RESOLVING THE INFRASTRUCTURE FUNDING CRISIS IN AUSTRALIAN LOCAL GOVERNMENT: A BOND MARKET ISSUE APPROACH BASED ON LOCAL COUNCIL INCOME[1]

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ABSTRACT: Numerous state-based and national public inquiries across Australia have demonstrated conclusively that local councils face almost insurmountable problems in coping with the problem of financing a massive backlog in local infrastructure maintenance and renewal. Various solutions have been advanced to tackle the problem, including the establishment of a federal government local infrastructure fund. In this paper we develop an alternative funding approach based on the issue of asset-backed securities by local councils in the capital markets. Using the case of water and wastewater operations by local councils in New South Wales, we show that local government has access to a relatively attractive asset in the form of municipal income that can form an income stream payable on a fixed-income security issued by the Australian local government sector.

1. INTRODUCTION

Over the past few years, a flood of state-based and national inquiries initiated by various local government associations have demonstrated conclusively that numerous local councils across all state jurisdictions face daunting problems with financial sustainability. The South Australian Financial Sustainability Review Board Report (2005) Rising to the Challenge, the Independent Inquiry into the Financial Sustainability of NSW Local Government ('Allan Inquiry')

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(2006) Are Councils Sustainable, the now defunct Queensland Local Government Association's (LGAQ) (2006) Size, Shape and Sustainability (SSS) program, the Western Australian Local Government Association Report (WALGA) (2006) Systemic Sustainability Study: In Your Hands - Shaping the Future of Local Government in Western Australia and the recent Tasmanian Local Government Association Report (LGAT) (2007) A Review of the Financial Sustainability of Local Government in Tasmania all found that a large number of local councils were financially unsustainable.

Two recent national inquiries into local government have drawn essentially the same general conclusions. The Commonwealth House of Representatives Standing Committee on Economics, Finance and Public Administration ('Hawker Report') (2004) Rates and Taxes: A Fair Share for Responsible Local Government, and the PriceWaterhouseCoopers Report (PWC) (2006) National Financial Sustainability Study of Local Government both established that financial distress was common in all Australian local government jurisdictions.

By far the greatest source of financial difficulties seems to reside in ensuring adequate local infrastructure provision. In this vein, Dollery et al. (2007) have argued that the main burden of financial distress has undoubtedly been borne by deferred local infrastructure maintenance and renewal. This has led in turn to a massive local infrastructure backlog. Everything from local roads and water and sewerage networks to the local community hall appears in need of immediate and expensive attention in numerous jurisdictions. These conclusions echo the findings of the state-based and national inquiries and suggest that urgent steps are required to remedy the problem.

Less certain is the magnitude of the task ahead. Estimates vary widely both within and between the different state jurisdictions. For instance, the Allan Inquiry (2006) into financial sustainability in New South Wales estimated expenditure in the order of $6.3 billion is required to return infrastructure in that state to a satisfactory level and concluded that, against a background of stagnant rates revenue and falling grants income, restoration fell well beyond the financial means of New South Wales local councils.

A similar theme emerged from each of the other inquiries conducted around Australia. In South Australia, requisite expenditure was estimated to be in excess of $300 million (FSRB 2005), in Western Australia around $1.75 billion (WALGA 2006), and in Tasmania $29 million (LGAT 2007), whereas the nation-wide review undertaken by PWC (2006) estimated high, intermediate and low monetary values for Australian local government infrastructure restoration as a whole at about $15.3 billion, $14.5 billion and $12 billion respectively. While there are understandable doubts regarding the veracity of these figures, the nature and significance of the infrastructure funding problem is now universally accepted by all scholars of Australian local government.

Attention has now turned to the most efficacious methods of remedying the problem. Various approaches have been suggested. These options range from judicious borrowing by individual local councils (FSRB 2006; Allan Inquiry 2006; WALGA 2006; LGAT 2007) to the Dollery et al. (2007) and the PWC (2006) proposals for the creation of an infrastructure renewal fund by the

Commonwealth government, given the existence of acute vertical fiscal imbalance in the Australian federation. However, this latter proposal received short shrift in the 2007-08 national budget, with the Commonwealth Minister for Local Government rejecting the idea outright. Furthermore, the history of grants between local and higher levels of government suggests that even if such a fund was created, local councils would be justified on scepticism regarding long-term access to the fund.[2]

Given the magnitude of the local infrastructure financial crisis, and the pressing need to address the problem in a cost-effective and sustainable manner, the question deserves the urgent attention of policy makers, practitioners and scholars alike. Accordingly, in this paper we propose a funding solution to the local infrastructure problem centred on the issuance of asset-backed securities by local government into capital markets along the lines of similar longstanding arrangements in American local government finance. We argue that Australian local government already has access to a relatively attractive asset in the form of rates and charges, which could form an income stream payable on a fixed income security[3] issued by the Australian local government sector. In order to illustrate the nature of our proposal in a concrete institutional context, we concentrate on the infrastructure renewal problem facing the water and wastewater operations of local councils in New South Wales.

The paper itself consists of five main sections. Section 2 outlines the infrastructure renewal problem currently facing local government in New South Wales, with particular attention paid to the water and wastewater sector. Section 3 provides a synoptic description of the system of municipal bond finance employed in the United States that could be simulated in Australian local government. Section 4 sets out the relevant principles embodied in our approach relating to the cost of capital and the structure of asset-backed securities. Against this background, section 5 considers the estimated cost of long-term debt that might be raised by local councils through the issuance of a suitable asset-backed security. The paper ends in section 6 with some brief concluding remarks.

2. INFRASTRUCTURE RENEWAL IN NEW SOUTH WALES LOCAL GOVERNMENT

The Allan Inquiry (2006) painted a disturbing picture of the asset maintenance and renewal problem facing local councils in New South Wales. The Inquiry (2006, p. 13) observed that 'studies commissioned by the Inquiry

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[2] The notable exception to this is the Roads to Recovery Programme which provides funds directly to local government from the federal government for the renewal of local roads. Indeed, the Dollery et al. (2007) proposal was modelled on adopting this programme for all local government infrastructure.

[3] A growing trend in the marketing of asset-backed securities is to offer a variable rather than fixed income stream (Gitman, Juchau and Flanagan, 2002). While we propose a fixed interest security in this paper, it is unlikely to influence the quantitative results. The underwriter could convert the yield from a fixed to floating rate by accessing the swap market.

estimate that overall under-spending on infrastructure renewal has been of the order of $400 to $600 million per annum' and that 'it would cost over $6.3 billion to restore these assets to a satisfactory condition', with an additional $14.6 billion required to replace existing infrastructure assets over the forthcoming 15 years. This estimate did not include the new infrastructure required to accommodate 'a growing and shifting population'. Moreover, the problem was not uniformly distributed across the state with seven percent of rural councils and 25 percent of urban councils 'renewing less than 30 percent of the infrastructure that should be replaced each year'. In addition, whereas 'only one in five councils are managing infrastructure risk via asset or risk management plans', only around 'five to 37 percent of any asset class within councils is subject to asset management planning'. This implied that the risk of exposure faced by individual local councils is increasing as assets deteriorate.

In the view of the Inquiry, these bleak circumstances should be addressed as a matter of urgency. The Inquiry recommended that local councils borrow $3.8 billion to meet the infrastructure backlog, not including water and sewerage infrastructure that could be separately financed by existing charges. In addition, local councils should 'raise an extra $900 million per annum in revenue to both close the renewals gap ($500 million) and meet the new debt charges ($400 million). Finally, local authorities should seek an extra $900 million in revenue through $200 million in augmented grants ($100 from the Commonwealth plus $100 million from the New South Wales government), $200 million in 'council expenditure savings' and $500 million from higher rates, fees and charges (Allan Inquiry 2006, p. 28). Since neither additional grants income nor the abolition of rate-capping has been forthcoming, the solution proposed by the Allan Inquiry has little hope of coming to fruition.

According to work undertaken for the Allan Inquiry by Roorda and Associates (2006, p. 25), viewed as a whole, the water and wastewater business entities of local government in New South Wales (known colloquially as Local Water Utilities (LWU)) have accumulated an infrastructure renewal backlog to the order of $955 million. Details regarding the exact breakdown of the backlog are limited. For example, Roorda and Associates (2006) does not specify the proportion of this funding that is required for pipeline replacement, the repair of treatment plants, etc. Furthermore, the method used to calculate the monetary value of the infrastructure backlog has been called into question (see, for instance, Maxwell (2006)). Nevertheless we need to accept the Roorda and Associates (2006) estimate as the best currently available. However, the Department of Water and Energy (DWE) - the New South Wales government agency with responsibility for the regulation of LWUs - did not reject the estimate of $955 million. Indeed, it pointedly argued that LWUs had already put in place policies to manage capital expenses in the future, thereby implicitly acknowledging the existence of a substantial renewal gap.

Despite the gravity of the situation, local infrastructure renewal cannot be completed over a relatively short time horizon; careful planning and adequate cost/benefit analysis are required to determine the net benefit of renewing local infrastructure to the local community in question before any program can be

implemented. Moreover, undertaking any major construction project over a relatively short period of time is likely to result in higher construction costs and thus impose an even greater long-run financial impost on the local community that must eventually pay for the infrastructure.

In response to the findings of the Allan Inquiry (2006) in so far as they related to LWUs, the (then) Department of Energy, Utilities and Sustainability (DEUS) noted that the infrastructure renewal gap was in fact fully funded, since LWUs held investment and cash reserves of around $1.1billion to fund the renewal task. In addition, DEUS argued that most LWU's had set average residential bills for their services that would fund on-going capital and operating expenses over the next thirty years (Allan Inquiry 2006, p. 120). If this argument was accepted at face value, then one might be tempted to conclude that there is no need to remedy the situation through direct borrowing, a federal government infrastructure renewal fund, capital raised in the bond market, or any other proposed approach. However, as we demonstrate in more detail in section 5 below, the relatively low default risk on a bond issued by local government is likely to result in a cost of capital relatively less than the risk adjusted returns that could be earned by local government through the investment of funds set aside for infrastructure renewal in a balanced portfolio. As a consequence, it may be rational for LWUs to raise funds through a bonds issue despite the fact that they already have investments and cash in excess of the identified expenditure requirement.

A second related consideration in this regard is the concept of intergenerational equity (Auerbach and Lee 2001). It can be argued that intergenerational equity principles will be violated if the current generation of water and wastewater service consumers in New South Wales were to entirely fund infrastructure renewal through higher charges, when subsequent generations will benefit from this asset renewal process. In order to apportion the infrastructure renewal expense across those generations that are likely to benefit from the renewal, it seems more equitable to fund this investment through borrowings to be repaid over the life of the renewed assets. In any event, DEUS explicitly called for LWUs to consider greater borrowings to fund capital investment (DEUS 2006).

The problem of funding water and wastewater infrastructure renewal is not confined to local government alone since in some states these functions are not run by local councils. For instance, the Water Services Association of Australia (WSAA 2007) estimated that around $30 billion of water infrastructure investment is required over the next five to ten years. Accordingly, the funding model proposed in this paper may be extended to water and wastewater utilities that are not owned by local government. These utilities presently exist in both Victoria and South Australia, and Queensland is on the verge of a substantial re-organisation of the industry involving the transfer of ownership of much of the water infrastructure network to the state government. In addition, almost every water and wastewater utility that services the capital cities of Australian states and territories is owned by the relevant state government.

The Commonwealth Department of Prime Minister and Cabinet (DPMC)

(2006) issued A Discussion Paper on the Role of the Private Sector in the Supply of Water and Wastewater Services in August 2006 that explored options for greater private sector involvement in the supply of urban water and wastewater services. It argued that more emphasis should be placed on private entities gaining access to existing networks to provide the traditional services offered by urban water utilities. The rationale outlined in the Discussion Paper focussed on reduced average costs through efficiency gains. However, as the Discussion Paper noted, the substantial sunk costs associated with either constructing infrastructure or gaining access to existing infrastructure are a significant barrier to entry for the private sector. This is particularly acute for cases where water charges are set on the basis of marginal cost pricing principles. The Discussion Paper did not broach the subject of using private capital raised by means of financial instruments, despite the fact that 'there is a significant amount of private capital available for infrastructure investment' (DPMC 2006, p. iv).

3. AMERICAN LOCAL GOVERNMENT INFRASTRUCTURE FUNDING

In the United States, state and municipal governments have a long history of issuing debt instruments in order to raise funds for both general obligations and project finance. This class of bonds are commonly referred to as 'municipal securities'. A unique feature of municipal securities issued in the United States has been the tax-exempt status accrued of interest payments. This obviously made this form of investment relatively more attractive in the eyes of investors. While tax advantages continue to be an important element of municipal debt instruments, successive American federal and state governments have progressively wound back tax exemption legislation in an effort to increase tax revenue steams (Hildreth 1993).

American municipal securities can be classified into two distinct groups. The first category encompasses tax-backed debt; a bond issued by municipal governments secured by their future tax revenue. In the context of this paper, a special type of instrument in this class known as a 'double-barrelled in security' is particularly important, since the revenue stream backing the asset is comprised of general tax revenue and income generated by a particular class of tax or charge (Fabozzi 2000).

The second category of American municipal bond - the so-called 'revenue bond' - is secured by the revenues generated by a particular project or business unit. This type of revenue bond is typically classified according to the source of revenue stream used to finance the bond. Examples include utility revenue bonds, seaport revenue bonds and transportation revenue bonds (Fabozzi 2000).

The process of issuing municipal securities in the United States involves a number of participants. It is customary for local governments (i.e. the ultimate issuer) to sell a debt instrument to an underwriter, a role typically filled by an investment banker. The underwriter then resells the security to investors. As a consequence, the investor receives coupon payments, typically on a semi-annual basis. While it is the issuer that ultimately pays the coupon, the means by which the coupon is paid differs. In some instances a trustee arrangement may be

established into which revenues from local government are placed in order to service coupon payments. Finally, sound legal advice is crucial to ensure that the financial instrument satisfies all relevant regulatory requirements (Hildreth 1993; Fabozzi 2000).

The multiple participants involved in the process each extract fees, which results in the final quantum of funds raised per bond being less than the face value of the bond. Minimising fees is therefore an important consideration in the capital raising process.

Hildreth (1993) has noted a trend shift away from issuing tax-backed debt to revenue bonds backed by funds generated by specific projects. This switch was attributable to attempts by American municipalities to avoid the stringent borrowing regulations imposed on tax-backed debt issuances (such as seeking voter approval in referenda).

The American experience of fund raising using municipal securities has not been without its problems. For example, Feldstein and Fabozzi (1987) have pointed to the difficulties arising from the fact that many municipal securities have 'rate covenants' related to how user charges can be set in regulated environments, which complicates the task of credit analysis by market participants. Similarly, 'priority of revenue' covenants also often generate a hierarchy of claims on municipal income, where other parties can legally extract funds from municipal revenue before bondholders. However, despite these problems, the American market has worked well (Beers and Cavanaugh, 1997).

It is thus clear that whereas local government in Australia has not traditionally accessed the capital market directly for funding, comparable levels of government in the United States have been following this practice for years. This demonstrates that our proposal for Australian local councils to seek funds in capital markets to finance the infrastructure backlog is feasible. Adequate funds for New South Wales LWU infrastructure restoration and investment could be raised by means of the issuance of debt instruments since this is not only already accepted practice in the United States, but it also generates sufficient levels of funding.

A final caveat is necessary. The sources of finance differ between Australian local government systems and its American counterparts. In particular, many American local government jurisdictions can employ local income taxes and local sales taxes, which represent 'growth taxes' in circumstances of a growing economic growth, a fact recognised by the investment community. By contrast, Australian local government enjoys no analogous growth tax. This obviously means the absolute magnitude of borrowing of the kind outlined in this paper would be smaller than that available in the United States. However, as we demonstrate, the method we propose would still have the capacity to cover the infrastructure backlog in Australian local government.

4. COST OF CAPITAL AND STRUCTURE OF ASSET-BACKED SECURITIES

Having examined the general nature of the financial problem facing Australian local government in terms of infrastructure maintenance and renewal,

and established that debt issuance is common practice for American local government, we now briefly review the relevant principles of debt financing underlying the municipal bond approach developed in this paper.

The cost of debt to a firm essentially equates to the required rate of return to attract the required funds to the firm in question (Institute for Research into International Competitiveness (IRIC) 2003). One measure of the cost of debt is the debt margin that must be offered by a firm to entice investors to purchase a risky debt instrument from the firm. The margin is expressed in terms of the spread between the risk-free rate paid on a government security and that paid on the risky bond. Recent regulatory decisions regarding pricing by the water sector in Victoria applied a debt margin of 1.1 percent. This was the equivalent of giving the utilities in question a credit rating of BBB+ (Essential Services Commission (ESC) 2004).

An alternative approach is to approximate the cost of debt, making use of the formula outlined in equation (1.1) (Gitman et al. 2002). However, it is still necessary to assume an appropriate interest rate (I) necessary to attract investors:

$$k_d = \frac{\mathrm{I} + \dfrac{PV - N_d}{n}}{\dfrac{N_d + PV}{2}} \tag{1.1}$$

where:

k_d = before-tax cost of debt;
I = annual interest in dollars;
PV = par value of bond:
N_d = net proceeds from the sale of debt (bond); and
n = number of years to the bond's maturity.

In essence, this approach approximates the cost to the issuer of raising debt in terms of the interest payment to be made each year relative to the amount raised by the issue of the bond. The advantage of this approach is that it allows for transactions costs to be incorporated into the calculations.

In section 5 we propose the issuance of an asset-backed security by New South Wales LWUs, where the investor's claim is on the revenue stream of the LWUs. Asset-backed securities have a number of unique features which can affect the marketability of the security. We now consider the more important generic characteristics before proceeding to the specification of the security to be issued by LWUs.

Asset-backed securities (ABS) were first issued by mortgage banks in the United States, but have since been applied to corporate financial operations with equal success. The basic concept of an ABS is to create a bond for the raising of capital that is backed by a claim on a particular asset, rather than all the assets of an entity. For example, a bank can create a bond that is backed by claims to a particular portfolio of loans rather than the entire asset base of the bank (Fabozzi 2000).

To ensure this claim is only directed against a particular asset, it is customary for the asset to be sold to an entity separate from the issuer. The entity is usually called a Special Purpose Vehicle (SPV). The ABS thus is issued not by the bank, but by the SPV. Historically, the primary advantage of this approach to banks resided in the fact that the asset was removed from the balance sheet, thereby allowing banks to reduce their regulatory capital holdings (Choudhry et al. 2005).

A second advantage derived from establishing an SPV is that the credit rating attached to the bond issued by the SPV is entirely related to the SPV rather than to the underlying issuer. Accordingly, a firm that might be given a BBB credit rating when issuing debt in the corporate bond market can raise the capital via an SPV that has an AAA credit rating. The higher credit rating can usually be attained through credit enhancement features such as bond insurance and so-called 'senior/subordinate' structures within the bond issued by the SPV[4] (Fabozzi 2000).

The process of securitisation is conceptually similar to that followed by municipalities when issuing revenue bonds as outlined earlier. There is usually an originator who sells the asset to the SPV. The SPV then issues bonds to investors, backed by the asset held by the SPV. In the case of a mortgage-backed security, the asset transferred to the SPV includes interest payments on the mortgage. In the case of other assets, such as utilities, revenue streams that service coupon payments will also need to be transferred to the SPV (Choudhry et al. 2005).

In the current context, it is unlikely that LWUs would need to make use of an SPV in order to generate a lower credit rating on the bond. The fact that the bond would most likely be issued by the New South Wales Treasury Corporation, combined with the nature of the revenue flows from LWUs, would ensure a relatively high credit rating would be secured. However, the ability of an SPV to package income streams from a diverse spread of LWUs, with differing credit qualities, makes the use of an SPV especially attractive. In particular, the Treasury Corporation could construct an SPV into which the reserve for asset maintenance currently held by LWUs could be sold. The SPV would then establish a revenue fund into which an agreed quantum of income from LWU's turnover could be deposited per annum. Coupons on the bonds issued by the SPV would be paid out of this fund. Thus, the SPV would act as a conduit through which a varied mix of LWUs could raise capital at a uniform yield, and presumably at a lower yield on average than would otherwise be the case had individual LWUs sought to access the capital market directly on an individual basis. Furthermore, since advice is only required on the bond issuance from the SPV managed by the Treasury Corporation, management expenses

[4] Although recent upheaval in the asset-backed commercial paper market may suggest future use of SPVs is likely to be curtailed, this should be judged in a relative sense. Of long-term non-government bonds on issue in Australia, asset-backed securities represented around 35 percent of the market as at June 2007, the largest proportion of all asset classes in this market. In fact, asset-backed securities have held this position since around 1996 (Reserve Bank of Australia (RBA) 2007a).

could be held to a minimum.

5. AN ASSET-BACKED SECURITY ISSUED BY LOCAL WATER UTILITIES

In this section, we attempt to calculate the approximate cost of long-term debt to LWUs making use of equation (1.1) in light of the probable fact that a $955 million infrastructure backlog existed in New South Wales local government infrastructure funding. Our aim therefore is to estimate the cost of raising $955 million, assuming transactions costs associated with the issuance of the bond equal two per cent of the face value of the bond. For convenience, we assume a par vale on each bond of $1,000, requiring a total of 955,000 bonds to be issued.

While a specific estimate of the debt margin pertaining to this particular security was not made, we assume that an asset backed by cash flows from utilities owned by local government and issued via the relevant state government debt office will not require a substantially higher rate of return than a risk-free asset. Given a spread on 10-year New South Wales Treasury Corporation bonds over Commonwealth Government Securities (with a current yield of 6 per cent) of equal maturity equal to 54 basis points (Reserve Bank of Australia (RBA) 2007b), it seems reasonable to suggest a yield of seven per cent would prove sufficient compensation to investors. This results in an annual coupon payment of $70. Finally, the bond will be issued with a maturity of 10 years and, for the sake of simplicity, we assume the bond devoid of any put or call options. Substituting the values from Table 1 into equation (1.1), we arrive at a cost of debt, k_d , equal to 7.27 per cent.

Table 1. Parameters for cost of capital approximation

Inputs	
Capital to raise	$955,000,000
Par Value (*PV*) of bond	$1,000
Interest cost in dollars (I)	$70[a]
Net proceeds from bond (N_d)	$980
Coupon periods (*n)*	10

$$k_d = \frac{70 + \frac{\$1{,}000 - \$980}{10}}{\frac{\& 980 + \$1{,}000}{2}}$$

k_d = 0.0727 or 7.27%

Notes: a. Implies a coupon of 7 percent on a bond with a *PV* of $1000.

LWU's would be able to use this as a comparative rate when investigating the viability of alternative funding arrangements, such as securing finance from a financial institution. In particular, individual LWUs could approach financial

institutions to determine the relative cost of capital from individual borrowing, rather than the collective approach outlined here. It seems likely that some LWUs may be able to enter a conventional loan arrangement with a bank at a relatively lower cost of capital, while others would be faced with the opposite outcome.

Of crucial importance to the success or otherwise of the debt issuance is the ability of the LWUs to service both the annual coupon payments and repayment of the principal upon maturity. We examine each issue separately, beginning with coupon payments.

The coupon funding requirement is equal to the product of the number of bonds on issue and the coupon paid on each bond. Assuming that the issue was fully subscribed, annual aggregate interest expense is equal to $66.85 million. This of course is expressed in nominal rather than real terms.

According to the DEUS (2006), the aggregate turnover of LWUs for the financial year 2004-05 was $850 million, excluding grants received for capital works. DEUS also reported that the average operating, maintenance and administration (OMA) expense per property for all LWU's was $530. With connected properties totalling 790,000 for the sector in 2004-05, this equates to an aggregate OMA expense of $418.7 million. Thus, subtracting OMA expenses from aggregate turnover of LWUs leaves $431.3 million per annum to fund coupon payments. While this is no doubt a crude approximation of 'surplus' revenue available to meet annual coupon expenses, this calculation may actually overstate the true OMA since maintenance expenses are likely to decline following infrastructure renewal.

As outlined in section 2, DEUS estimated that aggregate financial assets held by LWUs for the purpose of asset renewal at $1.1 billion. If an SPV was to be used as the conduit by which bonds were issued, this fund would be transferred to the SPV in order to retire the debt at maturity. Thus, principal repayment at maturity is more than adequately covered by the assets to be held by the SPV.[5]

However, the trustee of the SPV would presumably seek to invest the funds in an optimum portfolio of risky and risk-free assets. Assuming this, and an average annual return on that portfolio of 10 percent,[6] and reinvestment of interest income at that rate, the market value of the portfolio after 10 years would be $2.85 billion. Following repayment of bonds on maturity, the net increase in portfolio value equates to $1.89 billion. On the assumption that the fund was invested at the current risk-free rate on a 10 year bond (i.e. six per cent), the market value of the fund at maturity would be $1.97 billion, resulting in a net increase in the market value of the fund equal to $1.01billion. When compared to the aggregate fixed coupon payments of the debt issuance of $668.5 million, LWUs are financially advantaged through the funding of infrastructure renewal via long-term debt rather than retained equity.

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[5] We ignore taxation implications for the sake of expositional clarity.

[6] The Essential Services Commission (ESC 2004) suggested a market risk premium in Australia of 6 per cent (in nominal terms) was reasonable, given that a number of Australian regulatory bodies such as the Australian Competition and Consumer Commission had relied on this in recent determinations.

The approach outline above is deliberately simple for the sake of expositional clarity. It is most likely that LWUs would not raise the entire $955 million from a single market issue for two reasons. First, it would be very difficult to undertake the renewal task in one year, given the considerable logistical hurdles of such an exercise. Second, interest expense would be unnecessarily inflated by borrowing funds before they are required to fund expenses. An alternative approach is to establish a revolving facility through which bonds are issued periodically to match expenditure requirements. A second option is to issue bonds to the value of $955 million but with differing maturities.[7]

An important element relating to the success or otherwise of any financial instrument is its marketability. Although the relatively risk-free nature of the municipal bond outlined above may prove attractive to a wide range of investors, portfolio managers of managed funds may find this bond particularly appealing. For at least the last two years, there has been growth in the number of managed funds providing either partial or full exposure to the global water industry sector. For example, in April 2007, Macquarie Bank issued the 'Macquarie Global Water Index' (Macquarie Bank 2007) and the Australian fund manager MFS Group launched the 'MFS Water Fund'. The MFS fund is intended to provide investors with exposure to 'a broad and diverse range of water and water-related businesses including utilities, infrastructure and technology companies and the owners of water assets and water rights' (MFS Group 2007).

The funds appear to mostly consist of equity holdings in water-related entities. For example, the Macquarie Global Water Index has 13 publicly-listed companies with a combined market capitalisation of $US60 billion. However, a central tenant of modern portfolio theory resides in the principle of reducing systemic risk through diversification, particularly through the addition of securities that are not correlated with the broader market. Given this principle, it may well be the case that an existing market, formed by the growing number of managed funds seeking exposure to the water sector, is in place for the private placement of the ABS proposed in this paper.

It should be obvious that the major risk to this asset is a change in the cash flows emanating from the water and wastewater businesses operated by local councils. While this risk is unlikely to be correlated with the returns on a portfolio of risky financial assets, since demand for the services of LWUs is relatively income inelastic (see, for instance, Hoffman et al. 2006), at least two risks nonetheless remain. First, despite the relative income elasticity of the revenue stream underlying this bond, investors may still hold reservations regarding the probability of LWUs failing to transfer the revenue stream into the SPV. While the chances of this occurring appear low,[8] investors may

[7] A recent water revenue bond issued by Cascade Water Alliance (2006), located in the state of Washington in the United States, raised $US55 million through a bond issue that included securities with maturities ranging from one to 25 years.

[8] An additional advantage to funding infrastructure renewal via a debt instrument relates to the discipline debt obligations can place on managers. Given an on-going obligation to fund a portion of coupon payments from the revenue of water and wastewater businesses,

nevertheless demand a slightly higher yield as compensation. Approaches to underwriting or guaranteeing municipal bonds in the United States suggest a possible remedy to this risk.

In the state of Virginia, the bond guarantee programme authorises the Governor to withhold grants to municipalities that default on debt obligations. The grant revenue is diverted to pay interest or principal to the municipality's bond holders (Fabozzi 2000). This raises the question as to whether the federal and/or state governments would be willing to enter into a similarly styled arrangement. For example, the federal government could stipulate that the necessary portion of Financial Assistance Grants paid from the federal government to local councils (via the states) must first go toward payment of coupon obligations of defaulting LWUs. Of course, the trustee of the SPV may be willing to arrange a credit enhancement feature, such as a line of credit, from a private sector financial institution as an alternative.

Second, a vigorous policy debate continues in Australia as to the most appropriate pricing regime for urban water and wastewater services (see, for instance, Watson (2007) and Dwyer (2006)). While it is common place for editorial pages of the popular press, politicians and even some academics[9] to call for water utilities to charge higher water prices to reflect 'scarcity', others (most notably the NSW Independent Pricing and Regulatory Tribunal (2005)) argue that water should continue to be priced at the marginal cost of the next litre supplied. Others[10] recognise that prices will 'inevitably' rise to fund infrastructure projects aimed at augmenting supply, or at least plugging a few leaks in the network! In contrast, Dwyer (2006) argues that the price paid per kilolitre of water should fall, since regulators set prices to include a return on capital (the physical infrastructure) never actually financed by water utilities.

While these authors are united in their suggestion that pricing policies should pay due respect to the principal of economic efficiency, a recent decision by the Victorian Premier (Brumby 2007) has made way for equity considerations to be included in the mix. A review of water charges in the city of Melbourne by the ESC (the relevant regulator) has been suspended. The rationale for this intervention was that water prices charged by the three water retailers in Melbourne were rising, but at different rates. While economic theory would suggest this may actually be an efficient outcome due to differences in underlying cost structures for each of the retailers, it would appear that the Premier places considerable weight on the equity implications of such an outcome.

Clearly, a degree of uncertainty regarding the future trajectory of water charges remains. Governments and regulators would do well to consider the implications. In the eyes of financial markets, uncertainty equates to risk, and the higher the risk associated with the returns of a financial asset, the higher the

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Council managers and/or councillors may have less scope to divert funds from these commercial operations in order to cross-subsidise politically motivated expenditures.

[9] Grafton and Kompas (2006) and Young et al. (2007) have proposed higher urban water prices to reflect the 'scarcity' value of water.

[10] See, for instance, WSAA (2007).

required return. Logic would suggest it is reasonable to assume that the current policy uncertainty regarding the principles by which water prices should be set may contribute to relatively higher costs of capital for regulated utilities.

6. CONCLUSION

We have seen that a series of state-based and national inquiries into the financial sustainability of Australian local government has demonstrated conclusively that a large number of local councils in all Australian state and territory jurisdictions suffer an acute degree of financial distress. Moreover, the brunt of this financial problem has been borne by local infrastructure through inadequate maintenance, renewal and investment, although estimates of the actual magnitude of the shortfall vary widely.

Various solutions have been proposed to ameliorate the problem, including a combination of debt finance, the abolition of rate-capping, higher fees and charges, augmented intergovernmental grants and council expenditure reduction (Allan Inquiry 2006) and the creation of a federal local infrastructure fund (Dollery et al. 2007; PWC 2006). In this paper we have advanced an alternative approach that draws on successful institutional arrangements already in place in American municipal debt finance markets. We contend that discrete local government business enterprises, like LWUs in the case of New South Wales local government, could use the stream of income that they raise through fees and charges to fund a low risk bond issue on Australian capital markets that would yield sufficient funds for infrastructure investment at the minimum feasible interest rates and transactions costs. Quite apart from the financial benefits our scheme would realise in terms of cheaper long-term capital, it also addresses the problem of intergenerational equity ignored by the proposals advanced by the Allan Inquiry (2006), Dollery et al. (2007) and the PWC Report (2006).

We have sought to illustrate the feasibility of our scheme using the specific institutional context of New South Wales local government and the LWU business entities owned by New South Wales local councils and their need to raise $955 million to meet their reported infrastructure backlog. While the figures we used in our calculations are indicative rather than prescriptive, they nevertheless approximate the real market data that would pertain in an actual debt issue. The results of this exercise show that our scheme would generate a relatively bountiful and cheap source for the LWU entities owned by councils and thereby effectively address the current local infrastructure renewal crisis in that sector.

We have also argued that a growing market has emerged in managed funds exposed to the water sector. This potentially represents an existing market into which the proposed ABS could be privately placed. However, uncertainty surrounding the policy principles to guide regulators in the determination of water prices represents a significant risk to the successful placement of the municipal bond proposed in this article.

Finally, while this article has demonstrated that it is feasible to make use of a revenue bond in the context of Australian local government, a similar argument

in support of a 'tax-backed' bond has not been advanced. This was a deliberate omission since recent inquiries into the financial status of local government in Australia have noted that local councils are reliant upon a relatively 'slow growth' tax to fund general expense obligations (see, for instance, Allan Inquiry (2006) and PWC (2006)). In order to successfully market a tax backed bond, local government finance would most likely need significant reform, perhaps in the form of access to a growth tax such as the Goods and Services Tax.

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