Intergenerational equity: treatment of infrastructure in local government financial planning

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Abstract

This paper considers how local government authorities plan and financially provide for infrastructure while considering the needs of current and future communities. In New Zealand the *Local Government Act 2002* provides a base for local authority planning, which is articulated in the Long Term Council Community Plans (LTCCPs). Content analysis of the LTCCPs of five local authorities shows that generally local authorities are consciously making decisions about infrastructure with an awareness of intergenerational equity, with this being to a degree despite accounting information. There is also a large degree of consistency between local authorities, indicating the existence of good practice.

Key Words: intergenerational equity; local government

Introduction

The scale of public sector investment in infrastructure is substantial, and maintenance of infrastructure can be a material component of public sector expenditure (Walker et al., 2000). Pallot (1997) suggests that infrastructure assets form approximately 70% of New Zealand local government assets. Infrastructure assets, by their very nature, are expected to remain in place for a significant period of time, often through multiple generations, and provide the base services upon which a community operates (NZIER, 2004).

The New Zealand *Local Government Act 2002* (LGA 2002) introduces the concept of intergenerational equity. The Act defines the purpose of local government as '(a) to enable democratic local decision making and action by, and on behalf of communities; and (b) to promote the social, economic, environmental, and cultural well-being of communities, in the present and for the future' (LGA 2002, s10).

Accounting information informs the link between infrastructure and intergenerational equity by providing the basis for financial decision making and financial planning. However there are questions as to whether government accounting can 'measure the costs of infrastructure service provision in a generationally unbiased way' (McCrae and Aiken, 2000, p. 266).

The New Zealand Government's inquiry into local government rates determined the drivers of local authority expenditure to be: the costs of infrastructure (encompassing construction costs, depreciation and interest), unfunded or inadequately funded mandates from central government, and increases in community expectations. The provision of infrastructure, particularly roading, was considered to be the key driver of

expenditure (Rates Inquiry, 2007). McCrae and Aiken (2000) assert that 'the sheer size of the funding requirements, the social impacts and the political significance associated with infrastructure projects, is sufficient to ensure that inter-generational funding and tax burden issues are a fundamental issue for financial disclosure' (p. 269).

Given the size and importance of infrastructure expenditure, together with the potential effects on intergenerational equity, the question arises: 'How do local authorities plan and financially provide for infrastructure, while taking into account the need to consider present and future communities?' This research addresses this question within the context of financial planning, financing and accounting, and the requirements of the LGA 2002, in order to identify: inconsistencies of practice, problems with the underlying accounting concepts, and good practice.

Prior literature

This review commences by defining intergenerational equity and infrastructure. Next the most recent legislation governing local government is reviewed, leading to accounting issues relating to infrastructure and local government.

Intergenerational equity

The concepts of sustainable development and intergenerational equity are highlighted in the ubiquitous definition in the Brundtland report, which contends that development is sustainable when 'it meets the needs of the present without compromising the ability of future generations to meet their own needs' (United Nations, 1987, Clause 27). 'Intergenerational equity', although a widely used term does not easily lend itself to a single common definition, with its understanding being

related to the context in which it is used. Conversations about intergenerational equity occur in many contexts including: environmental, where issues include global warming, climate change, exhaustible resources and diversity of species (OECD, 2001, Earth and Peace Education Associates, 2003, United Nations, 1987); economic, where issues include age related expenses (Thompson, 2003), fiscal equity and infrastructure provision (McCrae and Aiken, 2000); and social and legal contexts (United Nations, 1987). What is common is the call for balance or 'partnership' between present and future generations (Earth and Peace Education Associates, 2003) and the requirement for 'fairness' in distribution (OECD, 2001, Warren, 2004). Thompson (2003) asserts that the issues of intergenerational equity are not merely fiscal or technical economic questions but are 'philosophical questions that engage ethical concerns about distributive fairness and justice, and the nature of our moral obligations to future generations' (p. 1; also Auerbach et al., 1994). Thus intergenerational equity can be defined as achieving a fair, ethical balance of costs and benefits between present and future generations.

Infrastructure

Infrastructure is 'the basic physical and organizational structures (e.g., buildings, roads, power supplies) needed for the operation of a society or enterprise' (Compact Oxford Dictionary, online), and providing services or inputs to other productive processes (NZIER, 2004). Infrastructure falls into three different categories: (1) economic or physical infrastructure, that is, physical assets used to provide services to production and to provide final consumption (Chapman et al., 2003); (2) social infrastructure, for example, education and health systems; and (3) institutional

infrastructure, such as capital markets and the legal system (NZIER, 2004). The focus of this research is on economic infrastructure, that is, physical infrastructure.

Infrastructure possesses particular characteristics including: high initial fixed costs and low marginal cost of supply; capacity adjustment only being able to occur in large 'lumpy' increments; high levels of sunk cost; risk of assets not being required as conditions change; multiple users of the services spanning production and final consumption; and scale and regulatory hurdles possibly creating long lead times for installing new capacity (NZIER, 2004). A key feature of infrastructure is the difficulty of finding substitutes for the services provided, and consequentially infrastructure service failures have the potential for widespread disruption impacts[1] (NZIER, 2004, Pallot, 1997). Other issues regarding physical infrastructure are the long, if not indefinite, life of some infrastructure and the potential for technological change to affect infrastructure by reducing the size of incremental costs or providing alternative forms of infrastructure (Chapman et al., 2003).

Infrastructure assets represent obligations society chooses to impose upon itself, as the means of providing services which society views as necessary. This implies future service potential, with the expectation costs being shared equitably across generations of users (McCrae and Aiken, 2000). This future orientation raises the issue: 'In what state should the infrastructure be maintained to pass onto future generations?' McCrae and Aiken (2000) claim that, because infrastructure assets

[1] An example of this was the failure of the electrical supply in Auckland in June, 2006: it was reported to have impacted 700,000 people and affected areas including hospitals, schools and universities (with some exams being postponed) , industry, commuter rail operation and traffic control. ('Power slowly being restored …', 2006)

incorporate the potential for service provision into the future, maintenance and renewal should occur 'so they are passed on to future generations of users in a comparable form to their inheritance' (p. 276).

In the context of this research, infrastructure assets are seen as physical infrastructure assets utilised within local government, adopting the LGA 2002 definition of network infrastructure, 'the provision of roads and other transport, water, wastewater, and stormwater collection and management' (s197). This review now considers the legislation governing local government, as it relates to intergenerational equity, infrastructure and planning.

Local government legislation in New Zealand

In 2000 the New Zealand Government initiated a review of the legislation regulating local government in New Zealand. At that time the major statute constituting local government was the Local Government Act 1974. In addition to the principal Act, 37 amending or supporting Acts were in existence. Firstly the government issued a Statement of Policy Direction for the review process (NZ Government, 2000) which suggested guiding principles. This statement placed emphasis on both the localness and the governmental characteristics of local government. The purpose of local government was summarised as facilitating “sustainable development for people and their environments through: the balanced pursuit of social, economic, and environmental objectives; and a focus on the wellbeing of future as well as current generations” (p. 6). This was the first time the concept of intergenerational equity was introduced into possible local government legislation. The review culminated in the *Local Government Act* 2002, which is now the principal legislation concerning local government in New Zealand.

According to the LGA 2002, the purpose of local government is 'to enable democratic local decision-making and action by, and on behalf of, communities; and … to promote the social, economic, environmental, and cultural well-being of communities, in the present and for the future' (s10). The principles of local government are mandated as: operating in an open, transparent and democratic manner; giving effect to identified priorities; having awareness of and taking account of diverse groups; providing for the interests of future generations as well as current communities; and operating with prudent stewardship and efficient use of resources (s14).

In order to determine community priorities and to provide a basis for long term planning s93 introduces the concept of the Long-Term Council Community Plan (LTCCP), which is expected to: describe the activities of the local authority, describe expected community outcomes; provide a base for integrated decision making; provide a long term focus; and provide a basis of accountability to the community. LTCCPs are required to plan at least 10 years into the future, and are reviewed at least triennially. Given their long-term orientation LTCCPs provide significant planning information with regard to community requirements, including infrastructure. LTCCPs are supported by annual plans which provide short term planning detail (s95) and annual reports which report on actual performance compared to the LTCCPs and the annual plan (s98 2 a). LTCCPs, annual plans, and annual reports combine to provide a short and long term planning framework together with a reporting and accountability mechanism.

While the LGA 2002 is principles-based, it does have specific requirements covering financial management. Section 100 requires a balanced budget, including specific links to the community outcomes as defined by the LTCCP, such as the cost of

maintaining an asset's service capacity and integrity throughout its useful life, and the equitable allocation of funding of service provision through the life of the asset. Prudent financial management is required (s101), including consideration of future community needs. Specific financial management policies are required: funding and financial (s102), revenue and financing (s103), liability management (s104) and investment (s105). While the need for policies and general content are specified, specifics and detail are left to the local authority to determine.

Accounting and financing issues of infrastructure assets

The *Local Government Amendment Act (No 2), 1989* fundamentally changed accounting for local government, introducing the requirement for reporting based on accrual accounting. This requirement was continued in the LGA 2002 requiring all financial information to be prepared using generally accepted accounting practices (s111). McCrae and Aiken (2000) question whether government accounting based on commercial accounting concepts and principles can measure the costs of infrastructure service provision in a generationally unbiased way, as they are based on a private property concept that is inappropriate and too short term for many infrastructure assets.

Significant accounting and financing issues exist in regard to infrastructure assets. There are a number of areas of debate: the valuation of infrastructure assets; the issues of recognition and treatment of depreciation; recognition and treatment of deferred maintenance; and financing of infrastructure assets. Pallot (1997) and Walker et al. (2000) specifically highlight the potential for intergenerational equity to be affected though non-transparent accounting manipulations relating to infrastructure.

Valuation

To enable calculation of depreciation or amortisation, it is necessary to have a base value. With infrastructure assets having potential for service over several generations (McCrae and Aiken, 2000) and with the lack of a market value (Pallot, 1997), it is difficult to establish the appropriate base value. The New Zealand Equivalent to International Accounting Standard 16 (NZ IAS 16 – NZICA, 2004) allows entities to select whether they carry assets at historical cost or revalue them (para. 29), the latter being normal practice. NZ IAS 16 allows different approaches to determining the fair value of the assets (and hence any related revaluation or devaluation), including: a market based approach, an income approach, and a depreciated replacement cost approach. In the case of infrastructure assets, both the income and market approaches struggle for validity, given the lack of comparative market data and the nature of infrastructure requiring annual expenditure rather than producing income. This leaves the possibility of using the depreciated replacement cost methodology, which also has problems, specifically about whether the assets are required. This question is addressed by consideration of whether the asset would justify replacement (Walker et al., 2000, Pallot, 1997). NZ IAS 16 requires adjustment for obsolescence and surplus capacity, effectively mandating the use of optimised depreciated replacement cost which assumes replication of service capability in the most efficient manner and adjusts for the age of the existing assets.

Depreciation

The understanding of depreciation is a key issue in regard to infrastructure assets. Pallot (1997) contends that depreciation is unlikely to be a close approximation of resource consumption for large infrastructure assets given that the valuation is

controversial and the useful life cannot be readily determined. Under situations where long-lived assets are adequately maintained, depreciation drops to almost zero, with the cost of maintenance reflecting actual costs of maintaining service capacity (McCrae and Aiken, 2000); in this situation charging depreciation as well as the cost of maintenance could result in double counting.

Hope (2003) suggests depreciation provides an indication of funds required to replace infrastructure assets and Pallot (1997) also suggest that 'the historical origins of depreciation show that it began as a distributive matter' (p. 239). Understanding the perceived purposes of depreciation and how depreciation is calculated forms a basis for understanding how depreciation may affect intergenerational equity.

Deferred maintenance

Pallot (1997) contends that the problem of deferred maintenance is 'universally acknowledged as the critical issue in infrastructure maintenance and reporting '(p. 226). The FASAB (2007) has defined deferred maintenance as 'maintenance that was not performed when it should have been or was scheduled to be and which, therefore, is put off or delayed for a future period '(p. 510). Deferred maintenance can be both an effective tool for managing the cost of maintaining infrastructure, at one end of the scale, and at the other end can be used to balance financial budgets at the expense of additional cost in future periods resulting in potential intergenerational inequities (McCrae and Aiken, 2000).

The issue of identifying and measuring deferred maintenance is critical given that maintenance charges affect the setting of user charges and rates. Different options for reporting (or not reporting) deferred maintenance are suggested and discussions occur around whether deferred maintenance should be recognised as a liability, a

provision or a reserve (Walker et al., 2000). What is consistently asserted is that deferred maintenance should be reported (Pallot, 1997, Walker et al., 2000, McCrae and Aiken, 2000). There is a consistent call for deferred maintenance estimates to be based upon asset management plans and engineering estimates (Pallot, 1997, Walker et al., 2000).

Financing

The financing of infrastructure assets is raised as a means of potentially achieving intergenerational equity. As much of the capital required for infrastructure is funded through loan financing, the loan repayments should be made by the generations benefiting from the service (Walker et al., 2000). However, for intergenerational equity one needs to look beyond just financial repayments and consider whole-of-life expenditure. With the 'flow of funds' approach the focus is on the cost and obligations incurred in current service provision, including the cost of borrowings, with these funds flows being amortised over the period of greatest use (McCrae and Aiken, 2000). This raises the issue of the bases on which intergenerational equity decisions are made, whether accrual accounting or cash flows.

Relationship to intergenerational equity

Intergenerational equity is embodied in all these accounting issues. Inequity exists when one generation funds the construction of assets through loan repayments, pays to maintain the assets, and funds future replacements through depreciation (Pallot, 1997, McCrae and Aiken, 2000). Accounting choices in regard to infrastructure assets are related to intergenerational equity (McCrae and Aiken, 2000), as recognised in the report of the Local Government Rates Inquiry (Rates Inquiry, 2007), which suggests 'that councils move away from fully funding depreciation, with the

development of longer-term funding policies that take better account of intergenerational equity, and the availability of longer-term debt financing' (p. 19).

Research Method

This research addresses the question of how local authorities in New Zealand plan and financially provide for infrastructure, while taking into account the needs of present and future communities, using document analysis as a method.

Document analysis

Documents form the core of local government accountability, including consultation (LGA 2002, s82-92), long and short term planning (LGA 2002, s93-s97) and reporting (LGA 2002, s98-99). Given that local authorities rely on public documents to communicate, inform, plan and report, document analysis was seen as an appropriate research method. (See Appendix for a list of the documents analysed.)

Specifically, this research used content analysis, which seeks underlying themes in the material being analysed, and can be performed with both quantitative and qualitative orientations (Bryman and Bell, 2007). The seeking of themes aligns well with the research question, and the ability to conduct analysis from both quantitative and qualitative orientations aligns with the intended source documents which have both defined data (e.g., depreciation rates) that could be directly compared between sources, and prose that required an interpretive approach.

Documents analysed

Long Term Council Community Plans

The main documents examined were the Long Term Council Community Plans of the selected local authorities. LTCCPs provide: a framework for long term planning, including describing the activities and expected community outcomes of those activities; a long term focus and framework for integrated decision making and co-ordination of resources; and a basis for accountability to the community (LGA 2002, s93(6)). LTCCPs are the subject of extensive community consultation (LGA 2002, s93(2)) and provide the base of planning for the community over at least 10 financial years (LGA 2002, s93(7)(a)). The minimum detail required is specified by Part 1 of schedule 10 of the LGA 2002 and includes requirements for financial forecasting, policy provision, and activity planning – including infrastructure planning.

Annual plans and annual reports

LTCCPs are supported by annual plans which provide short term planning and accountability detail, including details of expected variations from the LTCCP (LGA 2002, s95). Each local authority is also required to prepare and adopt an annual report (LGA 2002, s98) providing details of actual performance, including comparison to performance as planned in the LTCCP. Annual reports and annual plans are integral to confirming the veracity of the LTCCP and have been used to confirm details in the LTCCPs.

Quality of documents

Scott (1990) suggests that the quality of the documents be assessed on the criteria of authenticity, credibility, representiveness and meaning. Each public document in

this research is authentic in that it is available from the source and confirmable by web inquiry. Credibility with regard to accuracy is strong given that these documents are subject to scrutiny by both local authority management and elected representatives, and to audit review by the Auditor General. The documents are representative in that they are typical of the documents required by similar local authorities, but they are also unique for each individual local authority. The documents provide meaning in that they are based on relatively clear frameworks determined by legislation, although there are elements that required interpretation. Using Scott's (1990) criteria, these documents formed a sound base for analysis.

Elements examined

To consider how Local Authorities approach infrastructure provision, including consideration of future communities (generations), the research examined elements that were informed by the literature, namely asset valuation, depreciation, deferred maintenance and financing.

Asset valuation was examined by referring to both the LTCCP and annual report accounting policies and reviewing the reported method of valuing infrastructure assets, the accounting policies for asset revaluation, and whether asset revaluations had been anticipated in LTCCPs.

Depreciation is a key factor in both pricing (rate setting) and arguably ensuring cash is available for asset renewal or replacement (Pallot, 1997). This was examined by considering the rates of depreciation for classes of infrastructure assets and examining financial policies as provided in the LTCCPs. The output from this was a summarisation and comparison of the expected use of depreciation (e.g., as a generator of cash, as a measure of resource consumption or as a means of

'providing' for renewal /refurbishment expenditure), a review of how depreciation is funded by local authorities, and a review of the useful life of infrastructure assets.

Deferred maintenance is arguably the most significant issue in infrastructure provision and intergenerational equity (Pallot, 1997). It was examined by reviewing the financial accounts and forecasts, and reviewing financial policies. This was further informed by reviewing any discussion within the LTCCPs showing an awareness of this issue. The output of these reviews was a summarisation of how the different local authorities recognised deferred maintenance both within financial forecasts and in wider discussion.

Financing of infrastructure assets can be seen as a mechanism to effect intergenerational equity (Walker et al., 2000). Financing policies were reviewed specifically for consideration of intergenerational equity, including the LGA 2002 requirement for financial prudence. The output from this was a summarisation of the policies including elements common between local authorities and particularly how each local authority balances the requirement for financial prudence and consideration of future generations.

In addition to these elements that have a strong evidentiary base in the documents, the research examined the documents, including executive summaries and wider commentary, for overall consideration of future generations. This was not as 'clear cut' as the earlier elements, and had to be inferred from the documents. Related issues that affect infrastructure provision were also identified including; population changes, construction costs and changes in constituent expectations. This resulted in a summary of common factors seen to influence demand for infrastructure, and an

interpretive view of how fully each local authority has integrated consideration of intergenerational equity into its financial planning.

Selection of local authorities to be analysed

Local government in New Zealand is split into 12 regional councils and 73 territorial authorities[2] (LGA 2002, Schedule 2). Regional councils are deemed to be outside the scope of this research due to their focus on regional activities that cross a number of territorial authorities. Of the territorial authorities, there are six local authorities with populations greater than 150,000 providing for 41% of the New Zealand population, 21 with populations of between 45,000 and 150,000 serving 35% of the New Zealand population; the remaining 46 provide for 23% of the New Zealand population (Local Councils On-line, 2008).

Five local authorities were chosen to both demonstrate issues raised by the Auditor General (2007a), and to provide a cross-section of the population of local authorities. The local authorities selected were: Christchurch City Council, a large urban local authority; Invercargill City Council, a small city, who have been identified by the Auditor General (2007a, p. 121) as having issues with their LTCCP; Otorohanga District Council, a small rural local authority; Porirua City Council, specifically mentioned by the Auditor General (2007a, p. 81) as having issues with regard to intergenerational equity; and Tauranga City Council, a council with a reputation for

[2] Schedule 2 of the LGA 2002 actually lists 74 territorial authorities but, since the introduction of the Act, two territorial authorities, Christchurch City Council and Banks Peninsula District Council, have amalgamated.

being well administered and facing issues of high population growth. Table 1 shows statistics for the selected local authorities.

<insert Table 1 about here>

Findings

As this paper considers the relationship of infrastructure, intergenerational equity and financial planning within the context of local government in New Zealand it is useful to put the size of the issue in context. Table 1 shows that depreciation comprises between 18%–22% of operating expenses, and 38%–43% of rates revenue. Infrastructure assets comprise 69%–88% of fixed assets, and 49%–85% of total assets. Therefore issues related to the treatment of infrastructure and intergenerational equity are of significance, and are worthy of research and consideration.

The findings will be grouped by the accounting and financing issues identified in the literature review: asset valuation; depreciation; deferred maintenance; and financing. This is followed by an interpretive assessment of how fully intergenerational equity has been considered by each local authority, and lastly factors that influence the demand for infrastructure are identified. These findings enhance understanding of the ethical issue of achieving a fair balance (equity) of costs and benefits between present and future generations.

Asset valuation

The valuation of assets is a core issue with regard to accounting for infrastructure assets (McCrae and Aiken, 2000), as the valuation provides the base for depreciation and hence the rates calculation; and it forms the base for a number of financing

ratios. All five local authorities examined have utilised the depreciated replacement method to value infrastructure assets, although some small variations around optimisation of assets have been applied. This consensus has been driven from the application of NZ IAS 16, and has been aided by the work of the National Asset Management Steering group (NAMS)[3] which is referred to by the Auditor General (2007b) as defining good practice (p. 2). Areas of difference relate to valuation of land under roads, but this has little effect on either rates setting or intergenerational equity, as land is not depreciated or amortised.

Asset revaluation reserves form a significant portion of both the value of infrastructure assets, ranging from 13% to 62%[4], and equity, ranging from 19% to 71%[5]. Otorohanga define asset revaluation reserves as 'unrealised gains on assets owned by Otorohanga District Council. The gains are held in the reserve until such time as the gain is realised and a transfer can be made to accumulated funds' (p. 76)[6]. All the local authorities examined have allowed for asset revaluations in the ten year financial forecasts, generally aligning these with specific asset inflation indices. Christchurch specifically identifies as moderate the risk that 'revaluations will materially differ from those projected, thus changing projected carrying values of the assets and depreciation expense' (p. 208).

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[3] 'The NAMS group is a New Zealand based organisation that develops asset management best practice publications, knowledge and services' (NAMS, online).

[4] Percentages were calculated as: portion of asset revaluation reserves attributable to infrastructure assets/ total infrastructure assets. This was not able to be ascertained for Christchurch

[5] Total assets revaluation reserve/ equity

[6] Throughout the findings section, references are to the LTCCP of the local authority mentioned, unless otherwise stated

There is a lack of symmetry in the generally accepted accounting entries arising from changes in asset valuation. Increases in asset valuations are taken directly to equity (revaluation reserves), decreases in asset valuation (from carrying amounts) are first taken against similar asset revaluation reserves, with any remaining balance being taken as a write-down in the income statement. In line with NZ IAS 16, on the disposal of a revalued asset there is a transfer of related revaluation reserves direct to retained earnings, rather than through the income statement. This results in a situation where asset gains, including revaluations, are recognised direct to equity and asset write-downs, including depreciation (which is calculated on the asset carrying value), are taken through the income statement. This fundamental lack of symmetry, in charging only the debit entries to the income statement, clouds the LGA 2002 requirement for a balanced budget (s100) prepared utilising generally accepted accounting principles (s111), and influences the information provided to decision makers considering financial prudence and intergenerational equity. This is an intergenerational equity issue when depreciation is charged on the basis of a revalued asset value, and rates are struck based on that depreciation. As a result decision makers are turning to alternative means, such as cash flow forecasting, in order to consider prudence and intergenerational equity. Arguably a more equitable situation would occur if depreciation that is charged on the revalued portion of an asset were matched with an equal release of the appropriate revaluation reserve, or if depreciation is charged directly against the revaluation reserve.

Depreciation

The LTCCPs reviewed reveal different understandings of the purposes of depreciation, different approaches to funding of depreciation, and differences in assessment of assets' useful lives.

Purpose of depreciation

The local authorities understand depreciation as having many different purposes (see Table 2). The single purpose that all of the local authorities examined agree on is that depreciation provides for renewal and/or refurbishment of the assets. Christchurch states that 'rating for depreciation will be applied to capital expenditure annually' (p. 268). Invercargill has a specific policy on depreciation which clearly aligns depreciation with renewal expenditure, including 'balancing' of forecast depreciation with forecast renewal expenditure over the 10 year period of the LTCCP (p. 143). Otorohanga lists depreciation reserves as one of a number of funding sources for capital expenditure. Porirua utilises the NZ FRS 3 definition of depreciation as 'the measure of the consumption of the economic benefits embodied in an asset' (p. 199). Tauranga views depreciation as creating reserves which are then drawn on 'for capital renewal of assets or debt repayment' (p. 301)

<insert Table 2 about here>

These purposes of depreciation are largely at variance with NZ IAS 16 which defines depreciation as 'the systematic allocation of the depreciable amount of an asset over its useful life' (para. 6) and states that 'the depreciation method used shall reflect the pattern in which the asset's future economic benefits are expected to be consumed by the entity' (para. 60). The Auditor General (2003) also contends that

'depreciation is not a proxy for the amount needed to fund local authorities' long term asset requirements. Accounting for the past consumption of an economic benefit is not the same as providing for the full cost of services and assets in the future. These two purposes differ, and need to be considered separately' (p. 66).

Funding of depreciation

The understanding of the underlying purpose of depreciation flows strongly into how the various local authorities view the funding of depreciation, which directly impacts the level of rates and strongly impacts intergenerational equity. The LGA 2002 requires that 'each year's projected operating revenues are set at a level sufficient to meet that year's projected operating expenses' (s100) but allows the setting of operating revenues at a different level if 'it is financially prudent to do so' (s100) in order to maintain service capacity and integrity of assets; to equitably allocate funding for provision and maintenance of assets; and to fit with funding and financial policies adopted.

There is a wider range of views on funding of depreciation. At one extreme Christchurch states that 'fully rating for depreciation has been reinforced' (p. 32). At the other extreme Porirua focuses on 'fully funding operating cash requirements' (p. 199), while considering depreciation related to infrastructure assets and the issue of intergenerational equity in a separate section, concluding: 'indeed, if Council were to balance its budget, it would generate cash surpluses far beyond anything that could reasonably be justified to the present day community' (p. 179). Both Otorohanga and Tauranga do not fully fund depreciation, especially if the assets have a long useful life and are relatively young, and when minimal renewal work is anticipated.

Otorohanga does not fund depreciation for specific non-strategic assets that are not intended to be replaced at the end of their useful lives. None of the local authorities examined received qualified audit reports relating to the issue of a balanced budget but Porirua received an audit report that commented that the council had made adequate disclosures around the decision not to fund depreciation. The lack of consistency of funding depreciation suggests that there is no one best practice as to how depreciation is to be funded, and therefore how it impacts on intergenerational equity.

Useful life

The estimated useful life of an asset provides the base from which rates of depreciation are calculated. Table 3 presents a summary of the useful lives estimated (and hence depreciation rates struck) for infrastructure assets by the local authorities examined. This shows some broad consistency over similar assets in the different local authorities but it also shows a variety of detail levels and ways of considering useful life. For example, Tauranga divides roading into roads with less than 200 vehicles per day, and roads of over 200 vehicles a day; and Otorohanga differentiates between the basecourse for sealed and unsealed roads. These differences in approaches may result in depreciation calculations that vary between local authorities for similar assets. The risk of incorrectly estimating the useful life of assets has been specifically listed as moderate by Christchurch, and low by Invercargill and Otorohanga. This risk is not specifically commented on by Porirua or Tauranga.

<insert Table 3 about here>

Given that depreciation is 18%–22% of operating expenses for the local authorities reviewed, the understanding and calculation of depreciation is a key part in the information used to make decisions which affect intergenerational equity. There is a lack of consistent understanding of the purpose of depreciation, with evidence that even within the same local authority there are differences in understanding. This lack of consistent understanding of the purpose of depreciation flows strongly into the decisions made around the funding of depreciation. Funding of depreciation is further influenced by the LGA 2002 requirement for a balanced budget. The assessment of useful life directly affects intergenerational equity, by providing key information with regard to when replacement/renewal of infrastructure assets will need to occur.

Deferred maintenance and asset management plans

Pallot (1997) described deferred maintenance as arguably the most critical issue surrounding infrastructure reporting and management. Deferring maintenance is seen as a way of potentially balancing short term budgets at the long term expense of future ratepayers. The long term effect of deferring maintenance is evidenced by the current events in Waitomo District Council[7]: where the deferring of maintenance has left a community with run-down infrastructure, poor service levels and facing severe financial issues relating to remediating infrastructure assets.

The LTCCPs examined have little discussion about deferred maintenance. This does not mean it is not an issue, just that there is insufficient evidence to decide whether it is or not. So saying, there are the occasional hints that deferred maintenance is on the edge of becoming an issue: Invercargill, in discussing roading activity, notes 'a

[7] A small rural local authority contiguous to Otorohanga.

backlog of maintenance work exists, such as 50kms of reseals and 28kms of asphaltic surfacing, which will be overcome during the 10 year period of this plan' (p. 70); Porirua comments that asset management plans 'highlight the pressures arising from a maturing City with aging assets' (p. 60) and observes that some maintenance work has previously been seen as discretionary, resulting in under investment which now requires increases in expenditure.

The issue of deferred maintenance has been to a degree recognised by the LGA 2002 requirement that local authorities identify specific community activities[8] and the assets required to deliver those activities. Reporting is required on how the local authority will assess and manage the assets that support the community activity, relative to changes of demand and/or changes in service levels, including how required additional asset capacity will be provided and funded. Local authorities are also required to identify how maintenance, renewal and replacement of assets will be provided for and how the cost of this will be met (LGA 2002, schedule 10 (2)). These requirements are largely met through the preparation and use of asset management plans related to each specific activity.

Asset management plans underlie the financial forecasts for: maintenance costs, asset life, capital expenditure relating to asset replacement and renewal, and capital expenditure relating to service increases or capacity upgrades. Asset management plans may also consider possible future technologies for delivering service. The preparation and review of asset management plans is consistently commented on in

[8] Examples of activities are: Roading, Sewage, Water supply and Parks and Reserves (Invercargill, p. 23)

four of the LTCCPs: Christchurch remarks that 'as part of formulating this LTCCP, the council reviewed all activity management plans (p. 31); Invercargill notes that behind the activity summaries are detailed activity management plans; Porirua states that 'asset management plans were prepared to help inform this LTCCP' (p. 5) and comments that extra investment has been allowed in the LTCCP as a result of these updated plans; and Tauranga notes considerable efforts in updating asset management plans.

However, the local authorities note risks around the assumptions of the asset management plans. These include: the potential for assets to reach the end of their useful life earlier than forecast (Otorohanga, Christchurch, Invercargill), 'uncertainty over the condition of underground assets' (Otorohanga, p. 81; Invercargill), and the potential for loss of service potential earlier than expected (Invercargill).

The importance of the asset management plans for providing fundamental information underlying the LTCCPs is emphasised in the Auditors General's report on Invercargill City Council, in which he states: 'the forecast information could be misleading across the City Councils' range of activities because, in some instances, the forecast information is inconsistent with the underlying information, or based on inadequate underlying information' (Invercargill, p. 4). These comments specifically include the water asset management plan, including operating expenses and capital expenditure forecasts; and service levels for the roading asset management plan which directly flow into forecast operating expenditure. Overall, the Auditor General is scathing about the LTCCP of Invercargill, issuing a qualified audit report stating: 'the LTCCP …. does not provide a reasonable basis for long term integrated decision making…the City Council has been unable to demonstrate as required by S101 of

the Act, that it is managing its revenues, expenses, assets and liabilities, investments and general financial dealings prudently and in a manner that promotes the current and future interests of the community' (p. 4). Given these comments it would be difficult to see how Invercargill has information of sufficient quality to enable considered intergenerational decisions.

In summary, the issue of deferred maintenance has not been specifically addressed in the LTCCPs, but can be inferred from asset management plans which underpin the quality of financial forecasts. The rise of asset management planning, including the requirements of the LGA 2002, has to a degree mitigated the potential for the problems surrounding deferred maintenance to occur. Asset management plans are seen to provide the key to understanding factors that influence the costs and financing needs of infrastructure assets: asset life, maintenance requirements, renewal requirements, and changes in planned service levels; and hence provide an understanding of the factors that may influence intergenerational equity decisions.

Financing

The LGA 2002 places an overarching requirement on local authorities to manage 'financial dealings prudently and in a manner that promotes the current and future interest of the community' (s101(1)). Walker et al. (2000) contend that financing of infrastructure assets can effect intergenerational equity if the financing cost and repayments are aligned with the expected benefit of the asset.

Four financing policies provide insight into the relationship of financial prudence and intergenerational equity: the relationship of the period of benefit from particular assets of an activity to the funding of that activity, the stated reason for local

authorities' borrowing, the stated sources of funding infrastructure provision (both operating and capital), the financial limits placed on borrowing.

Period of benefit

All of the local authorities examined made specific mention of allowance for the period of benefits relating to specific assets in their financing policies. In general this was in broad categories of time. For example, Invercargill and Tauranga classified the period of benefit into short term, medium term and ongoing or long term. Tauranga specifically linked the period of benefits with intergenerational equity, stating: 'council will apply the intergenerational equity principle to ensure a spread of benefits across time' (p. 291). Otorohanga considers the 'overall impact of any funding allocation on the current and future well being of the District' (p. 94). Porirua also noted that 'several activities involve "inter-generational equity" ' (p. 197) including the provision of all significant infrastructure. Christchurch specifically includes consideration of 'the period in or over which those benefits are expected to occur' (p. 267) in funding operational expenditure. This shows that local authorities are aware of the intergenerational consequences of infrastructure decisions.

Reasons for borrowing

The stated reasons for borrowing provide insights into how local authorities view the use of debt. There is a common theme that borrowing is permitted in order to fund capital expenditure and long term assets. Christchurch states: 'Borrowed funds will be used to fund capital expenditure, equity investment, or short term liquidity requirements (less than one year)' (p. 279); Otorohanga allows 'Specific borrowing associated with "special one-off" projects; and to fund assets with intergenerational

qualities' (p. 111); and Porirua maintains 'borrowing will normally only be undertaken for the acquisition of assets' (p. 224).

The ability to effect intergenerational equity through borrowing is also seen, with Tauranga stating: 'Council has a large number of infrastructure assets which have a long economic life and long term benefits' (p. 296) and noting, 'Council sees the use of debt as an appropriate and efficient mechanism for promoting intergenerational equity between current and future ratepayers' (p. 296). Invercargill looks to 'match revenues received from investing activities with the expenses of those activities' (p. 150).

Thus local authorities are well aware of the long term consequences of borrowing to fund short term expenditure and the potential intergenerational consequences thereof. Indeed Porirua is adamant that 'borrowing to meet operating costs will in almost all circumstances be considered financially imprudent' (p. 224).

Sources of funding

Operating expenditure is generally financed from general and targeted rates, user charges, and subsidies received. Financing of capital expenditure, in all except Christchurch, is tightly aligned with specific activities. However Porirua states that 'generally council takes a global, rather than project-by-project, view of its activities' (p. 224), although 'in some circumstances debt funding for substantial projects may be considered separately (p. 224). Christchurch approaches funding of capital expenditure on a corporate basis according to priorities, rather than borrowing for specific assets or activities. Corporate funding of capital treats all borrowings as equal regardless of the asset life of the asset funded, effectively ignoring the intergenerational quality of some assets. However, intergenerational equity is

generally well supported by the sources of funding being well aligned with the activities undertaken and the period of benefit expected from the assets utilised.

Borrowing limits

The detail of policy limits placed on borrowing provides insights into the prudence requirements of the LGA 2002 and how these affect intergenerational equity. There are a variety of borrowing ratios used. Otorohanga and Christchurch limit external debt to assets, in a range of 10-12% of total assets, with Christchurch further limiting debt to no more than 5 times cash flows from operations. Tauranga and Porirua limit external debt to 200% of operating revenue. Invercargill limits debt to equity at a 20:80 ratio.

Interest costs are generally limited with Christchurch limiting interest to no more than 8% of gross revenue, Otorohanga to 15% of rates, and Porirua and Tauranga to no more than 20% of operating revenue. Tauranga also requires cash flows from operations to exceed interest by at least 2.5 times. Invercargill does not limit interest but specifies a process ensuring interest costs are hedged.

Three out of the local authorities examined have defined the maximum length of borrowing: Christchurch requires repayment of parcels of debt in a 30 year cycle, Otorohanga requires repayment over the life of the asset or 25 years whichever is the least, and Tauranga states that 'for practical and prudence reasons, the debt retirement rate will be a minimum of 4%' (p. 303) but with some exceptions.

There is a variety of practice with regard to the requirement for committed funding facilities, with Christchurch, Invercargill and Porirua all requiring committed funding

facilities of between 100% and 120% of forecast debt. All local authorities examined require a spread of debt maturity dates mitigating refinancing risk.

In general the financial policy limits placed on borrowing are more about prudence than a mechanism for effecting intergenerational equity. The requirement for prudence can be seen as contrary to the potential matching of intergenerational costs and benefits for long lasting infrastructure assets, but can also be seen as a significant driver of intergenerational equity by seeking to ensure local authorities will maintain an adequate financial position to continue on an on-going basis.

Consideration of future generations

The LGA 2002 statement of purpose for local government requires local authorities to consider 'the social, economic, environmental, and cultural well-being of the communities' (s10(b)) 'in the present and for the future' (s10(a)). With infrastructure providing fundamental underlying services to the community and having a significant effect on the finances of a local authority, how each local authority has considered the current and future communities was interpretively analyzed, considering how often and how significantly the LTCCPs comment on the future and specifically on intergenerational equity.

Tauranga has a strong focus on the future. The mission statement includes a necessity to 'enhance quality of life for current and future residents' (p. 8). The Mayor and Chief Executive comment: 'we need to provide for today and plan for tomorrow' (p. 1), noting the key issues as 'certainty for the future, affordability and fairness, prudent financial management, development that is responsive to all' (p. 1). An underlying theme in Tauranga's LTCCP is the need to plan for future growth with the population expected to rise from 105,000 in 2006, to 144,000 in 2021, Sixty percent of

the planned capital programme is related to growth. The financial policies evidence considerable thinking about intergenerational equity, including: defining intergenerational equity as 'the principle that the costs of any expenditure should be recovered at the time that the benefits of that expenditure accrue' (p. 289); stating: 'Council will apply the intergenerational equity principle to ensure a spread of benefits over time' (p. 291); contending that the use of debt is 'an appropriate and efficient mechanism for promoting intergenerational equity' (p. 296); and, with regard to long life assets, stating that 'the funding requirement in early years is adjusted downward so that current ratepayers are not disadvantaged compared to future ratepayers' (p. 302). Intergenerational thinking is entwined in the Tauranga LTCCP.

Christchurch sees its future as 'a world class boutique city, where people enjoy a sustainable lifestyle' (p. 8). The Mayor focuses on human activity that supports the future, including discussion about infrastructure provision but also noting: 'achieving the kind of future that ensures our and our children's prosperity cannot be the sole responsibility of local government' (p. 7). The chief executive asks the questions: 'What sort of city do we see it becoming in the future? – 10, 20, 30 years on. Will it be the sort of place our grandchildren will want to live in?' (p. 11). She notes that 'the thrust of the LGA 2002 is to create greater certainty around long term infrastructural planning '(p. 11). The period for repayment of loans relating to long term assets is discussed, with this being increased from 20 to 30 years and being seen as spreading 'the cost of an asset over the several generations of people who will benefit from it' (p. 33). Intergenerational equity is specifically commented on in the financial review, with key mechanisms in place to ensure intergeneration equity including: depreciation of assets reflecting their useful lives; loans raised to fund capital works being repaid within 30 years; ensuring revenue is sufficient to meet

depreciation, interest and debt repayments; and having asset management plans in place to ensure appropriate rates of asset renewal. The effect of these policies is seeing that current ratepayers will 'leave a legacy for the future' (p. 71). The LTCCP of Christchurch looks to the future and makes conscious efforts to ensure intergenerational equity.

The City Vision for Porirua includes the desire to be 'a strong, dynamic, regional centre, built on sound infrastructure and with a vigorous and sustainable economy' (p. 29). The development of community outcomes for the 2006 -2016 LTCCP has been guided by this vision. Porirua has wrestled with the LGA 2002 balanced budget requirement (s100) and the intergenerational consequences of fully funding depreciation on infrastructure assets, particularly where those assets are seen to be in good condition and with long useful lives. The Mayor reflects that the LTCCP 'provides an opportunity for us to look at the future of the city as a whole; its infrastructure, economy, environment, arts and culture. Most importantly, it locates people at the centre of these activities' (p. 3). The Chief Executive comments on balancing the budget, noting that 'The Plan forecasts operating deficits in every year of the LTCCP' (p. 6), with the key issue being whether such deficits are financially prudent in regard to a number of matters, including intergenerational equity. The LTCCP includes a significant section on balancing the budget, discussing: operating deficits versus operating cash flows, confirming the intention to rate to fully cover cash operating expenses; maintenance and replacement of key infrastructure assets out to 2100; and long run solvency and fiscal sustainability, focusing on cashflows. This section concludes that the forecast operating deficits are prudent and states: 'Indeed if Council were to balance its budget, it would generate cash surpluses far beyond anything that could reasonably be justified to the present day community' (p.

179). Thus Porirua has considered the intergenerational consequences of operating with a balanced budget, particularly on this generation, by allowing a financial plan that shows operating deficits, while maintaining appropriate cash resources. Porirua has reserved the right to revisit this and has instructed the Chief Executive, in the 2009 LTCCP, to consider strategies for funding replacement of stormwater and wastewater reticulation. The Auditor General has issued an unqualified report on the LTCCP but has included commentary on the additional disclosures' demonstrating financial prudence despite forecast operating deficits. Consideration of intergenerational equity is evident in other areas of the LTCCP including: recognising that moderate debt levels support intergenerational equity; the budget including consideration of equity across 'the city and generations' (p. 47); and noting of activities (and related assets) that have 'significant intergenerational benefits' (p. 217, p. 215). Intergenerational equity is an integral and considered part of the Porirua LTCCP.

Otorohanga has a stated mission of 'operating proactive policies which promote progress' (table of contents). The Mayor and Chief Executive do not specifically comment on the future but note 'the next ten years could be characterised as a period of consolidation for the District' (p. 1) and acknowledge previous infrastructure projects which have 'left the district with a solid foundation for ongoing growth' (p. 1). There is discussion about the balanced budget requirement and specifically about the 'equitable allocation of responsibility for funding the provision and maintenance of assets throughout their useful life' (p. 82), concluding that in some limited cases it is not appropriate to fund depreciation. Financing policies allow for borrowing for 'assets with intergenerational qualities' (p.111) and, within policies on interest rate management, specifically allow consideration of 'intergenerational factors' (p. 112) as

part of managing interest costs. Overall Otorohanga exhibits a good awareness of intergenerational equity issues albeit at a lower level of sophistication than the larger local authorities.

Invercargill has a mix of focus with an initial statement: 'To ensure our community is a great place to live for our children, grandchildren and great grandchildren, it is important that we have a vision for the future' (p. 6). However within both the Mayor's and Chief Executive's statements there is little evidence of future thinking but rather continuing to do what has always been done, although both the Mayor and Chief Executive do state that the LTCCP builds on existing strategic plans and directions. There is little evidence of consideration of intergenerational equity within the financial policies presented, with the closest being the policy on depreciation which matched depreciation expense to renewal capital expenditure over the 10 year period of the LTCCP. The Auditor-General has strongly criticised this LTCCP, asserting that it does not provide a reasonable basis for long-term integrated decision making. Overall, despite the initial statement focusing on the future, Invercargill exhibits little intergenerational thinking within its LTCCP.

In general, other than Invercargill, each of the local authorities has shown a good awareness of intergenerational equity in its LTCCP. But what is evident is that each local authority has reacted to the need for intergenerational equity with different approaches: from Christchurch's full rating for depreciation and desire to 'leave a legacy for the future' (p.71) to Porirua's considered and careful discussion around not funding depreciation of some long term infrastructure assets where there is not evident need for replacement. Tauranga's most significant issue has been how to deal with significant infrastructure requirements, related to anticipated population

growth, while maintaining appropriate generational equity. Otorohanga has probably the least sophisticated consideration of intergenerational equity, but has displayed awareness of future infrastructure requirements particularly over a large geographical area. This lack of sophistication would seem appropriate with Otorohanga being the smallest (by population) of the local authorities examined. Invercargill exhibits very much an attitude of continuing to do what has always been done with little considered thought for intergenerational equity.

Other factors affecting demand for infrastructure

The demand for infrastructure is not only affected by existing infrastructure condition and provision, or by financial capacity or constraint, but also by other factors, such as population; costs of construction; changes in the regulatory environment; and changes in constituent expectations. These factors require additional consideration in providing infrastructure and hence affect intergenerational equity (Walker et al., 2000).

Changes in population are consistently seen as a key factor in the demand for infrastructure. Tauranga identify expected population growth from 105,000 (at June 2006) to 144,000 by 2021, and note 'approximately 60% of the total capital programme is growth related' (p. 60) concluding that 'the quantum and timing of growth is therefore a critical assumption for Tauranga City' (p. 60). Christchurch also forecasts significant growth with the population expected 'to grow by another 16% by 2026' (p.41). This population forecast is recognised as a significant forecasting assumption with the risk of underestimating seen as requiring provision of 'additional unplanned services and infrastructure' (p. 205) and the overestimation risk seen as requiring council 'to support excess levels of infrastructure and service delivery' (p.

205). Porirua, Invercargill and Otorohanga all forecast relatively stable populations and note similar consequences to Christchurch if these forecasts are incorrect. Otorohanga also notes additional risk given the size of the population base 'which is relatively small and sensitive to change' (p. 81).

The increasing cost of construction of infrastructure has a direct effect on the decisions made around infrastructure assets, with there consistently being concern expressed over this. Christchurch typifies the concerns: 'There is currently tremendous pressure on costs, particularly in those areas of Council business that relate to the construction industry' (p. 31). Otorohanga provides detail of the specific inflation assumptions for different areas of cost and notes risk of movement in pricing of service purchases as medium. Porirua also provides specific inflation assumptions but recognises that the risk is that these assumptions can be incorrect both up and down, with a consequential effect on the revaluation of infrastructure assets. Invercargill uses differential inflation rates stating an inflation assumption of 3.5%, for infrastructural activities affected by the construction price index, compared to 2.5% for administrative activities. It assesses the inflation assumption as a medium risk. Tauranga uses differential inflation forecasts for capital expenditure compared to operational expenditure with the capital index consistently being higher than the operational index. Tauranga also notes a 'very high' (p. 61) uncertainty of predicting the impact of cost influencers. These cost pressures can influence timing of provision of infrastructure and hence may affect intergenerational equity.

Changes in the regulatory environment are seen as affecting the demand for and capability of delivering infrastructure, specifically issues of resource consent and unknown changes in central government regulations. Christchurch lists

obtaining/maintaining of resource consents as a moderate risk with additional costs and/or project delays seen as consequences. Otorohanga notes that 'resource issues will also play a part in determining which outcomes can be achieved within the ten year time frame' (p. 1). Porirua also evaluates renewing of resource consents as a low risk. Tauranga notes achievement of resource consents as a significant assumption; assuming that these can be obtained without significantly impacting on the timing of capital works. Invercargill and Porirua list changes in central government policy as a medium risk[9], with Invercargill stating 'Due … to the inability and impracticality of planning for unknown changes, it must be assumed that the national platform will be stable' (p. 182). These changes have the potential to affect intergenerational equity mainly through changing the timeframe of completing infrastructure, or affecting the ability of infrastructure to operate.

There is a consistent theme through the LTCCPs that there are increases occurring in ratepayer expectations. To a degree these changes are being caught by the asset management planning process, with Christchurch stating: 'the levels of service described in our asset management plans determine the Council's cost structure' (p. 31). Tauranga claims that the expected levels of service have been updated in the asset management planning, noting 'in some instances Council has defined a level of service and has increased funding to achieve this level of service over a number of years' (p. 61). Invercargill maintains there is a low risk of changes in the demand for services that would require altering its service provision. Otorohanga has not specifically commented on changes in service expectations. Porirua lists as a low risk 'significant changes in customer expectation regarding mode of service' (p. 253).

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[9] This risk is seen as a general risk rather than a risk specifically aligned to infrastructure provision.

Conclusions

Thompson (2003) asserts that intergenerational equity issues are philosophical questions not only related to fiscal or technical economic issues but concerned with the ethical issues of distributive fairness and justice, and our moral obligations to future generations. Without the ability to see the future, decisions with intergenerational consequences are generally based on the best information (which may be imperfect) available at the time. Consistently the LTCCPs warn that the financial forecasts are 'prepared on the basis of the best estimates available at the time' (Christchurch, p. 3) and that 'actual results are likely to vary from the information presented' (Christchurch, p. 3). This research has seen that infrastructure decisions, made by local authorities, have significant intergenerational consequences and that these decisions are, at the least, informed by and, at the most, influenced by: financial information provided (both historical and forecast), accounting policies used and financing decisions made. Based on the LAs examined, long term infrastructure provision is a significant factor in local authority financial planning, with depreciation comprising approximately 38–43% of rates revenue and infrastructure assets generally forming more than 70% of fixed assets and over 50% of total assets. Forecast financial information is a key source for decisions regarding infrastructure provision and therefore intergenerational equity. The quality of the information provided and the assumptions on which it is based are crucial in achieving intergenerational equity. The LGA 2002 requirements for financial prudence, balanced budgets and adherence to generally accepted accounting principles provide strictures around the financial information provided, and cause difficulties relating to asset valuations, and the calculation and funding of depreciation.

Asset valuations form the basis of depreciation calculations, and also affect financing ratios through influencing the value of equity. Problems arise from the required accounting treatment of asset valuation movements, where debits are expensed against income but credits are recognised directly to equity. This asymmetry of entries is an issue when depreciation is charged on the basis of a revalued asset value, and rates are struck based on that depreciation. Arguably it would be more equitable to match depreciation, charged on the revaluated portion of an asset, with an equal release from the appropriate revaluation reserve. Achieving this change would require rethinking by the accounting profession, including changes to the accounting standards to allow this to occur.

Depreciation is a key item in financial forecasts. There is a lack of consistency, and arguably confusion, in understanding of the purpose of depreciation. This flows directly into decisions made regarding funding of depreciation. Depreciation is funded in a range from fully funding to not funding depreciation on certain infrastructure assets. These decisions require local authorities to anticipate how infrastructure assets, both current and future, are financed, thereby affecting intergenerational equity. The fact that local authorities choose to fund depreciation differently shows that accounting for depreciation does not provide information of sufficient subtlety to enable consistent practice to occur. The inconsistent practices result in different rating regimes between different local authorities with the consequence of inconsistent funding of infrastructure assets. Consistent practice would only occur

where local authorities agreed on the purpose(s) of depreciation. There are existing local government forums in which it would be appropriate for this to be considered.[10]

Deferred maintenance is seen as a critical issue in infrastructure reporting and management (Pallot, 1997). The deferral of maintenance can potentially balance short term budgets at the long term expense of future ratepayers, with related intergenerational consequences. Intensification in the use of asset management planning is evident, mitigating the potential problems of deferred maintenance. Asset management plans provide understanding of the factors influencing the costs and financing needs of infrastructure, and are seen to underpin financial forecasts. The rise of asset management planning, effectively mandated by the LGA 2002, has shifted the focus of providing accurate information to the underlying asset management plans. Achievement of accuracy in asset management plans and the resulting financial forecasts could be a useful area of further research.

Examining financing policies has shown that local authorities: allow for the period of benefits that an infrastructure asset provides; largely only borrow to fund capital expenditure and long term assets; and generally align sources of funding (both operational and capital) with the activities undertaken, thus supporting cost equity between generations. Borrowing limits are more aligned to the LGA 2002 requirement for financial prudence than used as a mechanism for effecting intergenerational equity. This requirement for prudence can be seen to oppose the matching of infrastructure related costs and benefits, but can also be seen as a driver

[10] For example, National Asset Management Steering group, or the NZ Society of Local Government Managers.

of intergenerational equity by seeking to ensure an adequate financial position to enable the local authority to continue on an on-going basis.

The analysis of how local authorities have integrated intergenerational equity into their LTCCPs demonstrates that each local authority has reacted to the need for intergenerational equity differently, with these approaches reflecting the priorities set by the local authority itself. This supports the contention that decisions having intergenerational consequences are ethical decisions (Thompson, 2003). Local authorities seem to accept that accounting information is not sacrosanct but that it provides a base of information from which decisions can be made. This is shown by the different levels of depreciation funding, the considering of information past the ten year period of the LTCCP, and the evident awareness of non-financial factors influencing infrastructure demand (e.g., population increases, changed levels of service).

This research shows that there are issues that could usefully attract further research including: the asymmetry of accounting treatment of asset valuations; inconsistency of practice around funding of depreciation and, closely related, consideration of funding of future infrastructure provision; the rise of asset management plans as a key source of information supporting financial planning; and the consideration of the overarching requirement for financial prudence, including the balancing of risk.

Overall it appears that most local authorities are consciously making decisions about infrastructure assets with an awareness of the intergenerational consequences of those decisions. To a degree, this is despite accounting information rather than because of it, there being examples of inconsistency in how financial information is provided. However, there is also a large degree of consistency, pointing to good

practice occurring. Intergenerational equity decisions regarding infrastructure are made based on the best, but sometimes imperfect, information available. This information includes financial forecasts and is supplemented by additional information. The ethical decisions made, that seek to achieve a fair balance of costs and benefits between present and future generations, are strongly influenced by the information provided.

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Appendix: Documents analysed

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Christchurch City Council (2007a) *Annual Report 2007.*

Christchurch City Council (2007b) *Annual Plan 2007/08.*

Invercargill City Council (2006a) *Our Way – Invercargill, Long Term Council Community Plan (LTCCP) 2006/07 – 2015/2016.*

Invercargill City Council (2006b) *Annual Report 2005/2006.*

Invercargill City Council (2007) *Annual Plan 2007/2008.*

Otorohanga District Council (2006) *Long Term Council Community Plan (LTCCP) 2006/07 – 2015/2016.*

Otorohanga District Council (2007a) *Annual Report 2007.*

Otorohanga District Council (2007b) *Annual Plan 2007/08 and Amendment to LTCCP 2006-2016.*

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<Tables to be inserted in text where marked>

Statistics[11]	**Christchurch City Council**	**Invercargill City Council**	**Otorohanga District Council**	**Porirua City Council**	**Tauranga City Council**
Population	348 435	50 325	9 078	48 546	103 635
Land Area	1 609 km^2	491 km^2	2 063 km^2	182 km^2	168 km^2
Revenue ($000's)	$387 177	$57 894	$12 624	$61 357	$168 244
Rates Revenue ($000's)	$204 578	$29 682	$7 660	$34 286	$63 775
Operating expense ($000's)	$361 556	$58 793	$11 162	$52 202	$137 887
Depreciation ($000's)	$78 386	$12 820	$2 969	$13 271	$24 154
Total assets ($000's)	$5 670 192	$541 932	$199 551	$857 165	$2 361 441
Fixed assets ($000's)	$4 043 998	$480 668	$194 122	$814 693	$1 686 317
Infrastructure assets ($000's)	$2 806 664	$375 767	$170 515	$682 628	$1 598 908

Table 1: Summary statistics for selected local authorities

[11] Population and land area are as at 2006 census sourced from the Local Council on-line website; financial information is from the annual reports to 30 June, 2007 for each local authority, except for Invercargill which is from the annual report ending 30 June, 2006, due to the non-release of the 2007 annual report.

Purpose of Depreciation	Christchurch City Council	Invercargill City Council	Otorohanga District Council	Porirua City Council	Tauranga City Council
Generator of cash for capital expenditure	✓		✓		✓
Providing for renewal/refurbishment	✓	✓	✓	✓	✓
Resource consumption				✓	✓
Providing for repayment of debt					✓

Table 2: Purposes of depreciation

Useful Life of major asset categories (years)	Christchurch City Council	Invercargill City Council	Otorohanga District Council	Porirua City Council	Tauranga City Council
Water supply - water pipework - pumpstations - treatment plants - reservoirs - other assets	 55-130 10-100 15-100 20-25	50-100 15	 5-80 2-80 5-25	 40-100 15-90 80-90	 20-100 30-80 15-80 20-80
Water – number of asset details published	4	2	6	4	14
Wastewater - pipework - pumpstations - treatment plants - other assets	 15-100 10-100 15-100	50-100 15	 14-80 3-60	 50-120 45-90 18-90 40-100	 50-100 30-70 1-70
Wastewater – number of asset details published	3	2	3	7	10
Stormwater - pipework - other assets	 20-150	 50-100 15-100	 13-80 8-60	 50-125	 50-100
Stormwater – number of asset details published	1	3	3	3	1
Roading - formation - basecourse - footpaths - surface - bridges - other assets	 indefinite 40-120 20-80 2-25 70-120 30-100	 indefinite 66-100 25 14 100 15	 1-60 20-55 1-15 12-94 3-80	 40-100 60 14-18 70-100 5-80	 indefinite 1-60 1-30 50-70
Roading – number of asset details published	12	7	10	8	8
Land under roads	Indefinite	Indefinite	Indefinite	Indefinite	Indefinite

Table 3: Useful lives of major asset categories