Council faced a dilemma about assessment of the remaining useful life after recognising impairment loss of the gravel road as a result of flooding. On the other hand, changing the remaining useful life due to a reassessed pattern of consumption of the remaining future economic benefits will obviously reflect on the condition. For example, a Council used to re-seal local roads every 30 years. However, after consultation with the community, it was agreed to re-seal the roads every 15 years. This was reflected in the Asset Management Plan (AMP) and Long Term Financial Plan accordingly with appropriate funds allocated. In this case, the seal with the age of 10 years, before reassessment of useful life, was considered to be in good condition. However, after adoption new AMP, the seal would be pretty close to the end of its useful life (15 years), and its condition will have to be decreased accordingly to reflect the fact that it is subject to renewal (re-sealing) soon.

Both factors will obviously result in the changed accumulated depreciation and impairment loss element of the fair value of the asset. However, the accounting of this effect is treated differently by the standards. Indeed, we have come up with three potentially correct, but different approaches:

1) Treat the effect as part of revaluation adjustment through the Asset Revaluation Reserve based on AASB 116;
2) Treat the effect as a change in estimate based on AASB 108 prospectively through Profit and Loss account; or

3) Treat the effect as an error based on AASB 108 through Retained Earnings.

The first option (1) would work well if the changed condition does not affect useful life. However, as was shown in Example 3, changed condition will always affect useful life (see Figure 3.2). Otherwise, depreciation will not be based on the depreciable amount and this contradicts AASB 116 and UIG 1030 (see Figure 3.1). In this case, the effect of change in useful life should be treated as a change in estimates based on AASB 108 (option (2)).

The second option (2) is to treat the effect of changes in the useful life as an effect of a change in estimate based on AASB 108 (2015). The standard requires the effect of this change to be recognised prospectively by including in profit and loss account in the period of the change and future periods. This approach seems more in line with the substance of the accrual accounting principles. Indeed, paragraph 32(a) of AASB 108 (2015) clearly states that change of useful life is a change in estimate. Secondly, recognising the joining the dots adjustment through the current year profit and loss account matches the subsequent treatment of the depreciation which will be charged through the profit and loss account following the principles of depreciation in AASB 116. Finally, if the entity follows the principles of AASB 116 to assess the remaining useful life every year, the effects will not be so material compared to the practice when revaluation (and assessment of the useful life) is delayed for a longer period (5 years, for example).

In regard to the third accounting treatment ((3), above), some may argue that by recognising this adjustment on the face of financial statements, an entity admits there were errors in the prior period calculation of the depreciation which can be treated as an error based on AASB 108. Furthermore, paragraph 51 of AASB 116 (2015) requires that the useful life of the asset be reviewed at least each financial year-end. We will see in Chapter 4 that the effect of a joining the dots adjustment can be really material and this is usually a result of the fact that councils reassess the remaining useful life only every 5 years when the formal comprehensive revaluation is due. In effect, not reviewing the useful life at the end of each period during the five years, the accumulated dollar effect of reassessed useful life at the time of the comprehensive revaluation becomes significant. As we know, according to paragraph 5 of AASB 108 (2015), 'error' includes mistakes in applying accounting policies. Reassessment of useful life every year is usually part of the accounting policies of every council. As a result, some

may argue that the treatment of the effect of non-assessment of change in the useful life in prior periods can be treated as an error and recognised through Retained Earnings with all the accompanying changes to the financial statements as required by the AASB 108. This treatment though, has some negative implications:

a) It will require a restatement of comparative figures in the financial statements and an additional third column in the balance sheet as required by the AASB 108;
b) Additional disclosures to the Financial Statements are required; and
c) This does not reflect well on management and auditors.

It is clear from this analysis, that the accounting treatment of the effect of a change in useful life of long-lived infrastructure assets in public sector is not covered in detail in the national accounting framework. Furthermore, AAS allow for different accounting treatments of this effect. Accordingly, it is imperative to have more specific guidance which would comply with AAS and at the same time provide greater clarification to specialised areas like infrastructure assets in local government. In this regard, it is necessary to consider the *NSW Local Government Code of Accounting Practice and Financial Reporting,* which is now analysed in detail in the Section 3.4.

3.4 Local Government Code of Accounting Practice and Financial Reporting

As we saw in Section 3.2, the *NSW Local Government Code of Accounting Practice and Financial Reporting* (the Code) is the third level of authority for NSW local government councils in regard to accounting and financial reporting. The Code is updated every year by the Office of Local Government NSW (OLG) to align with the latest changes in AAS and any feedback from stakeholders. At the time of writing, the latest version of the Code is Code 25 (2017) prescribes requirements for financial reporting for the financial year ended 30 June 2017. The empirical part of this dissertation in Chapter 4 refers to the revaluation of roads which happened in NSW local government in June 2015. At that time, the relevant Code was Code 23 (2015). In our analysis of the Code we will thus refer to both versions, as it is also important to see how the practice has changed since the last revaluation was done.

As was also noted in Section 3.2, the Code follows (or should follow) all the requirements of the AAS. There are also some extra requirements specific to the needs of the regulator and other stakeholders with which councils should comply. We will discuss thus only those specific requirements, assuming other requirements from AAS are in the Code. The requirements regarding accounting treatments of infrastructure assets are included in Note 9 of the Code.

First, paragraph 3 of Note 9 of the Code (2017) mandates councils to use a revaluation model for infrastructure assets. Furthermore, paragraph 8 of Note 9 of the Code (2017) requires councils to perform revaluations of their infrastructure assets every five years with roads infrastructure accordingly, needing to be revalued as at 30 June 2015. The next revaluation of roads is due in June 2020. Technically, there is not any inconsistencies with the AAS. Indeed, paragraph 34 of AASB 116 (2015) suggests revaluation every 3-5 years if there are no significant changes to the fair value before the revaluation.

Secondly, paragraph 7 of Note 9 of the Code (2017) requires councils to use the cost approach in revaluation of infrastructure assets. Paragraph 10 of Note 9 of the Code 23 (2015) referred to the depreciated replacement cost (DRC) as an estimate for the fair value of specialised infrastructure assets. The depreciated replacement cost was defined as the current replacement cost (CRC) of an asset less accumulated depreciation. This was inconsistent with the requirements of paragraph B8 of AASB 13 (2015) mandating a current replacement cost approach. However, as we discussed earlier, the difference between CRC and DRC is not significant in practice. Therefore, there are no substantive issues about non-compliance with the AAS. It should be noted that in the latest version, Code 25 (2017) has been changed to align with AASB 13 with reference to CRC.

Thirdly, the accounting treatment of the revaluation in the Code was taken directly from paragraph 35 of AASB 116 (2015). Indeed, paragraph 9 of Note 9 of the Code 25 (2017) states that:

> Where a council revalues depreciable assets, OLG has determined any accumulated depreciation at the date of the revaluation is treated by restating proportionately with the change in the gross carrying amount of the asset so that the carrying amount of the asset after revaluation equals its revalued amount.

As we know from Chapter 2, this is the "gross approach" and is in full compliance with the AAS.

Thus far, we have not seen any inconsistencies with the AAS, which would probably mean that even here there is not any guidance to what should be the right approach to the accounting treatment of revaluation and decline in value in particular. However, the Code up to the Code 24 did have illustrative examples in the Appendix to the Code which described how to treat the effect of change in accumulated depreciation as a result of revaluation. Examples 2(c) and 2(d) in the Appendix I *Accounting Examples* (Appendices to Code 23, 2015) described a situation when the accumulated depreciation as a percentage of replacement cost before revaluation was lower than that after revaluation, due to under-depreciation of the assets in previous years. This effect was treated as an error and corrected through Retained Earnings of the current period and adjustment of the accumulated depreciation of the assets. In other words, all considered, in the absence of any specific accounting treatments, the Code highlighted OLG's position in regard to the accounting treatment of change in the accumulated depreciation as a fraction of gross replacement cost. It should be noted that the Appendix to the Code did not have examples of an opposite situation when the accumulated depreciation before revaluation was higher than after revaluation (or over-depreciation in previous years). However, considering the lack of other guidance about this matter, we assume that OLG meant the same approach would be used here on the ground that over-depreciation in previous years is by nature the same error as under-depreciating.

The above examples served as a major guidance for many councils for a long period of time (to the author's knowledge, since 2007). The situation changed in 2016 with the NSW Auditor General stepping in as the official auditor of local government councils in NSW.

Before 2016 NSW councils were audited, and the audit reports were issued and signed by independent chartered accountant audit firms throughout the state. In 2016 The *Local Government Act 1993* expanded the Auditor-General's mandate to include financial and performance auditing of local councils and council entities. Since that time the Audit Office NSW has begun to contribute to the improvement of local government accounting practice. Code 25 (2017) is the first Code which considered the feedbacks from the Audit Office NSW. One of the major areas of feedback to the OLG from the

Audit Office was in relation to the examples mentioned above. Thus, in the NSW Audit Office Submission (2017) the Audit Office stated that depreciation is never restated as part of a correction of error. It should be corrected prospectively. In response to this, OLG simply removed the examples, and did not give any additional guidance. As a result, the Code now does not have any specific guidance and rules, which means the matter of the accounting treatment of decline in value is still subject to the various treatments by council managers: that is, treating it as part of revaluation adjustment, as an error, or as a result of change in estimates. The only positive outcome is that all councils are now under the Auditor General, which means that whichever approach the Audit Office selects as most appropriate, it will probably be consistent between the councils.

Currently, all councils are revaluing Water and Sewer infrastructure assets following requirements of the Code to perform full comprehensive revaluation of these assets as at 30 June 2017.There is no doubt the question of the change of accumulated depreciation will arise and it will be significant. It will be interesting to see how the changes in the remaining useful life will be treated this year under the direction of the Audit Office of NSW.

3.5 Other States Regulations in regard to revaluation and depreciation of infrastructure assets in local government

As demonstrated in Section 3.4, the *NSW Code of Accounting Practice and Financial Reporting* does not give clear guidance about accounting for the effect of reassessment of the useful life of the infrastructure assets as part of the revaluation exercise. It is thus important to review accounting practices in local government in other Australian States.

3.5.1 Queensland Local Government Accounting Practice

The *Local Government Act 2009* and the *Local Government Regulation 2012* apply to Queensland Local Government councils in the preparation of financial statements. Based on the Section 177 of the *Local Government Regulation 2012* councils have to prepare general purpose financial statements in accordance with Australian Accounting Standards (AAS), Statements of Accounting Concepts, Interpretations and Framework for the Preparation and Presentation of Financial Statements. There is no third

authoritative regulation for the financial reporting as in NSW with the Code issued by the Office of Local Government NSW every year. However, the Queensland Department of Infrastructure, Local Government and Planning produces Tropical Council Financial Statements (Tropical) as a guidance only, and these are not mandatory. Councils can use their own format and content in their financial statements as long as they comply with the requirements of the AAS. Detailed guidance for accounting of particular matters is referenced from the Model to specific Bulletins issued by Department of Infrastructure, Local Government and Planning. The latest available Tropical (2017) is for the year ended 30 June 2017.

Tropical (2017) refers to Bulletin (2011) for the accounting for infrastructure damaged by natural disasters. This Bulletin describes accounting principles of impairment of infrastructure assets with Fair Value determined using Depreciated Replacement Cost (DRC) Approach. This Bulletin is obviously dated as the issue of AASB 13 (2015) and further update to AASB 136 (2015) effective 1 January 2017 eliminated any references to DRC. In addition, Tropical (2017) incorrectly interprets the meaning of the term Current Replacement Cost (CRC) in the disclosure template for the fair value of the infrastructure assets. Indeed, it says that the fair value is determined using "written down current replacement cost" which is the "CRC less accumulated depreciation". This is confusing as, according to paragraph B8 of AASB 13 (2015), current replacement cost is the amount that would be required currently to replace the service capacity of an asset. The service capacity of the same asset will be different at any given time during its useful life (UFL). In the beginning of the UFL the service capacity will be 100% decreasing to the end of the UFL. In other words, CRC is the carrying amount (fair value) while Tropical (2017) treats it as a gross replacement cost.

There is no any technical guidance on accounting treatment for the change in the accumulated depreciation and impairment loss component of fair value as part of a revaluation exercise. However, Bulletin (2001) referred to Queensland Treasury for additional guidance. Given that, it is important to review this source of regulation in more detail.

The Office of the Queensland Treasury and Trade (QTT) regulates accounting for state government agencies. Infrastructure Assets accounting matters are covered in Non-Current Assets Policies for the Queensland Public Sector (NCAP) and Non-Current

Assets Policies Tools (NCAP Tools). NCAP 3 *Valuation of Assets* (2014) regulates valuation of non-current assets. In general, the approach to valuation is the same as in the NSW Code, mandating councils to follow a cost approach to fair value of infrastructure assets and a "gross" method of accounting for the accumulated depreciation. NCAP Tools *Illustrative Examples for Fair Value Measurement* (2014) provides an example of accounting for revaluation of busways. One of the outcomes of the valuation is that the remaining service potential is reflected in restated accumulated depreciation. There is nothing in this example to refer to the remaining useful life, but it is logical to assume that the changed remaining service potential is reflected in the changed remaining useful life. However, there is another example in NCAP Tools which refers to heritage and cultural assets (stone lighthouse) in which the outcome clearly states that the changed remaining life is reflected in restated accumulated depreciation. All considered, we can assume that the QTT's position is that the change in the remaining useful life of the asset affects the accumulated depreciation. However, as will be shown below, NCAP 5 *Depreciation and Amortisation* (NCAP 5) (2014) provides examples which contradict this statement.

NCAP 5 (2014) regulates depreciation aspects. As a starting point NCAP 5 (2014) refers to the position of AASB that the depreciation method chosen must closely reflect the expected pattern of consumption of the future economic benefits embodied in the asset. This statement is followed by the notification that most commonly used methods are time based (straight-line and reducing balance) and output based which are the same as in AASB 116. However, the NCAP 5 (2014) also allows for other time-based methods for allocation of the depreciable amount over useful life. By way of example, s. 5.3 of the NCAP 5 (2014) refers to the method "that reflects the expected deterioration in the condition of an asset based on engineering estimates or previous experience with similar assets". This is a confusing point as since the Policy allows for a deterioration curve in selecting the depreciation method which is close to Condition Based Depreciation. As we know already, Condition Based Depreciation is not allowed by UIG 1030 (2004). In addition, deterioration has nothing to do with the consumption of the service potential of the asset.

In regard to the change in the remaining useful life, NCAP 5 (2014) provides examples which contradict each other. The first example relates to the accounting treatment of the effect of a change in the remaining useful life. This example clearly illustrates that

prospective adjustment of the effect of a change in the useful life will affect only depreciation charges in subsequent years. There should be no adjustments in the year when the change in the accounting estimates is made. This contradicts the position that the accumulated depreciation should be affected, as noted in the NCAP Tools *Illustrative Examples for Fair Value Measurement* (2014) and it also contradicts the next example given in the same publication. The example describes the accounting for the effect of an increase in value as a result of revaluation and also as a result of a change in the useful life. The major confusing point in this example is that the asset's fair value (and accumulated depreciation accordingly) has been determined considering the fact that the replacement cost increased plus, that the useful life increased as well. In other words, accumulated depreciation in the year of change of the estimate *will* be affected.

3.5.2 South Australia Local Government Accounting Practice

The Local Government Association of South Australia (SALGA) issues South Australia Model Financial Statements (Model) every year to guide and assist councils to prepare their annual financial statements. In general, the Model is similar in structure and content to the NSW Code. There are some rules though, which make the Model more specific compared to the NSW Code. For example, in Note 7 "Fixed Assets" in the latest Model (2017), it is specifically highlighted that the new estimate of useful life is applied prospectively. Moreover, the Model holds not to " calculate the depreciation that would have accumulated based on the new useful life (as if that had always been used) and make an adjustment" (Model, 2017, p. 101). Unfortunately, the Model does not provide any alternative way to calculate depreciation if this dictate is obeyed. We assume though, that the Model would follow the approach of prospective accounting of depreciation which is calculated based on the carrying value (adjusted value) and the remaining useful life at the time reassessment was done. However, as we have discussed in Chapter 3, this will not fit the requirements of the NSW Local Government councils financial reporting.

3.5.3 Victorian Local Government Accounting Practice

Financial reporting in Victorian Local Government is guided by The Model Financial Reporting Better Practice Guide (MFRBPG) which is published by Local Government Victoria (LGV) each year to assist councils in preparing annual financial statements in accordance with Australian Accounting Standards. The latest guide for the year ended

30 June 2017 is MFRBPG (2017). This guide summarises the requirements for the preparation of annual financial reports with references to separate guidance where necessary. Thus, for detailed guidance for accounting for property, plant and equipment MFRBPG (2017) refers to the Local Government: Accounting for non-current physical assets under AASB 116 – A Guide (Guide). The latest Guide available on the LGV website is Guide (2006). Although the Guide is dated, it still has some important information regarding revaluation of the infrastructure assets relevant to the central questions of this thesis.

Thus, paragraph 3.1.1 "Useful Life" of the Guide (2006) clearly states that the condition can be used to determine remaining useful life (p.12). This supports our conclusions in Chapter 3. Furthermore, paragraph 3.1.3 "Basis of allocation of depreciation" states that condition "is also used over time to verify or vary initial estimates of total useful life by comparing the actual rate of degradation with the expected or planned rate" (Guide, 2006, p 14). In other words, the Guide looks into depreciation from the "engineering" perspective as was tagged in Chapter 2. Importantly, however, the Guide (2006) acknowledges the inherent problem with the statement above:

> It is not clear however, that an asset rated in good condition at one point in time and the same asset later rated in fair condition provides any less or more economic benefit per unit time. A trafficable road in the first year of its life can be argued to provide the same service potential in its 50th year of life – it allows commuters to get safely from A to B. Consequently, methods that vary depreciation over time to reflect an asset's condition require a clear rationale and demonstrable explicit linkages to the rate of consumption of economic benefits. (p.14)

There are two main conclusions which can be made regarding the above statement. First, the Guide understands the depreciation as purely a degradation or deterioration factor affecting the value of the asset. At the same time, it acknowledges that physical degradation will probably never match the accounting depreciation (consumption of service potential). Unfortunately, the Guide does not give any further guidance on the treatment of the above issue.

In regard to the fair value approach paragraph 4.2.2 "Depreciated Replacement Cost (DRC)" refers to DRC as the only suitable method for valuating complex infrastructure

assets. As we demonstrated previously, though, the then new AAS disregarded the term DRC, in practice, it still complies with the current replacement cost approach (CRC) referred to in AASB 13. Importantly, the Guide suggests 2-3 years cycles for revaluation of road segments which might be a more accurate approach compared to the NSW Code's five years.

3.5.4 Western Australia Local Government Accounting Practice

The Department of Local Government of the Government of Western Australia (DLGWA) prepared the Local Government Accounting Manual (Manual) which is used by WA councils as guidance. The latest available Manual on the DLGWA website Manual (2012) was last updated in 2012. The Manual (2012) covers a broad range of information common to the majority of local governments in the preparation and disclosure of financial information in the annual financial statements (Manual, 2012, p. S1-Page 3). Section 9 of the Manual covers accounting of non-current assets. It is interesting to note, that sub-section 9.3.5 "Depreciation Methods" refers to four main methods of depreciation: straight line; diminishing balance; units of production; and condition based method. The first three methods are taken from AASB 116. On the other hand, condition based depreciation (CBD) is tagged as a "less common" method (Manual, 2012, p.S9- Page 32).

According to Manual (2012), CBD is "based on a verifiable and cost-justified asset renewal program . . . and is expressed as an annuity over the period". Following a description of the method, the Manual noted the fact that this method was excluded from use when it does not meet strict criteria as set out in UIG 1030 *Depreciation of Long-Lived Physical Assets*. This is what we have learned from Chapter 2 and 3. However, importantly, the Manual still highlighted this method just to show that it is possible to use alternative methods of depreciation as long as they comply with requirements of AAS. We believe this creates more confusion for the finance professionals and users of the financial statement rather than clarifying the approach.

Regarding valuation of infrastructure assets at fair value, Manual (2012) is similar to The Model Financial Reporting Better Practice Guide in Victorian Local Government with the Depreciated Replacement Cost (DRC) method as the main approach.

In sum, the WA local government accounting guidance has no detailed explanations or examples of accounting for the change in the accumulated depreciation and impairment loss component of the fair value of infrastructure assets.

3.5.3 Tasmanian Local Government Accounting Practice

Tasmanian local government councils, in preparation of their financial statements, have to comply with the requirements of the Tasmanian *Local Government Act 1993* and the Australian Accounting Standards. Unfortunately, there are no manuals or guidance in regard to the financial reporting and accounting matters on the Local Government Division page of the Tasmanian Government web-page (http://www.dpac.tas.gov.au/divisions/local_government). We managed to find the Local Government Model Financial Report (LG Model) available on the Tasmanian Audit Office (TAO) web-site. However, the Model (2016) is very broad and dated.

3.5.4 Northern Territory Local Government Accounting Practice

There is not any special accounting and financial reporting manual or guidance for Northern Territory Local Government Councils. Based on Section 15 (1) of Part 7 of *Local Government (Accounting) Regulations 2014*, councils should comply with the Australian Accounting Standards in preparing their financial statements. Given the lack of information at the local government level, we believe that analysis of the state agencies accounting practice would be helpful for this study. In addition, considering the example of the Queensland Local Government above, it is reasonable to assume that local government authorities may apply to the state Treasurer's accounting guidance as a reference.

Northern Territory government agencies follow accounting guidance in the form of Accounting Series issued by the Department of the Treasury and Finance of the Northern Territory Government which are called Treasury Directions (TD). Three Series are relevant to our review: TD A2-2 *Property, Plant and Equipment* (TD A2-2) (2010), TD A2-3 *Depreciation and Amortisation* (TD A2-3) (2006) and TD A2-4 *Revaluation* (TD A2-4) (2006). In TD A2-3, the Treasury requires the use of straight-line depreciation unless special approval is obtained to use any other alternative. It is

worth mentioning that paragraph 11 of TD A2-3 provides the reasons for mandating usage of straight-line depreciation by all agencies across the Territory by stating:

> The straight-line method has been mandated for Agencies as it will provide consistency from a whole of government reporting perspective and because the straight-line method is recognised as being simple to use, is well understood and widely adopted in both the public and private sectors. The straight-line method provides a good approximation of use of the service potential embodied in an asset and will provide materially correct depreciation expense figures for a vast majority of Agency assets.

This statement is strict but fair. Sometimes a ruling is required in order to avoid ambiguity and inconsistency in the practice. In addition, the TD A2-3 also mandates agencies to use useful lives in the Appendix to TD to ensure consistency across the territory. Only in limited cases can an agency adopt alternative useful lives with the approval of the Treasurer. It would be a good recommendation for NSW local government regulators to follow this same approach.

It is important to note that (and this is what the NSW Code is lacking) most of the Northern Territory Treasurer's Directions usually provide reasonings for rules or guidance, as with straight-line depreciation. Another example of this is TD A2-4 which recommends using the gross method of revaluation accounting. The rationale for this recommendation is mentioned in paragraph 23(ii) of TD A2-4 which refers to the fact that this method will provide users with information related to the condition of the assets: that is, the possible amount and timing of cash flows for asset replacement purposes. This rationale appears sound.

3.6 Conclusion

Chapter 3 sought to answer the first question raised at the end of the Chapter 2: "What is the current accounting framework for revaluation and depreciation in Australian local government in general and NSW in particular?" The main reason for this question came from the apparent lack of understanding of the factors affecting the decline in value of an infrastructure asset and its accounting treatment. In order to answer this question, in Chapter 3 we reviewed the AASB publications, the *NSW Local Government Code of*

Accounting Practice and Financial Reporting, and we also analyzed local government accounting practice in other Australian States.

The results of our review revealed that the depreciated replacement cost (DRC) approach to valuation of infrastructure assets is the only method being used in local government. Moreover, straight-line depreciation is the most commonly used method of depreciation due to its simplicity and understandability by stakeholders. In addition, straight-line depreciation most closely reflects the consumption of long-lived assets (at least for the most part of their useful life). We also argued that there are no problems with the accounting treatment of the change in the replacement cost element of fair value as part of a revaluation exercise. However, the accounting treatment of the change in accumulated depreciation and impairment loss element of fair value of the assets is not clear in the current framework.

Ignoring the replacement cost element of the value of an asset, fair value may change due to obsolescence, reassessment of the useful life or both factors. Based on the requirements of AASB 136 (2017), if there is evidence of obsolescence, the value of the asset is declined by way of increasing the accumulated depreciation and the accumulated loss element of fair value. This adjustment is treated as part of normal revaluation adjustment in paragraphs Aus39.1 and Aus40.1 of AASB 116 (2015). However, confusion exists in the Australian Accounting Standards (AAS) in regard to the accounting treatment of the effects of changes in an estimate of the useful life. A change in the useful life of infrastructure assets is a normal practice given that these assets are assumed to operate indefinitely due to constant renewals and replacements of components. The change in useful life is treated as a change in estimate based on the AASB 108 (2015), which prescribes prospective accounting treatment for this change. However, the practical implementation of the prospective treatment is not clearly defined in the Standard.

Analysis of the AAS revealed that the prospective treatment of the change in useful life means adjusted depreciation charges through profit and loss account in the subsequent years, following the year when reassessment occurred. However, practical implementation of this consequence is not clear. There are two possible options of how to start new depreciation in the next year. Firstly, depreciate the carrying amount (as at the end of the year when reassessment has been done) over the adjusted remaining useful life. However, this would be not in line with the requirements of AASB 116 and

UIG 1030 which require depreciation to be based on the depreciable amount only. The other option is to make an adjustment of the carrying amount of the asset in the current year (by mean of appropriate adjustment to accumulated depreciation) followed by the new depreciation charges in the subsequent years. This approach is partially supported by AASB 108 which refers to the fact that the change in an accounting estimate can affect assets in the current period (the period when the estimate changed). This means, for example, that if the remaining useful life has been extended, then, in order to avoid overstatement of depreciation in subsequent years, councils have to increase the carrying value of the asset in the current period by adjusting accumulated depreciation and the accumulated impairment loss element of the value of the asset. This is the adjustment named by Howe (2004) as the "joining the dots" adjustment.

The question whether the accumulated depreciation of the current period should be affected or not, is not the only matter here. Assuming that the right option is to adjust accumulated depreciation and the impairment loss element of fair value, the next question concerns the accounting treatment for that effect. The critical analysis in Section 3.3.6 revealed three potentially correct but, differing approaches:

1) Treat the effect as part of revaluation adjustment through the Asset Revaluation Reserve based on AASB 116;
2) Treat the effect as a change in estimate based on AASB 108 prospectively through Profit and Loss account; or
3) Treat the effect as an error based on AASB 108 through Retained Earnings.

The first option would work perfectly in a situation when the fair value is affected by the changed condition (obsolescence). However, critical analysis in Section 3.3.6 revealed that condition is interconnected with useful life. This means that if the condition changed, then the useful life (and remaining useful life accordingly) is highly likely to change and vice versa. This leads to application of another standard AASB 108 requiring a different accounting treatment.

The *NSW Local Government Code of Accounting Practice and Financial Reporting* lacks detailed guidance and does not provide agencies with any reasonable assistance in dealing with this issue. Therefore, as will be demonstrated in Chapter 4, in practice, NSW local government councils have been using only the first and third options described above resulting in inconsistency in the state accounting practice and significant misstatements in the annual reporting. We do acknowledge though, that now

the Audit Office NSW has stepped in as a formal auditor of NSW local government in 2016, the issues may be resolved in the 2018 financial year.

The local government accounting framework comes in a variety of forms: from financial reporting models (Queensland, South Australia, Tasmania) to guidance (Victoria, Western Australia) and Code (New South Wales). However, most of them are either dated or too broad to be able to help with detailed technical accounting issues regarding the revaluation of infrastructure assets.

All considered above, it is apparent that the current Accounting Framework is not robust enough to provide a clear view on the matters related to the effects of changes in asset condition and useful lives. This issue is common in the public sector given the specialised nature of infrastructure assets, particularly that they may last indefinitely. One can anticipate that with such lack of guidance, accounting practice will be inconsistent in NSW local government financial reporting. In Chapter 4 we will review the results of a roads revaluation in NSW Local Government which occurred in 2015 and endeavour to answer the second and third questions raised in Chapter 2 which, to repeat, are:

- In practice, how do NSW councils account for the results of a revaluation of infrastructure assets and a decline in value; and
- What are the consequences of the current accounting practice on the reliability of the financial reports of NSW local government councils.

CHAPER 4: ANALYSIS OF THE CURRENT PRACTICE IN REVALUATION OF ROADS ASSETS IN NSW LOCAL GOVERNMENT

4.1 Introduction

Our analysis of the current accounting framework in NSW local government performed in Chapter 3 revealed inconsistencies and a lack of guidance for the accounting treatment of revaluation and depreciation of infrastructure assets. It is thus important to understand how in practice NSW local government authorities have accounted for these matters. In Chapter 2 we raised questions which are paramount to this thesis. In particular, the questions covered in Chapter 4 are as follows:

- In practice, how do NSW councils account for the results of a revaluation of infrastructure assets and a decline in value; and
- What are the consequences of the current accounting practice for the reliability of the financial reports by NSW local councils?

In attempt to answer these questions we will analyze the results of the latest revaluation of roads assets performed by 89 NSW local government authorities. The list of councils is presented in Table A.1 in Appendix A.

Chapter 4 is divided into seven main parts. Following this introduction, Section 4.2 provides explanation of the method used in the analysis of the revaluation results. Section 4.3 interprets the results of the revaluation of 89 councils by allocating them into aggregative groups. Section 4.4 represents a case study based on the revaluation approach used by the City of Ryde Council. Section 4.5 seeks to answer the question as to whether the councils actually comply with the Australian Accounting Standards in their approaches to the revaluation accounting. In section 4.5 we also suggest an accurate approach to revaluation accounting in local government. In Section 4.6 we review the potential effect of incorrectly applying the accounting standards on the financial statements and financial ratios of the NSW local government councils. Chapter 4 concludes in section 4.7 with a synoptic account of NSW current accounting practice, potential non-compliance with the accounting standards and its effects on the reliability of the financial statements.

4.2 Explanation of the method

Revaluation affects the fair value of an asset. As we saw in Chapter 2 and Chapter 3, the fair value of an infrastructure asset in local government is its current replacement cost adjusted for obsolescence. In simple terms, the fair value is the carrying amount which is calculated as the replacement cost less accumulated depreciation and impairment loss. The value of the replacement cost in the local government sector is usually determined by application of unit rates to the appropriate unit of measure. For example, normal practice is to use square meters for seal as a unit measure for valuation of sealed roads surface. By applying the appropriate unit rate to the area of the seal, the seal replacement cost is calculated. The effect of changed unit rates will obviously affect accumulated depreciation and impairment loss by the same rate. However, there is another factor which will further affect the accumulated depreciation and impairment loss element, namely obsolescence. The revaluation effect can thus be divided in two parts:

1) the effect of the change in unit rates; and
2) the effect of obsolescence.

In our analysis of actual revaluation practice in NSW local government we will use this separation as a basis for the analysis. However, most of the councils do not divide the revaluation effect into these two factors. Thus, we will identify the effects of each factor separately by applying a factor analysis. The accuracy of our factor analysis approach will then be validated by checking with those councils which did separate the revaluation effect. For the purpose of explaining the methodology employed, we will use as an example, revaluation of roads as at 30 June 2015 performed by two councils: Liverpool City Council (LCC) audited by PricewaterhouseCoopers (PwC) and Ballina Shire Council (BSC) audited by Thomas Nobel & Russel (TNR). These councils had contrasting approaches to accounting treatment and disclosure of the effect of revaluations of roads.

The empirical analysis of the revaluation was performed by considering the following information disclosed in the General Purpose Financial Statements:

1) Note 1 – Summary of Significant Accounting Policies. This note summarises all accounting policies adopted and followed by a council during the reporting period. We will refer to the Depreciation part of this note.

2) Note 9(a) – Infrastructure, Property, Plant and Equipment (IPPE). This note represents a schedule of all changes during the reporting year affecting the value of IPPE by classes of assets.
3) Note 20 – Retained Earnings, Revaluation Reserves, Changes in Accounting Policies, Changes in Accounting Estimates and Errors. This note discloses the nature of changes that occurred in the equity reserves during the reporting year.

Both LCC and BSC had roads revalued in the 2014/2015 financial year. The summary of Note 9(a) for the year ended 30 June 2015 for the two councils is presented in Table 4.1.

Table 4.1: Roads assets schedule for the year ended 30 June 2015 for Liverpool City Council and Ballina Shire Council, in $000

Council	As at 30 June 2015				Movements during the year			As at 30 June 2014			
	RC	AD	CV	AD as %% to RC	Total value of movements	Depreciation	Total revaluation effect	RC	AD	CV	AD as %% to RC
Liverpool	1,151,553	190,757	960,796	17%	25,224	-14,152	268,347	1,001,013	319,636	681,377	32%
Ballina	507,136	81,252	425,884	16%	16,279	-6,055	55,054	530,413	169,806	360,607	32%

The schedule is split between three main areas (reading from right to left):

1) Opening balances of values as at 30 June 2014: RC – Replacement Cost; AD – Accumulated Depreciation and Accumulated Impairment Loss; and CV – Carrying Value. The AD as %% (percentage or fraction) to RC is not part of Note 9(a) and was added by the author for the purpose of this analysis. The latter represents the percentage of the accumulated depreciation and impairment loss as a fraction of replacement cost.
2) Movements during the year: this is the total value of movements usually comprising the value of all capitalised costs during the year (constructions, purchase, renewals, etc.) and disposals; depreciation; and revaluation effect.
3) Closing balances of values as at 30 June 2015: this has the same structure as the opening balances columns but at the end of the reporting year.

In our analysis below, we will need the AD as percentage to RC figures to be compared between the closing and opening balance. However, due to the fact that we are interested in the analysis of the revaluation effect only, we cannot use the reported 30 June 2015 figures as they include the effect of all changes occurring during the year including those not relevant to revaluation. Accordingly, for the purpose of accuracy of our analysis, the 30 June 2015 (closing balance) values should be adjusted for the effects of

movements and depreciation during the year. As a result, the BSC and LCC Note 9 comparison table will look as presented in Table 4.2.

Table 4.2: Roads assets schedule for the year ended 30 June 2015 for Liverpool City Council and Ballina Shire Council adjusted on depreciation and movements, in $000

Council	As at 30 June 2015 before movements and depreciation				Total revaluation effect	As at 30 June 2014				Change in AD
	RC	AD	CV	AD as %% to RC		RC	AD	CV	AD as %% to RC	
LCC	1,126,329	176,605	949,724	16%	268,347	1,001,013	319,636	681,377	32%	-16%
BSC	490,857	75,197	415,660	15%	55,054	530,413	169,806	360,607	32%	-17%

As it can be seen from Table 4.2, the total effect of revaluation on the fair value of roads was $268m increase in LCC and $55m increase in BSC. It is important for our analysis to split the effect of revaluation between the effect arising from change in unit rates and that resulting from a change in condition. For this purpose, we apply the factor analysis tool.

Based on Table 4.2, the AD as percentage to RC fell by 16% (from 32% to 16%) in LCC and by 17% (from 32% to 15%) in BSC. This movement is the result of the obsolescence factor (condition assessment). The dollar value of the effect of obsolescence can be easily calculated by multiplying the change in AD as percentage to RC on the old RC values. In case of LCC, this will be equal to $163m (16% * $1,001m); for BSC this will be equal to $89m (17% * $530m). After that, the effect of unit rates can be determined by deducting the obsolescence effect from the total value of the revaluation effect. A summary of the factor analysis performed on the LCC and BSC is presented in the Table 4.3.

Table 4.3: Factor analysis of roads revaluation of Ballina Shire Council and Liverpool City Council, in $000

Council	Total effect of revaluation	Revaluation effect split between	
		Change in Unit Rates	Condition Assessment
LCC	268,347	105,667	162,680
BSC	55,054	-33,495	88,549

As can be seen from the Table 4.3, the obsolescence effect is more significant compared to the unit rates effect. It is now important to see how the obsolescence effect was recognised in the financial statements.

As noted earlier, Ballina Shire Council (BSC) and Liverpool City Council (LCC) were selected for this example because they recognised the revaluation effect differently. Indeed, BSC recognised all the revaluation effect of $55m through the Asset Revaluation Reserve purely as a revaluation effect. By contrast, LCC partitioned the

revaluation into a unit rates effect of $106m recorded through the Asset Revaluation Reserve, and an accumulated depreciation change of $163mln recognised through Retained Earnings. LCC disclosed the latter effect in Note 20 as follows:

> Council has adjusted the accumulated depreciation for the following asset classes as at 30/6/14 to reflect the correct value of accumulated depreciation. In accordance with AASB 108 - Accounting Policies, Changes in Accounting Estimates and Errors, the above Prior Period Errors have been recognised retrospectively.

It is not clear from Note 20 exactly what caused the change in the accumulated depreciation or what kind of error was corrected. However, comparing the depreciation accounting policy in Note 1 between the 2014/15 and 2015/2016 general purpose financial statements of LCC, we can see that the useful life changed in some components of the road class of assets. In line with the outcomes of our analysis in Chapter 3 that the accumulated depreciation and impairment loss will change with a reassessment of useful life and/or condition, in regard to LCC, it was an extension of the useful life which caused the decrease in Accumulated Depreciation and Impairment Loss.

4.3 Analysis of latest actual revaluation of roads in NSW Local Government Councils

We have analysed the results of roads revaluation reported by 89 local government councils in NSW out of a total of 152 councils existing in the years 2013-2016 (see Table A.1 in Appendix A). Most of the councils from the sample performed roads revaluation in the 2014/15 financial year, with only four councils revaluing in 2013/14, and three councils revaluing in 2015/16. In this timeframe there were about 15 chartered accounting firms which audited NSW local government councils. Based on the author's professional experience, councils always rely on the advice from their auditors in such complicated areas as revaluation of infrastructure assets. It is thus reasonable to expect that all councils audited by a particular audit firm will have the same approach to the revaluation. This was proved by our analysis as the councils we analysed were audited by all 15 audit practices.

Based on the analysis of the general purpose financial statements of 89 councils we find:

- 36 councils had AD as a fraction to RC decrease by 10% to 53%;

- 28 councils had AD as a fraction to RC decrease by 1% to 9%;
- 5 councils had AD as a fraction to RC increase by 10% - 31%;
- 16 councils had AD as a fraction to RC increase by 1% - 9%; and
- 4 councils had no change in AD as a percentage to RC.

The relative figures of changes in AD as fraction to RC above represent significant dollar value adjustments. It is interesting to note that the majority of councils had the AD as fraction to RC fall, which led to an increased fair value of the assets. Depending on the depreciation methodology used and the accounting treatment of the AD adjustment, we have classified the above councils between groups as follows:

- Group 1 (12 councils) - councils which followed straight line depreciation in the year of revaluation and accounted the effect of change in AD as a fraction to RC as a correction of prior year error through Retained Earnings (RE);
- Group 2 (68 councils) – councils which followed straight line depreciation in the year of revaluation and treated the change in AD as a fraction to RC as part of revaluation through the Asset Revaluation Reserve (ARR); and
- Group 3 (9 councils) – councils which followed consumption-based or condition-based depreciation methods in the year of revaluation and treated the effect of the change in AD as a fraction to RC as part of a revaluation through the ARR.

4.3.1 Group 1 councils

There were 12 councils in this group: Liverpool City Council, City of Sydney, Guyra Shire Council (merged with Armidale Dumaresq Council on 12 May 2016), Armidale Dumaresq Council (merged with Guyra Shire Council on 12 May 2016), Newcastle City Council, Upper Hunter Shire Council, The Hills Shire Council, Sutherland Shire Council, Inverell Shire Council, Hornsby Shire Council, Hawkesbury City Council and Camden Council. All councils except for Camden had AD as a fraction to RC fall as a result of revaluation. This effect was treated as a correction of prior period errors and disclosed in Note 20. The description of the nature of the error in Note 20 may vary in wording between the councils, but the substance remains the same:

> The remaining useful life of each asset has been reassessed to actual. This reassessment has resulted in a material difference as to where some assets actually sit in relation to the asset lifecycle relative to

> what the value of accumulated depreciation in Council's Financial Report as previously indicated. Council does not have sufficient and reliable information that will allow the restatement of information prior to 30/6/14 (the closing date for the comparative figures in this report). As a result, Council has adjusted the accumulated depreciation for the following asset classes as at 30/6/14 to reflect the correct value of accumulated depreciation.

The above disclosure raises more questions than it answers. For example, does the fact that the remaining useful life was reassessed to match the lifecycle of the asset, mean that the condition of the asset was affected? It is worth noting that Newcastle City Council in its Note 9(a) highlighted the fact that the change in AD is the effect of a condition-based remaining life review. This was the only council to make this additional note whereas others did not make any clarifications.

There was only one council in Group 1 - Camden Council - which had the AD as a fraction to RC for roads increased by 4%. This effect was also treated as a correction of prior period error and recognised through Retained Earnings. The Note 20(c) specified it as follows: "As part of the revaluation process and condition assessment it was identified that some asset classes required accelerated depreciation in order to fairly represent the condition and fair value of the asset class." This statement may be understood as, in council's view, depreciation should reflect the condition of an asset. If it does not, then an adjustment to the carrying value should be done in order to match the condition. This adjustment was treated as the correction of an error.

All councils from Group 1 were audited by only two audit firms: PwC and Forsyths. It is fair to assume that auditors followed the guidance in the Appendix to the *NSW Local Government Code of Accounting Practice and Financial Reporting* (the Code) which at that time recommended treating the effect of a change in accumulated depreciation and impairment loss as an error in depreciation applied in previous years. The guidance required that this correction be recorded through Retained Earnings. As we know from Chapter 3, this guidance was removed in the latest Code 25. The remaining effect of revaluation in councils from Group 1 was fully recognised through the Asset Revaluation Reserve (ARR). The accuracy of the splitting of the revaluation effect between error and revaluation was confirmed in all material respects by our factor analysis.

4.3.2 Group 2 councils

This is the largest group with 68 councils having had the AD as fraction to RC change within the range of a 54% decrease, to a 31% increase. The Group 2 councils did not specifically disclose the effect and treated it as part of the normal revaluation adjustment with recognition through the ARR. Thus, in order to determine the dollar value of the AD effect, we have performed the factor analysis described in detail in the Section 4.2. All of the councils from the Group 3 followed straight line depreciation in the year when the revaluation was done.

4.3.3 Group 3 councils

As with Group 2, councils from Group 3 had the effect of a change in AD as a fraction to RC recognised through the ARR as part of one single revaluation adjustment without further detail. However, these councils followed depreciation models different to straight line. These councils are: Clarence Valley Council, Tweed Shire Council, Willoughby City Council, Richmond Valley Council, Penrith City Council, Kempsey Shire Council, Coffs Harbour City Council, City of Ryde, Broken Hill. The depreciation methods referred to here were condition- based and consumption-based. It should be noted that in the following year, after revaluation, five councils kept the same methodology with the remaining four transferring to straight line depreciation. It is interesting to note that councils from Group 3 had an insignificant effect of change in AD as a fraction to RC, varying from a decrease of 6% to the highest increase of only 7%. The only exception is Broken Hill which followed consumption-based depreciation in 2014/15, however the effect of the change in AD as a fraction to RC was an increase of 14% as a result of a revaluation of roads.

The main observations in regard to Group 3 councils are as follows:

1) By applying condition/consumption-based depreciation, the effect of a change in AD as a fraction to RC is immaterial (less than 10%). This is because by adopting the depreciation model, councils try to imply a predictive consumption model which would reflect the condition of the asset at any time during the lifecycle of the assets. Creating a model which would follow the condition-based profile is not an easy exercise and may involve many assumptions and judgements. This may explain why the effect of the change in AD as a fraction to RC in Broken Hill council was significant.

2) Not all councils followed the alternative depreciation model after revaluation was done. Four councils transferred to the straight-line depreciation model after the year of revaluation. There may be two reasons for this. First, condition-based and consumption-based models are not in compliance with UIG 1030. Second, as was mentioned above, the condition-based model is hard to implement if not enough data or resources are available.
3) Amid those councils which kept using the same alternative method of depreciation after revaluation is the City of Ryde which managed to disclose in Note 1 a more detailed approach, which we will now use for the case study in Section 4.4 to get a practical understanding of the usage of the condition-based depreciation model.

4.4 Case Study: Condition-based depreciation model at City of Ryde Council

As was explained in Section 4.3.3 the Councils from Group 3 did not have a significant revaluation adjustment. We believe that the main reason for that was due to the fact that these councils followed alternative straight-line depreciation methods: condition-based and consumption-based models. City of Ryde Council had a very detailed accounting policy about this model disclosed in its annual financial statements. Therefore, we decided to make further analysis of this method based on the example of this council.

According to Note 1 to the general purpose financial statements (GPFS), the City of Ryde Council has been using condition-based depreciation for all its infrastructure, property, plant and equipment assets since 1 July 2013. The note states:

> Council utilises a condition basis for calculating depreciation, which determines the remaining useful life and loss of future benefit, based on its condition…Whilst this is not true "condition based" depreciation, Council, in adopting this new method of depreciation, has broken each of its asset categories into five condition ratings. Within each of these condition ratings, Council has reviewed and determined both the useful life and loss of future benefit, while the asset traverses through that condition rating. Therefore, in each condition rating the asset will have a straight-line depreciation, which

will increase as the condition rating increases and the condition of the asset decreases. The following table sets out the range of useful lives and depreciation within each condition rating by asset category.

The depreciation rates and useful lives adopted at City of Ryde are presented in the Table 4.4.

Table 4.4: Useful lives and depreciation rates for Infrastructure, Property, Plant and Equipment at City of Ryde

Useful life (range of years)					
Asset Category	**1**	**2**	**3**	**4**	**5**
Buildings	10	60	20	5-10	1-5
Drainage assets	5-20	15-130	10-40	5-15	5-10
Land Improvements	5	5	5	5	5
Other assets	1-5	1-25	1-10	1-5	1-5
Other structures	5-20	5-80	2-40	3-15	5
Road assets	5-20	2-130	2-50	3-20	5-20
Depreciation (range of %)					
Buildings	0.5%	0.83%	1.25%	1.5%-3%	N/A
Drainage assets	0.25%-1%	0.38%-1.67%	0.63%-3%	1%-7%	N/A
Land Improvements	1%	9%	5%	3%	2%
Other assets	1%-5%	1.4%-20%	2%-30%	7%-50%	N/A
Other structures	0.25%-1%	0.63%-2%	0.63%-5%	1%-23.33%	N/A
Road assets	0.25%-1.67%	0.38%-5%	0.5%-5%	0.75%-23.33%	N/A

Source: Adopted from City of Ryde Annual Report 2015-16, Note 1 Summary of Significant Accounting Policies, p. 149.

Table 4.4 breaks the useful life (UFL) into five stages of the lifecycle of each class of assets. The stages actually represent the condition level where condition 1 is the brand new and condition 5 is the end of the useful life and in most cases can be considered as unserviceable. Thus, for example, during the first stage of the lifecycle which last from 5 to 20 years, roads assets will depreciate straight line at a rate from 0.25% to 1.67% per year. At a second stage the roads assets' UFL varies from 2 to 130 years with the straight-line depreciation rate per year varying from 0.36% to 5%. In other words, it is a series of straight-line depreciations which the depreciation rate changing depending on what stage of the lifecycle the asset is. It is obvious that the useful life and depreciation rates are too broad and are for the aggregative classes of assets. However, we can still compile a condition-based curve for roads assets which, although not precise, will allow us to compare the overall concept of the condition-based curve against straight-line depreciation. In Table 4.5 we have set up data based on the depreciation model disclosed in Note 1 to GPFS of the City of Ryde, taking as a basis the maximum useful life for roads assets and the lowest depreciation rate accordingly.

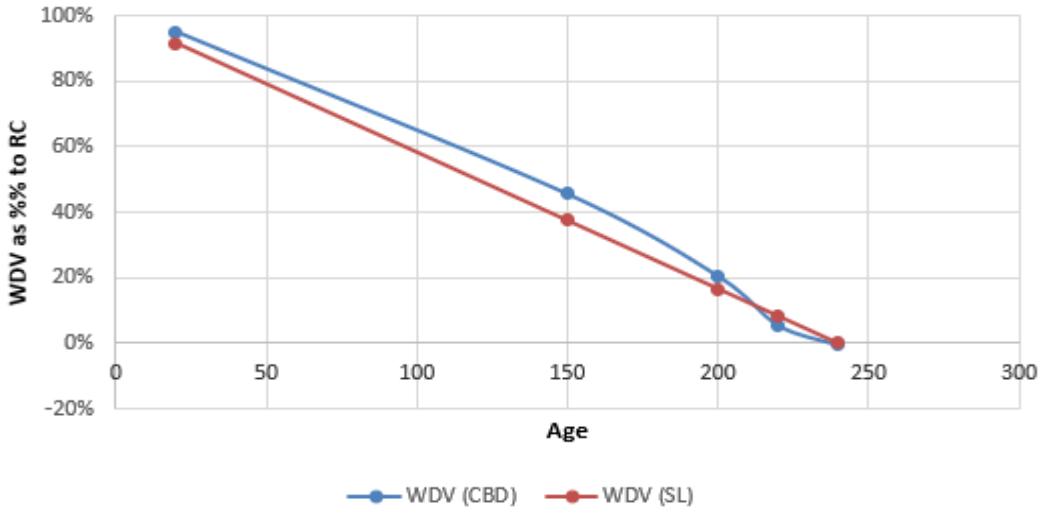
Table 4.5: Roads assets – condition-based depreciation (CBD) data from the City of Ryde Council

Condition			Condition based depreciation	Straight line depreciation

	Maximum UFL	Age, years	Annual Depreciation Rate	Accumulated Depreciation	Written Down Value	Annual Depreciation Rate	Accumulated Depreciation	Written Down Value
1	20	20	0.25%	5%	95%	0.42%	8.33%	91.67%
2	130	150	0.38%	54%	46%	0.42%	62.50%	37.50%
3	50	200	0.50%	79%	21%	0.42%	83.33%	16.67%
4	20	220	0.75%	94%	6%	0.42%	91.67%	8.33%
5	20	240	0.30%	100%	0%	0.42%	100.00%	0.00%

Based on the data from Table 4.5 we prepare a graphic of straight line and condition-based depreciation curves in Figure 4.1.

Figure 4.1: Condition-based depreciation (CBD) curve as per City of Ryde model compared to straight line (SL) approach:



At first glance, both curves are not materially different at any given point in time. As was noted above, Note 1 provided only aggregative information on useful life and depreciation rates for roads assets as a class of assets. However, it still gives us a conceptual understanding that the CBD curve is higher for most of the lifecycle of the asset. If we had more detailed information by categories and components, the CBD curve for each component would differ significantly from the SL curve.

The City of Ryde Council is exceptional in that it has been performing a revaluation of roads every year since the adoption of the CBD model and has been treating all revaluation adjustments through ARR. Though it was audited by PwC, this approach contradicted all other councils audited by this firm where the revaluation effect was split between purely revaluation through ARR and the AD effect through RE. This can be explained by the fact that the yearly revaluation effects of the change of AD as a fraction to RC were not material: the effect in 2013-14 FS is a drop by 5%, and in 2014-15, an increase by 7%. The effect in 2015-16 is not material.

It is now time to ask the central question: do the councils comply with the Australian Accounting Standards in regard to the revaluation of their infrastructure assets?

4.5 Do councils comply with the AAS?

Analysis of the latest revaluation of roads for the 89 councils revealed interesting results. First, most of the councils did not split the revaluation effect between purely revaluation (unit rates factor) and obsolescence (condition-based factor) and recognised all the effects through the Assets Revaluation Reserve (ARR) as one adjustment. Second, councils which did split the revaluation effect between the unit rates and obsolescence, treated the latter as a correction of prior period depreciation error and recognised it in Retained Earnings. In addition, the obsolescence effect was disclosed as a result of change in the remaining useful life with some instances as a result of a condition change. Third, councils which followed alternative methods of depreciation (Group 3 councils) justified the adopted method as a way to reflect the condition of the asset at any given time during the lifecycle of the asset. We can assume that this target was achieved due to the fact that the effect of change of AD as a fraction to RC was not material except for just one council. Finally, regardless of the different approaches to the accounting treatment of the revaluation effect, all councils got an audit opinion that was unqualified.

In Chapter 3 we suggested that the condition and remaining useful life are interconnected. That means that if the condition changes, the remaining useful life should change as well and *vice versa*. Councils which separated the effect of revaluation between unit rates and obsolescence (Group 1 councils) clearly disclosed the reason for the latter as the reassessment of the remaining useful life (with only one council referring to the changed condition as the main factor). Factor analysis of revaluation effects in councils that did not do a split (Group 2 councils) revealed a significant effect of a change in AD hidden in the revaluation adjustment. Even though the split was not done by councils, it is clear now that a reassessment of the UFL and/ or condition change were involved. However, the change in UFL should be treated as a change in estimate based on AASB 108, and treated prospectively, while the effect of a condition assessment (the obsolescence factor) is treated as a revaluation adjustment through ARR based on AASB 136 and AASB 116. We know from Chapter 3 that a change in estimates affecting the carrying value of the asset should be recognised in the profit and loss account in the year of reassessment. It now comes to the question of what is the

primary driver for the change in accumulated depreciation and impairment loss in determining which standard to follow?

From Chapter 3 we know that, according to paragraph B9 of AASB 13 (2015), the current replacement cost (CRC) approach reflects the cost to a market participant buyer to acquire or construct a substitute asset of comparable utility, adjusted for obsolescence. Obsolescence comprises multiple factors which include physical deterioration, functional (technological) obsolescence and economic (external) obsolescence and it is broader than depreciation for financial reporting purposes (an allocation of historical cost). As we concluded in Chapter 3, the main thing about Fair Value is that it is not connected to the depreciation. Depreciation is a systematic allocation of the service potential and does not consider factors covered by obsolescence. Though, the accumulated depreciation still contributes to the determination of fair value, it is not the main factor.

It is obvious that there is a gap in cross referencing between the Standards and, what is more important, in the practical application of them to local government accounting practice. However, there might be a practical solution. We know from Chapter 3 that obsolescence in the fair value determination has the same meaning as the impairment indicators in AASB 136. From the point of view of the reality of local government infrastructure asset management and infrastructure financial accounting, impairment in most cases comes up due to natural events (flooding, fire, etc.) or technological failure (breakage, etc.). When this happens, the impairment is recognised and the fair value is decreased. This will obviously result in a decrease in the remaining useful life for the purpose of the remaining depreciation. However, the primary effect is still obsolescence (not reassessment of the UFL) and should be recognised through ARR based on requirements of AASB 136 and AASB 116. If the remaining useful life has been reassessed however, just because council changed the policy for renewals or due to other reconsideration not affected by the obsolescence factors (mentioned above), then the change in remaining useful life should be treated as a change in estimate with the effects recognised in the profit and loss account as is required by AASB 108.

AASB 116 requires assessment of useful life at the end of every reporting period. The same requirement is in AASB 136 for the impairment test. Assuming that condition is mostly affected by some obvious events (natural, technological), this can be monitored and accounted for easily every year. This is what usually occurs with municipalities

subject to regular flooding of rivers (for example, Nambucca Shire Council). On the other hand, based on the experience of the author and considering the results of the analysis above, councils wait five years for the next comprehensive revaluation to assess the remaining useful life of the assets. This results in the significant adjustment related to the change in estimate getting hidden in the revaluation effect at the time of the five-yearly comprehensive revaluation. In effect, by deferring this procedure for five years, councils did not follow the requirements of AASB 116 to assess the useful life every year. We believe that this is an error from the perspective of AASB 108 and should be treated retrospectively through Retained Earnings. Considering that most councils had AD as a fraction to RC lowered, this means that councils overstated their depreciation in the preceding five years and understated their net results. In the analysis of the accounting approaches in Chapter 3 we explained the main negative implications of this approach (recognition of an error). These are:

d) It will require a restatement of comparative figures in the primary financial statements and an additional third column in the balance sheet as required by the AASB 108;
e) Additional disclosures to the Financial Statements are required; and
f) This does not reflect well on management and auditors.

It is thus critically important for councils to make sure that they assess useful life every year and, if materially changed, to make adjustment.

In sum, as the analysis revealed above, in most cases the effect of a change in AD as fraction to RC is really the effect of a reassessment of the remaining useful life. Reassessment of the useful life is the change in estimate based on the requirements of AASB 108 which should be treated prospectively with current year effect on accumulated depreciation recognised in the profit and loss account. However, what is important is that the reason for the significant effect on accumulated depreciation comes from the fact that councils did not follow the requirement of the AASB 116 to reassess the useful life at the end of every reporting period. This should now be treated as an error based on the AASB 108. But we know accounting treatment of error is significantly different to the effect of a change in estimate. Error is treated retrospectively with the effect recognised in retained earnings and the years to be compared in the financial statements are amended – the ‘comparatives restatement’. In other words, we have an effect which is covered by one standard but which may have

two opposite options for accounting treatment. The possible effect of the error on the councils' financial statements and financial performance is shown in the sensitivity analysis performed in Section 4.6.

4.6 Sensitivity analysis of the effect of not assessing the useful life every reporting period

The purpose of this section is to show the effect of non-compliance with the requirements of the AASB 116 to assess useful life at the end of every reporting period. As was demonstrated in Section 4.5 the effect of change in accumulated depreciation (AD) as a fraction to replacement cost (RC) in most cases represents the effect from a reassessment of remaining useful life. Though the Australian Accounting Standards (AAS) do not have any reference to the term "remaining useful life" it obviously affects the useful life of the asset. We concluded that if material, this effect is actually an error for the purposes of AASB 108.

The adopted useful life has a direct impact on annual depreciation charges which constitute one of the main components of the operating expenses in the profit and loss account of any general purpose local government council. The error arising from not adjusting useful lives at the end of each reporting period will clearly lead to errors in depreciation and as a result, a misstatement of the net operating result. Furthermore, this may result in the reassessment of some of the financial ratios the NSW councils reported on in the years preceding the comprehensive revaluations. For the clarity and efficiency purposes we summarise our approach and assumptions used in the sensitivity analysis as follows:

- Only the effect on roads assets are considered;
- Following our analysis above, we assume that the effect of a change in AD as a fraction to RC is the result of reassessment in remaining useful life only;
- The value of the error (the effect of change of AD as a fraction to RC) was calculated using factor analysis explained in Section 4.2;
- The error for the annual depreciation is calculated as the total value of the error divided by five, because councils follow five yearly revaluations. We can only assume that in previous revaluations councils performed assessment of the remaining useful life;

- Due to time and word limitations, we recalculated a depreciation figure for the 2015 financial year (or other year if revaluation occurred in a different year) only;
- The recalculated depreciation figure for 2015 was used for a recalculation of the net result for the year and for recalculation of the Operating Performance Ratio (see below).

The ratio we selected for our sensitivity analysis is called Operating Performance Ratio which is calculated as follows:

OPR = (OR – OE)/OR, where

OPR – Operating Performance Ratio;

OR – Total continuing operations revenue excluding capital grants and contributions;

OE – Operating Expenses

There are other ratios which NSW Local Government councils report on, however the OPR is one of the main ratios providing insight into the sustainability of the council's business. The benchmark for this ratio is always more than 0%, i.e. breakeven or more. If a council continuously reports a negative OPR then this is a strong indication of its inability to serve a community in a financially sustainable manner. This ratio was one of the sustainability ratios used for the assessment of councils to be able to meet financial sustainability criteria in the Fit for the Future assessment process in 2016. The benchmark for this ratio was greater than or equal to a break-even average over 3 years. We are not aiming to identify in the present study any councils which might have been mistakenly assessed as Fit for the Future. Our purpose is to indicate the risk of an incorrect calculation of the ratio based on a misstated depreciation. Accordingly, we will assess the potential effect on the ratio for just one year – the year of revaluation, i.e. 2015 (or other, if revaluation was done in a different year).

4.6.1 Results of the sensitivity analysis

Sensitivity analysis revealed that 41 councils had an adjusted depreciation for the 2015 financial year as positive, which is clearly not possible. All these councils had AD as % to RC decreasing as a result of the revaluation, which means over-depreciation in previous years. However, the problem is that the annual value of this over-depreciation is higher than the actual reported depreciation. This could be the result of the limitations

of our analysis as there might be other factors affecting the change in AD as % to RC which were not properly disclosed by the councils in their GPFSs. We thus exclude these councils from our further analysis. In addition, we also exclude the City of Ryde Council because that council does actually perform revaluations every year. As a result, the final list of councils subject to the sensitivity analysis comprises 47 councils.

For the 47 councils analysed, we perform the following calculations:

1) Calculate the annual value of the error by dividing the revaluation portion related to the change of AD as a fraction to RC on five years;
2) Calculate the adjusted depreciation charge and compare it to actual reported depreciation;
3) Calculate the adjusted value of the net result and compare it to the actual reported one; and
4) Calculate the adjusted operating performance ratio (OPR) and compare it to the actual reported one.

Given that the main interest for us is the effect on OPR as an indicator of financial sustainability we discover 13 councils with significant variation to the reported OPR, as presented in the Table B.1 in Appendix B. It should be noted that by "significant variation" we assume those changes which might affect the users of the financial statements in decision making process. For example, when the actual OPR was positive while, in fact, after correction of depreciation figures, is negative.

The councils in the Table B.1 represent examples of when the adjusted OPR is significantly different to the actual reported one. For example, Orange City Council reported a positive OPR in the 2015 financial year (5%) while, in effect, had the correct depreciation been applied, the OPR would become negative (-8%). This is due to the fact that the adjusted depreciation is higher than the actual by 447%. A similar situation is in Lismore City Council with a 0% OPR reported and -5% adjusted; and Byron Shire with 0% reported and -7% adjusted. The OPR of -1% in Bathurst Regional Council could still be considered as sustainable. However, with the adjusted OPR of -5%, it would no longer be acceptable. On the other side, there are examples of the opposite situation. Thus, Wingecarribee Shire Council reported in 2015 a negative OPR of -3% while the adjusted one is a positive of 4%. The same applies to Brewarrina Shire Council with a reported negative OPR in 2015 of -6% while the adjusted OPR could be positive 5%. The reason for this happening would be an overstatement of depreciation in

previous years. Guyra Shire Council reported a negative -8% OPR while in fact the more accurate application of depreciation could result in the OPR close to the breakeven (-1%). Councils like Wagga Wagga City Council and Uralla Shire Council reported OPRs close to break even while the real situation was probably much worse. Indeed, with a -2% OPR reported in Wagga Wagga the adjusted OPR is -30%; and with a -2% OPR reported in Uralla, the adjusted one is -12%.

The main purpose of the financial statements is to provide fair and accurate information about the financial position, financial performance and cash flows of an entity so the users of those financial statements can make relevant and up to date economic decisions.

As we saw in the sensitivity analysis above, not complying with the requirements of the AASB 116 to assess the useful life at the end of each reporting period, may lead to significant misstatements in depreciation and in net operating result. This in turn will lead to misstatements in the main financial ratio calculations. Finally, users of the financial statements may be given misleading information about the operations of the entity.

4.7 Conclusion

Analysis of the accounting framework in Chapter 3 revealed a lack of clarity and guidance for the revaluation of infrastructure assets in local government in Australia. It was thus paramount for this thesis to see how the revaluation is undertaken in practice in NSW. In Chapter 4 we aimed to understand the practical application of the accounting framework to revaluation and depreciation of infrastructure assets by NSW local government authorities. Based on the analysis of the latest revaluation of roads performed by 89 NSW councils we found out that the approach to revaluation is not consistent across the state. This result was expected considering the issues within the framework discussed in Chapter 3.

The main focus of the analysis of the revaluation of roads made by NSW local government councils was on the accounting treatment of the change of the accumulated depreciation and impairment loss component of fair value, as a fraction to replacement cost. Based on the analysis of 89 councils, we proved that this effect was significant. Indeed, 36 councils had accumulated depreciation and impairment loss as a fraction to replacement cost decreasing in the range 10%, to as much as 53%; five councils had the fraction increase by as much as 10% to 31%; other councils had that change within

10%. Given the significance of the effect, it becomes critical to ensure that this effect is accounted for in accordance with the requirements of the Australian Accounting Standards. However, in practice, clearly councils had a different approach and understanding of this effect.

Indeed, 68 councils (Group 2) had the effect of a change in accumulated depreciation and impairment loss as a fraction to replacement cost included into the revaluation adjustment without making any additional disclosures. In effect, councils hid this effect and treated it purely as the effect of revaluation through the Assets Revaluation Reserve in Equity. 12 councils (Group 1) treated the accumulated depreciation effect as an error and recognised it separately through Retained Earnings in Equity. They disclosed this effect as arising from a reassessment of the remaining useful life. The remaining nine councils (Group 3) treated the accumulated depreciation effect similarly to the councils from Group 2, however, they were separately analysed. The reason for the separate analysis of the latter group is because these councils followed alternative depreciation approaches (all others used straight line depreciation), and the effect of the change of accumulated depreciation and impairment loss was not material.

Following the logic of the disclosure posted by councils from Group 1 in the general purpose financial statements in regard to the error, the effect of the error is the result of a reassessment of the remaining useful life. However, we know from Chapter 3 that this is a change of estimate and should be treated prospectively based on AASB 108. By making further analysis, we concluded that the effect of a change in accumulated depreciation and impairment loss as a fraction to replacement cost may not only be caused by a reassessment of the useful life but also by the obsolescence factors or condition assessment. The latter effect should be treated the same way as the revaluation adjustment based on AASB 136 and AASB 116, as was done by councils from Group 2. However, the problem is that the condition factor and remaining useful life factor are interconnected, where the reassessed condition can affect the remaining useful life and vice versa. The question is then – what factor is the primary one as, obviously, depending on the answer, accounting treatment is different.

Councils from Group 2 (the largest group) have not disclosed anything about the effect of the change in the accumulated depreciation and impairment loss as a fraction to replacement cost. They just recognised the revaluation effect through the Asset Revaluation Reserve as one adjustment. In this case, we can only assume that the

primary effect of the change was condition assessment. However, we doubt this position. Indeed, the condition assessment should be done to assess the effect of the obsolescence factor. The latter is a main determinant for fair valuation based on AASB 136 and AASB 13. In practice, in local government, the condition of the assets changes due to natural events or technological failure. This does not happen regularly from the point of view of all the local governments within the state, (or if happens, the effect may not be material compared to the total value of the class of assets). On the other hand, the reassessment of useful life can happen more often due to a change in asset management practice and a reassessment of the lifecycle of the assets, or from obtaining more accurate data. In this case, we believe that the accounting treatment of the accumulated depreciation effect in most of the councils from Group 2 was driven by a reassessment of the remaining useful life and this should not be hidden in the revaluation adjustment recorded in the Asset Revaluation Reserve.

We believe that the material effect of the change of accumulated depreciation and impairment loss as a fraction to replacement cost caused by the reassessment of the remaining useful life is an error based on AASB 108 due to non-compliance with the requirements for AASB 116. The latter requires entities to assess the useful life at the end of each reporting period. If councils followed this requirement, then the accumulated depreciation effect would not be material at the time of a comprehensive revaluation which is done every five years. We proved that the effect of an error could potentially result in misleading reporting of the performance of the councils and lead to incorrect operational performance ratios. Regardless of this, it is notable that the audit opinions of all councils analysed in this study were not qualified.

Councils from Group 3 had the effect of the change of the accumulated depreciation and impairment loss as a fraction to replacement cost as not materially significant (except for just one council). We believe this is due to the alternative depreciation models followed by the councils at the year of revaluation – consumption-based and condition-based. However, we cannot confirm that this would be the best approach for councils. There are some good reasons for this. First, there is a high risk of non-compliance with AASB 116 and UIG 1030 which prohibit usage of these models except in special circumstances. Second, the models are quite complicated and should be based on a robust analysis of reliable data related to historical asset management processes, future replacement and renewal programs. Not all councils can afford to perform this

exercise. Third, by adopting these models, councils are trying to align consumption of the service potential of the asset (depreciation) with its fair value. However, this contradicts AASB 13 which does not connect fair value with the depreciation. In effect, depreciation and fair value are two different concepts serving different purposes. Finally, given the significant amount of judgement involved, the models are hard to audit. We assume these are the reasons which forced four councils from Group 3 to move to straight line depreciation models after the year of revaluation.

All considered, we believe that the majority of the councils (Group 2) did not fully comply with the requirements of Australian Accounting Standards in regard to treatment of revaluation effects. This could result in the information provided in their financial statements being misleading. Even councils from Group 1, which treated the analysed effect as an error, did not perform a restatement of the prior year financial statements, which we believe could have been done without much effort. It is patently clear that more clarity and guidance are required to make the accounting practice of revaluation and depreciation of infrastructure assets in local government consistent and relevant for decision-making by stakeholders.

CHAPTER 5: CONCLUSION

5.1 Chief findings

The review of the empirical evidence in this study has revealed significant problems in accounting for revaluation and depreciation of infrastructure assets in local government in Australia. The problems arose with the implementation of the accrual accounting model in local government around the world in the 1980s and the associated new requirement to recognize and depreciate infrastructure assets. The difficulties stem mostly as a consequence of the unique characteristics of public sector infrastructure assets; in particular their long and sometimes uncertain lives, and the fact that they cannot be sold and most do not operate for profit. The literature review in Chapter 2 has shown that the problems in the accounting treatment of the revaluation of infrastructure assets in local government have not been covered in detail in the academic literature. This provided the rationale for this thesis which, in effect, was built around questions raised in the end of Chapter 2, namely:

1. What is the current accounting framework for revaluation and depreciation of infrastructure assets in Australian local government in general and NSW in particular?
2. In practice, how do NSW councils account for the results of the revaluation of infrastructure assets, and whether they comply with the Australian Accounting Standards?
3. What are the consequences of the current accounting practice on the reliability of the financial reports by NSW local councils?
4. What would be the compliant accounting approach considering the requirements in the NSW local government sector and Australian Accounting Standards?

Our review of the existing accounting framework revealed that there is no consistent understanding of the reasons and accounting treatment of the effect of the change in accumulated depreciation and impairment loss element as a fraction of gross replacement cost (gross book value) as a result of revaluation of infrastructure assets. In Chapter 3 we showed that the change in accumulated depreciation and impairment loss element may be a result of a change in estimate of the remaining useful life or change in condition (i.e. obsolescence). Both factors are interconnected. However, the accounting treatment of each is different. A change is estimates of the useful life should

be treated prospectively with the effect recognized in the profit and loss account in current year and subsequent years based on requirements of AASB 108. On the other hand, a change in condition should be accounted for in the current year with the effect recognized in the equity within the asset revaluation reserve based on requirements of AASB 136 and AASB 116. As a result of potential confusion of the primary factor (i.e. remaining useful life or condition), the accounting treatment and reporting of this effect will be inconsistent throughout the state. This conclusion was validated by the empirical analysis performed in Chapter 4.

In Chapter 4 we reviewed results of a revaluation of roads assets performed by 89 NSW councils during the period 2013-2016. The review revealed that the effect of a change in accumulated depreciation and impairment loss as a fraction of gross replacement cost may vary from a decrease of 53% to increase of 31%. This makes this effect significant. However, the accounting treatment of this effect varies between the councils. Most of the agencies did not disclose anything in their financial statements about this effect and treated it as part of "normal" revaluation adjustment through the Asset Revaluation Reserve in the year of revaluation.

Only a small proportion of councils recognized this effect as an error through retained earnings in equity and disclosed it separately. However, these councils did not follow the precise requirements of AASB 108 on accounting treatment of errors (restatement of comparative amounts for the prior period(s) presented in which the error occurred; or if the error occurred before the earliest prior period presented, restatement of the opening balances of assets, liabilities and equity for the earliest prior period presented; and other additional disclosures). In addition, explanations of the error were not clear. Indeed, in most cases the reason for the error was stated as change in the useful life without further explanations. From Chapter 3 we know that change in useful life is a change in estimates based on AASB 108. In this case the effect should have been recognized in the profit and loss account in current year with subsequent change in depreciation in future years (i.e. prospective treatment).

It is interesting to note that in our analysis of councils' compliance with AAS in Chapter 4 we made a logical deduction which confirmed that in most cases the primary factor affecting the proportion of the accumulated depreciation and impairment loss element of the fair value would be the change in the estimates of the useful life not affected by the condition. Change in condition would be the secondary factor affected by the

primary factor. The reason for the change in estimate in useful life may be based on reassessment of asset management lifecycle assumptions or other factors not affected by the change in condition of the asset. Does this mean that councils did not comply with Australian Accounting Standards and should have accounted for the change in estimates of remaining useful life prospectively as required by AASB 108? At first sight it appears to be affirmative. However, the problem is much deeper.

NSW local government agencies have to perform comprehensive revaluations every five years. The results of the empirical analysis in Chapter 4 revealed that the effect of a change in accumulated depreciation and impairment loss as a fraction of gross replacement cost was material at the time of revaluation. That means that councils assess the useful life and pattern of consumption of future economic benefits at the time of their comprehensive revaluation only, thereby failing to comply with the requirements of AASB 116 to assess the useful life of assets at the end of each reporting period. Based on AASB 116, if the change in estimate is significant, entities should make appropriate adjustments in the year of assessment and not wait for the comprehensive revaluation in the five-year cycle.

Taking all these considerations into account, we contend that most NSW councils did not comply with Australian Accounting Standards in accounting for infrastructure assets. Thus councils' infrastructure assets' value was affected by the change in estimates of the remaining useful life which would require prospective accounting treatment. However, the significance of the change means that councils did not follow requirements of AASB 116 to have the useful life and pattern of consumptions of service potential reassessed at the end of each reporting period. The latter lead us to a conclusion that the material effect of the change in accumulated depreciation and impairment loss components should have been recognized as an error and treated retrospectively as required by AASB 108. As noted above, this will require extensive amendments to be done on the face of financial statements, namely:

- restatement of comparative amounts for the prior period(s) presented in which the error occurred; or
- if the error occurred before the earliest prior period presented, restatement of the opening balances of assets, liabilities and equity for the earliest prior period presented; and
- other additional disclosures.

To avoid errors, we propose the accounting approach which would be in compliance with Australian Accounting Standards and outlined in Section 5.2 below.

5.2 Policy implications and recommendations

The way councils account for and report the effect of a change in the useful life of infrastructure assets at the time of a comprehensive revaluation may be considered as a tool for hiding serious errors and facts of non-compliance with the accounting standards. There is no doubt that more guidance is required from regulators. Considering the fact that infrastructure assets and roads, in particular, represent the largest asset base on every council's balance sheet, it is reasonable to assume that management could put more effort into ensuring compliance and accuracy of accounting for this asset portfolio. In Chapter 4 we showed that there is a high risk that the annual depreciation during the five years preceding the latest roads revaluation will be incorrect. This led to the incorrectly reported net operating results, and even more importantly, the operational performance ratio. All this has a negative impact on the reliability and comparability of the financial reports issued by local government councils.

Councils should avoid significant errors at the time of comprehensive revaluations. As we concluded in Chapter 3 and Chapter 4, the existence of errors requires a significant number of additional disclosures and does not reflect well on management and auditors. Regardless of the lack of consistent authoritative guidance available to councils at the moment, we propose a compliant approach to the accounting of the infrastructure assets to avoid such errors. In essence, councils should perform formal assessment of the useful life and pattern of consumption of the service potential of infrastructure assets at the end of each reporting period as required by AASB 116. If changed significantly, or if there is a risk that it will result in material misstatement at the time of next comprehensive revaluation, they should treat the change as a change in estimate in the year of reassessment along with appropriate disclosure of the reason for the change. This will have immaterial effect on the current year depreciation expense, but will contribute to the reliability and fairness of the financial statements. If the assessment of the useful life is made every year, then at the time of the comprehensive revaluation, the effect of the changed accumulated depreciation and impairment loss as a fraction of replacement cost will not be material.

It is clear that there is a need for significant improvement in the accounting for infrastructure assets and in their revaluation in particular. We believe that potential improvements should come from both policymakers (NSW Office of local Government (OLG), Australian Accounting Standards Board (AASB), NSW Audit Office) and from councils themselves.

The main problem which local government agencies face is a lack of authoritative technical guidance and detailed illustrative examples. The absence of this material makes the revaluation matter subject to varying interpretations by councils. This in turn leads to inconsistency in financial reporting throughout NSW local government. In order to avoid this, the OLG should consider including specific guidance as part of the *NSW Code of Accounting Practice and Financial Reporting*. As we noted in Chapter 3, following feedback from the NSW Audit Office, the OLG removed from the Code 25 the Illustrative Example relating to the incorrect accounting treatment of depreciation in previous years and did not post any guidance in return. At the time of writing this thesis, OLG released a Draft Code 26 for the year ended 30 June 2018, but this still does not have any statement or guidance covering the issue of errors in depreciation. Because of the fact that fair value measurement is an area subject to significant judgement and there are still many areas for discussion and consultation, it is highly important to have authoritative guidance set up.

Based on the analysis of the Australian Accounting Standards we believe that AASB should consider inclusion in AASB 108 and/ or AASB 116 some clarification about the primary factor affecting the change in the estimate of the useful life of the asset. If the primary factor is condition, then this should be accounted for as a revaluation adjustment based on AASB 116. In contrast, if the change in estimate of the useful life was affected by factors other than condition (or obsolescence overall) then this should be treated as a change in estimate based on the requirements of AASB 108.

Apart from the need to comply with the requirements of AASB 116 to assess the useful life and pattern of asset consumption at the end of each reporting period, councils should ensure the useful life matches the actual lifecycle of classes of assets. This will obviously require setting up reliable asset management plans. Furthermore, it is necessary to have an effective communication channel between engineering, asset management and finance functions within the council. This will ensure that the financial

reporting is up to date and reflects all the latest changes in the operational side of the council's business.

5.3 Shortcomings of the empirical analysis

Notwithstanding the significance of the findings mentioned in Section 5.1, we should acknowledge the limitations associated with the empirical analysis undertaken in Chapter 4.

First, the analysis covered only 89 authorities out of 152 councils existing in NSW and operated during the timeframe from 2013 to 2016. We believe, nevertheless, that the findings are likely to be representative of all councils. As explained in Section 4.3 of Chapter 4 there were about 15 chartered accounting firms auditing all NSW local government councils at that time. All of these auditors were included in the analysis of the 89 councils. Given the fact that councils rely on the position of their auditor in such matters as revaluation of infrastructure assets, we believe that the risk is quite remote that any council not covered in our analysis, but audited by one of those firms, would have a different approach to other councils audited by the same auditors.

Secondly, disclosures of the revaluation effect in the NSW councils' financial statements were either not detailed or not made at all, making it impossible to fully understand the reason for the changes in the accumulated depreciation and impairment loss component of fair value. We made a logical assumption that the most common and likely reason would be a change in the remaining useful life, not because of the change in condition, but due to a reassessment of the lifecycle of the assets. Because of this uncertainty, we removed 42 councils out of original 89 for the purpose of sensitivity analysis of depreciation and the effects on operating performance ratio.

Thirdly, the conclusions of Section 5.1 relate to a review of the revaluation of roads assets only. The latter comprise roads, kerbing and guttering and bridges. However, from Chapter 2 we know that infrastructure assets are long-lived assets (sometimes with uncertain lives), they cannot be sold and they are used to provide services to the community at zero or a nominal fee (Barnes and Lord, 2017, p. 130; Drew and Dollery, 2015, p. 30; Fickes, 2002, p. 46; Pallot, 1997, p.228). Furthermore, according to guidelines prepared by the New Zealand Society of Local Government Managers, infrastructure assets (cited in Pallot, 1997, p. 232) are "stationary systems . . . [which] intend to be maintained indefinitely at a particular level of service potential by

continuing replacement and refurbishment of its components". Accordingly, we can reasonably assume that other infrastructure assets in local government (water and sewerage systems, buildings, stormwater drainage) will have the same problems in revaluation accounting as do roads.

5.4 Avenues for Future Research

International and Australian research on revaluation and depreciation problems in local government appears to be focused on highlighting major problems and pointing to the effects procedures may have on regulators' policy-making. There is lack of research and regulatory guidance on the practical implementation of the accounting framework in relation to fair value accounting of infrastructure assets at local government. At the time of writing, some welcome initiatives have been launched by policymakers in the field of fair value in the public sector. Thus, the Australian Accounting Standards Board (AASB) – following its 12 December 2017 meeting – has issued an Action Alert 188 (2017) initiating a Fair Value Measurement Project which will analyse the following matters: Restrictions on assets; "Highest and best use" concept; When to use the different valuation approaches; Implementation guidance for current replacement cost and why in practice there is little or no difference to depreciated replacement cost; Obsolescence; Disclosures; Interaction of AASB 13 with other Standards.

All these matters are very important areas for research and will be relevant to the problems raised by this thesis. Apart from those initiatives, we suggest some further matters for attention and potential research:

- Revaluation and depreciation of infrastructure assets in the for-profit sector. Capital intensive sectors like mining, oil and gas, and utilities rely heavily on infrastructure assets which are similar in nature to infrastructure assets managed by local government, the only difference being that they generate cash flow. Considering this, the model for fair valuation may not be current replacement cost (CRC). It is highly probable that the best model to use will be an income approach or income approach and CRC in combination. However, the problems with proper accounting of the change in useful life and depreciation, as well as condition assessment, should be similar to local government sector. In this regard, it would be highly instructive to understand the problems in depreciation and revaluation accounting this for-profit sector has, and how it deals with this.

- Condition based depreciation (CBD) and its relation to the fair value of infrastructure assets. CBD is a very controversial alternative method to depreciation and has been criticised for being complex and not compliant with AAS. However, based on the case study of the City of Ryde Council analysed in Chapter 4, the method can still be in compliance with the AAS. Furthermore, as we saw in Chapter 4, councils which used alternative methods of depreciation (consumption based or condition based) had the effect of a change in accumulated depreciation and impairment loss component as a fraction of replacement cost assessed as not significant. The latter means that the CBD method aligns with the fair value of the assets at any given time during the lifecycle of the asset. It must be noted however, as we saw in previous chapters, that the method proved to be too complicated and subject to significant judgements. The questions which can thus be raised are:
    - Does the depreciation affect fair value; and
    - If yes, then how could implementation of alternative methods of depreciation (for example, CBD) be made understandable, reliable, usable and auditable?
- Asset Management and Financial Accounting approach to depreciation and fair value. Asset managers in every local government council in Australia are keen to secure sufficient resources for maintenance and renewal of assets. Asset managers thus look at depreciation as a tool for accumulation of funds for the renewal program. On the other hand, as we saw in the Chapter 2 and Chapter 3, the accounting concept of depreciation is different and it is more about the pattern of consumption of the service potential embodied in the asset. Accordingly, the questions which can be investigated further are:
    - Should depreciation be funded?
    - What is the Asset Management concept of depreciation?
    - Should depreciation be treated similarly in Asset Management and Financial Accounting? and
    - What are the pros and cons of aligning the concept of depreciation between these two functions?
- Comparison of IPSASB and AASB views on fair value measurement of infrastructure assets in public sector. International Public Sector Accounting Standards Board (IPSASB) is the international organisation which develops

accounting standards and guidance for use by public sector entities worldwide. Publications of IPSASB are not mandatory in Australia. However, considering the level of the organisation and influence it has worldwide, it is worth assessing the application of its publications and standards in the Australian local government sector.

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Appendix A: Councils selected for empirical review

Table A.1: Information related to revaluation of roads assets at NSW councils which was used for empirical analysis, $000

Group	Council	FS date when revaluation occurred	Auditor	After revaluation but before movements during the year				Total effect from revaluation	Before revaluation				Change in AD	How the AD change effect was recorded
				RC	AD	CV	AD as %% to RC		RC	AD	CV	AD as %% to RC		
1	Liverpool City Council	2014-15	PWC	1,126,329.00	176,605.00	949,724.00	16%	268,347	1,001,013	319,636	681,377	32%	-16%	RE
1	City of Sydney	2015-16	PWC	1,735,866.00	648,859.00	1,087,007.00	37%	216,962	1,735,867	865,822	870,045	50%	-12%	RE
1	Armidale Dumaresq Council	2014-15	Forsyths	137,135.00	34,510.00	102,625.00	25%	- 26,281	221,681	92,775	128,906	42%	-17%	RE
1	Guyra Shire Council	2014-15	Forsyths	79,869.00	17,893.00	61,976.00	22%	16,807	63,781	18,612	45,169	29%	-7%	RE
1	Newcastle	2014-15	PwC	645,935.00	221,456.00	424,479.00	34%	111,157	616,279	302,957	313,322	49%	-15%	RE
1	Upper Hunter	2014-15	Forsyths	231,548.00	20,584.00	210,964.00	9%	26,159	267,558	82,753	184,805	31%	-22%	RE
1	The Hills	2014-15	PWC	964,516.00	30,011.00	934,505.00	3%	355,667	999,687	420,849	578,838	42%	-39%	RE
1	Sutherland	2014-15	PWC	806,312.00	217,774.00	588,538.00	27%	311,787	404,138	127,387	276,751	32%	-5%	RE
1	Inverell Shire	2014-15	Forsyths	202,290.00	36,169.00	166,121.00	18%	- 9,416	303,470	127,933	175,537	42%	-24%	RE
1	Hornsby Shire	2014-15	PWC	376,858.00	58,669.00	318,189.00	16%	54,117	369,563	105,491	264,072	29%	-13%	RE
1	Hawkesbury City	2014-15	PWC	506,524.00	163,056.00	343,468.00	32%	107,849	476,225	240,606	235,619	51%	-18%	RE

Group	Council	FS date when revaluation occurred	Auditor	After revaluation but before movements during the year				Total effect from revaluation	Before revaluation				Change in AD	How the AD change effect was recorded
				RC	AD	CV	AD as %% to RC		RC	AD	CV	AD as %% to RC		
1	Camden	2014-15	PWC	423,922.00	103,055.00	320,867.00	24%	- 3,784	405,195	80,544	324,651	20%	4%	RE
2	Lismore city	2014-15	TNR	327,793.00	161,802.00	165,991.00	49%	- 24,508	332,260	141,761	190,499	43%	7%	ARR
2	Tamworth Regional Council	2014-15	Prosperity Audit Services	432,226.00	92,731.00	339,495.00	21%	- 159,056	694,326	195,775	498,551	28%	-7%	ARR
2	Singleton	2014-15	Hill Rogers Spencer Steer	216,694.00	29,577.00	187,117.00	14%	66,062	161,692	40,637	121,055	25%	-11%	ARR
2	Glenn Innes	2014-15	Crowe Horwarts	138,752.00	32,438.00	106,314.00	23%	3,684	143,062	40,432	102,630	28%	-5%	ARR
2	Ku-Ring-Gai	2014-15	UHU Haines Norton CA	445,905.00	199,040.00	246,865.00	45%	50,658	372,148	175,941	196,207	47%	-3%	ARR
2	Balranald	2014-15	Pitcher Partners	105,778.00	49,696.00	56,082.00	47%	- 50,204	144,547	38,261	106,286	26%	21%	ARR
2	Bega Valley	2014-15	RSM	355,498.00	183,405.00	172,093.00	52%	16,021	320,666	164,594	156,072	51%	0%	ARR
2	Bellingen	2014-15	Forsyths	108,229.00	36,924.00	71,305.00	34%	- 47,682	193,809	74,822	118,987	39%	-4%	ARR
2	Coonamble	2014-15	Hill Rogers Spencer Steer	221,036.00	33,136.00	187,900.00	15%	67,442	163,612	43,154	120,458	26%	-11%	ARR
2	Orange City	2014-15	Intentus CA	303,321.00	110,333.00	192,988.00	36%	- 23,245	253,080	36,847	216,233	15%	22%	ARR
2	North Sydney	2014-15	Hill Rogers Spencer Steer	290,484.00	99,762.00	190,722.00	34%	41,301	295,460	146,039	149,421	49%	-15%	ARR
2	Wagga Wagga	2014-15	Crowe Horwath	790,386.00	343,277.00	447,109.00	43%	32,886	472,631	58,408	414,223	12%	31%	ARR

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				RC	AD	CV	AD as %% to RC		RC	AD	CV	AD as %% to RC		
2	Upper Lachlan	2014-15	Intentus CA	111,386.00	41,730.00	69,656.00	37%	- 16,050	141,978	56,272	85,706	40%	-2%	ARR
2	Waverley	2014-15	Hill Rogers Spencer Steer	333,984.00	119,997.00	213,987.00	36%	36,104	342,770	164,887	177,883	48%	-12%	ARR
2	Wingecarribee	2014-15	Warton Thompson & Co CA	510,659.00	194,655.00	316,004.00	38%	39,128	498,238	221,362	276,876	44%	-6%	ARR
2	Yass Valley	2014-15	Crowe Horwath	165,349.00	43,652.00	121,697.00	26%	37,643	173,477	89,423	84,054	52%	-25%	ARR
2	Woollahra Municipal Council	2014-15	Hill Rogers Spencer Steer	461,271.00	138,901.00	322,370.00	30%	46,908	390,148	114,686	275,462	29%	1%	ARR
2	Wollongong	2014-15	PWC	1,317,258.00	778,642.00	538,616.00	59%	6,068	1,307,011	774,463	532,548	59%	0%	RE
2	Wollondilly	2014-15	Warton Thompson & Co CA	200,273.00	92,837.00	107,436.00	46%	- 29,606	193,604	56,562	137,042	29%	17%	ARR
2	Wentworth	2014-15	Pitcher Partners	361,925.00	88,384.00	273,541.00	24%	79,587	270,703	76,749	193,954	28%	-4%	ARR
2	Weddin	2014-15	Intentus CA	85,228.00	12,678.00	72,550.00	15%	671	84,239	12,360	71,879	15%	0%	ARR
2	Warren	2014-15	Hill Rogers Spencer Steer	125,009.00	11,537.00	113,472.00	9%	21,525	137,228	45,281	91,947	33%	-24%	ARR
2	Walgett	2014-15	Luka Group	131,093.00	61,463.00	69,630.00	47%	10,144	114,310	54,824	59,486	48%	-1%	ARR
2	Uralla	2014-15	Forsyths	75,861.00	32,543.00	43,318.00	43%	- 18,271	92,921	31,332	61,589	34%	9%	ARR
2	Temora	2014-15	Auswild & Co CA	133,856.00	49,513.00	84,343.00	37%	- 7,688	172,656	80,625	92,031	47%	-10%	ARR

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				RC	AD	CV	AD as %% to RC		RC	AD	CV	AD as %% to RC		
2	Strathfield	2014-15	Hill Rogers Spencer Steer	116,243.00	33,042.00	83,201.00	28%	19,976	100,992	37,767	63,225	37%	-9%	ARR
2	Shoalhaven	2014-15	Pitcher Partners	980,852.00	292,035.00	688,817.00	30%	32,697	904,253	248,133	656,120	27%	2%	ARR
2	Queanbeyan City	2014-15	Hill Rogers Spencer Steer	122,986.00	44,405.00	78,581.00	36%	- 9,473	141,640	53,585	88,055	38%	-2%	ARR
2	Port Stephens	2014-15	Pitcher Partners	361,670.00	44,220.00	317,450.00	12%	50,260	331,432	64,242	267,190	19%	-7%	ARR
2	Port Macquarie Hastings	2014-15	TNR	532,954.00	215,807.00	317,147.00	40%	- 53,896	593,902	222,852	371,050	38%	3%	ARR
2	Oberon	2014-15	Crowe Horwath	181,843.00	26,454.00	155,389.00	15%	83,336	108,820	36,767	72,053	34%	-19%	ARR
2	Warringah	2014-15	Hill Rogers Spencer Steer	420,685.00	23,953.00	396,732.00	6%	90,706	370,672	64,646	306,026	17%	-12%	ARR
2	Narromine	2014-15	Hill Rogers Spencer Steer	212,532.00	27,054.00	185,478.00	13%	126,940	129,149	70,611	58,538	55%	-42%	ARR
2	Narrandera	2014-15	Crowe Horwath	88,033.00	12,511.00	75,522.00	14%	- 18,321	123,333	29,490	93,843	24%	-10%	ARR
2	Narrabri	2013-14	Crowe Horwath	224,807.00	73,793.00	151,014.00	33%	63,341	208,284	120,611	87,673	58%	-25%	ARR
2	Muswellbrook	2014-15	Hill Rogers Spencer Steer	327,943.00	79,929.00	248,014.00	24%	- 12,863	355,134	94,256	260,878	27%	-2%	ARR
2	Mosman Municipal	2014-15	Hill Rogers Spencer Steer	205,588.00	89,218.00	116,370.00	43%	4,267	214,104	102,001	112,103	48%	-4%	ARR
2	Moree Plains	2014-15	Luka Group	330,294.00	86,105.00	244,189.00	26%	19,646	307,837	83,294	224,543	27%	-1%	ARR

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				RC	AD	CV	AD as %% to RC		RC	AD	CV	AD as %% to RC		
2	Mid-Western Regional	2014-15	Intentus CA	352,369.00	137,964.00	214,405.00	39%	35,609	278,709	99,913	178,796	36%	3%	ARR
2	Maitland	2014-15	Pitcher Partners	538,646.00	145,358.00	393,288.00	27%	14,910	506,357	127,979	378,378	25%	2%	ARR
2	Lockhart	2015-16	Crowe Horwath	204,220.00	26,861.00	177,359.00	13%	16,506	188,967	28,114	160,853	15%	-2%	ARR
2	Liverpool Plains	2014-15	Pitcher Partners	275,094.00	32,289.00	242,805.00	12%	- 18,262	349,207	88,140	261,067	25%	-14%	ARR
2	Lithgow	2014-15	Crowe Horwath	245,726.00	74,423.00	171,303.00	30%	34,002	198,605	61,304	137,301	31%	-1%	ARR
2	Lachlan Shire	2014-15	Intentus CA	233,559.00	64,933.00	168,626.00	28%	79,256	224,500	135,130	89,370	60%	-32%	ARR
2	Kyogle	2014-15	TNR	219,583.00	60,852.00	158,731.00	28%	27,622	214,492	83,383	131,109	39%	-11%	ARR
2	Kiama Municipal	2014-15	Pitcher Partners	125,309.00	48,130.00	77,179.00	38%	24,896	112,094	59,815	52,279	53%	-15%	ARR
2	Hay Shire	2014-15	AKW	62,370.00	29,702.00	32,668.00	48%	703	54,228	22,263	31,965	41%	7%	ARR
2	Gunnedah Shire Council	2014-15	UHY Haines Norton CA	280,610.00	80,377.00	200,233.00	29%	61,127	243,907	104,801	139,106	43%	-14%	ARR
2	Griffith City	2013-14	Crowe Horwath	283,605.00	43,022.00	240,583.00	15%	109,466	179,201	48,084	131,117	27%	-12%	ARR
2	Hurstville City	2014-15	Hill Rogers Spencer Steer	287,407.00	80,692.00	206,715.00	28%	62,455	252,520	108,260	144,260	43%	-15%	ARR
2	Fairfield City	2014-15	Pitcher Partners	431,122.00	65,829.00	365,293.00	15%	37,742	444,356	116,805	327,551	26%	-11%	ARR

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				RC	AD	CV	AD as %% to RC		RC	AD	CV	AD as %% to RC		
2	Eurobodalla Shire	2014-15	Pitcher Partners	498,381.00	127,915.00	370,466.00	26%	43,565	487,620	160,721	326,899	33%	-7%	ARR
2	Coolamon	2014-15	Auswild & Co CA	62,787.00	7,300.00	55,487.00	12%	5,896	85,667	36,076	49,591	42%	-30%	ARR
2	Cobar	2014-15	Luka Group	247,943.00	41,132.00	206,811.00	17%	103,990	152,435	49,614	102,821	33%	-16%	ARR
2	Cessnock	2014-15	Forsyths	601,997.00	72,900.00	529,097.00	12%	50,437	541,672	63,012	478,660	12%	0%	ARR
2	Carrathool	2015-16	Auswild & Co CA	155,652.00	30,895.00	124,757.00	20%	22,225	152,680	50,148	102,532	33%	-13%	ARR
2	Cabonne	2014-15	Intentus CA	169,431.00	46,547.00	122,884.00	27%	6,578	204,713	88,407	116,306	43%	-16%	ARR
2	Byron Shire	2014-15	TNR	285,389.00	126,128.00	159,261.00	44%	- 44,510	317,122	113,351	203,771	36%	8%	ARR
2	Burwood	2014-15	Hill Rogers Spencer Steer	195,328.00	54,746.00	140,582.00	28%	- 7,608	194,718	46,528	148,190	24%	4%	ARR
2	Brewarrina	2014-15	Hill Rogers Spencer Steer	106,313.00	29,531.00	76,782.00	28%	13,468	96,630	33,316	63,314	34%	-7%	ARR
2	Bourke	2014-15	Hill Rogers Spencer Steer	156,809.00	23,597.00	133,212.00	15%	9,686	152,456	28,930	123,526	19%	-4%	ARR
2	Bogan	2013-14	Hill Rogers Spencer Steer	82,461.00	15,132.00	67,329.00	18%	56,877	37,560	27,107	10,453	72%	-54%	ARR
2	Blayney	2014-15	Intentus CA	118,319.00	23,202.00	95,117.00	20%	- 11,412	143,587	37,058	106,529	26%	-6%	ARR
2	Bland	2014-15	Luka Group	229,455.00	16,737.00	212,718.00	7%	97,644	155,038	39,964	115,074	26%	-18%	ARR

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				RC	AD	CV	AD as %% to RC		RC	AD	CV	AD as %% to RC		
2	Blacktown	2014-15	PwC	1,702,863.00	643,798.00	1,059,065.00	38%	46,122	1,613,923	600,980	1,012,943	37%	1%	ARR
2	Berrigan	2014-15	Richmond Sinnott & Delahunty CA	141,895.00	34,013.00	107,882.00	24%	20,598	119,900	32,616	87,284	27%	-3%	ARR
2	Bathurst Regional Council	2014-15	Intentus CA	408,806.00	127,388.00	281,418.00	31%	20,596	356,755	95,933	260,822	27%	4%	ARR
2	Ballina	2014-15	TNR	490,857.00	75,197.00	415,660.00	15%	55,054	530,413	169,806	360,607	32%	-17%	ARR
3	Clarence Valley	2014-15	TNR	628,432.00	121,328.00	507,104.00	19%	13,960	596,482	103,338	493,144	17%	2%	ARR
3	Tweed Shire	2014-15	TNR	646,110.00	142,722.00	503,388.00	22%	57,549	621,758	175,919	445,839	28%	-6%	ARR
3	Willoughby City	2014-15	PWC	243,487.00	59,611.00	183,876.00	24%	4,054	245,818	65,996	179,822	27%	-2%	ARR
3	Richmond Valley	2014-15	TNR	202,806.00	41,292.00	161,514.00	20%	- 1,880	202,468	39,074	163,394	19%	1%	ARR
3	Penrith	2014-15	Hill Rogers Spencer Steer	1,018,058.00	313,286.00	704,772.00	31%	208,224	734,029	237,481	496,548	32%	-2%	ARR
3	Kempsey	2014-15	TNR	323,861.00	96,007.00	227,854.00	30%	- 157,195	564,950	179,901	385,049	32%	-2%	ARR
3	Coffs Harbour	2013-14	TNR	525,384.00	134,468.00	390,916.00	26%	25,090	514,300	148,474	365,826	29%	-3%	ARR
3	City of Ryde	2014-15	PWC	291,529.00	72,106.00	219,423.00	25%	- 12,697	281,043	48,923	232,120	17%	7%	ARR
3	Broken Hill	2014-15	UHY Haines Norton CA	161,433.00	42,807.00	118,626.00	27%	- 19,459	157,997	19,910	138,087	13%	14%	ARR

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				RC	AD	CV	AD as %% to RC		RC	AD	CV	AD as %% to RC		
	Total			32,328,194	9,226,037	23,102,157	29%	3,098,393	30,729,462	10,725,691	20,003,771	35%	-6%	

Appendix B: Results of sensitivity analysis of the effect of application incorrect depreciation rates

Table B.1: Results of sensitivity analysis of the effect of incorrect depreciation rates in previous years, $000

Council	FS date when revaluation occurred	Change in AD as % to RC	Value of error	Annual depreciation				Net result				Operating Performance Ratio	
				Reported depreciation	Adjusted depreciation	Overstatement/ (understatement)	Difference, %	Reported net surplas/ (deficit)	Adjusted net surplus/ (loss)	Difference	Difference, %	Reported	Adjusted
Guyra Shire Council	2014-15	-7%	4,323	- 1,347	- 482.36	864.64	-64%	71	936	865	1218%	-8%	-1%
Lismore city	2014-15	7%	-22,246	- 7,276	- 11,725.19	- 4,449.19	61%	875	- 3,574	- 4,449	-508%	0%	-5%
Balranald	2014-15	21%	-29,649	- 4,955	- 10,884.84	- 5,929.84	120%	- 2,950	- 8,880	- 5,930	201%	-39%	-93%
Orange City	2014-15	22%	-55,211	- 2,471	- 13,513.17	- 11,042.17	447%	42,775	31,733	- 11,042	-26%	5%	-8%
Wagga Wagga	2014-15	31%	- 146,863	- 5,837	- 35,209.61	- 29,372.61	503%	25,648	- 3,725	- 29,373	-115%	-2%	-30%
Wingecarribee	2014-15	-6%	31,442	- 9,983	- 3,694.66	6,288.34	-63%	7,081	13,369	6,288	89%	-3%	4%
Wentworth	2014-15	-4%	10,642	- 3,685	- 1,556.62	2,128.38	-58%	- 346	1,782	2,128	-615%	-9%	1%
Uralla	2014-15	9%	-8,529	- 1,957	- 3,662.89	- 1,705.89	87%	3,764	2,058	- 1,706	-45%	-2%	-12%
Muswellbrook	2014-15	-2%	7,700	- 3,429	- 1,889.04	1,539.96	-45%	19,960	21,500	1,540	8%	-5%	-1%
Camden	2014-15	4%	-17,958	- 7,990	- 11,581.70	- 3,591.70	45%	80,198	76,606	- 3,592	-4%	-5%	-10%
Byron Shire	2014-15	8%	-26,801	- 4,953	- 10,313.29	- 5,360.29	108%	6,845	1,485	- 5,360	-78%	0%	-7%
Brewarrina	2014-15	-7%	6,475	- 1,687	- 392.06	1,294.94	-77%	113	1,408	1,295	1146%	-6%	5%
Bathurst Regional Council	2014-15	4%	-15,235	- 5,660	- 8,707.08	- 3,047.08	54%	7,023	3,976	- 3,047	-43%	-1%	-5%