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Toward an Economic Analysis of Housing Interventions

Stage 1A – Analysis of Costs

Summary Report

Report to
Housing New Zealand Corporation

3 May, 2007

Preface

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Executive Summary

This is an analysis of the costs associated with various housing interventions operated by Housing New Zealand Corporation and the Ministry of Social Development. The benefits that accrue from these interventions are to be identified and quantified in a later study. That later study will build on this work to provide a cost-benefit analysis of housing interventions.

The interventions analysed were: State Housing, Income-Related Rents, the Accommodation Supplement, the Mortgage Insurance Scheme, and the Housing Innovation Fund. The purposes of these schemes can be generalised as provision of community housing (State Housing and Housing Innovation Fund), affordability (Income-Related Rent and Accommodation Supplement), and encouragement of home ownership (Mortgage Insurance).

The following table summarises the costs of housing and assistance programmes for single people. Equivalent tables for other family groupings are found in Section 2.7 of this document.

Table 1 Cost Summary: Single – No Children

Dollars per household per year – Government perspective

	House Size (bedrooms)			
Family Type	**1**	**2**	**3**	**4**
State House (build)	-3,000	-4,600		
HIF - LG	-4,800			
HIF - CBO	-5,800			
IRR	-5,300	-7,500		
AS	-4,600	-5,200		
State House + IRR	-8,300	-12,200		
State House + AS	-7,600	-9,800		
HIF - LG + AS	-9,400			
HIF - CBO + AS	-10,400			

Source: NZIER

The table is divided into three parts: provision of housing; provision of affordability assistance; and combined housing and affordability assistance.

The table indicates that, from the Government's perspective, State Housing is a more cost-effective means of providing accommodation than the Housing Innovation Fund. This conclusion is driven, in part, by Government capture of asset appreciation under the State Housing option. A scenario of stable house prices (rather than appreciating in real terms) would lift the cost of State House provision by $2,200 per year for a 1-bedroom unit to levels similar to those of the Housing Innovation Fund.

The Accommodation Supplement is cheaper to Government than Income-Related Rent. The difference in cost is borne by the tenant in the form of higher rent.

For joint provision of accommodation and affordability assistance, State Housing with the Income-Related Rent is shown to be more cost-effective than the Housing Innovation Fund and Accommodation Supplement. However, if house prices were stable in real terms, then funding social housing through the Local Government Housing Innovation Fund and providing the Accommodation Supplement would be the most cost-effective option.

Although not a current option, combined State Housing and affordability assistance costs could be reduced by replacing the Income-Related Rent with the Accommodation Supplement.

Other key findings were that the combined cost of social housing and affordability assistance can be lessened by:

- reducing or eliminating mismatches between house and family size
- ensuring that State Houses only go to those who need them.

Specific findings from each of the analyses follow.

State Housing

State Housing provides accommodation to people in society who would not otherwise be housed, or whose alternative accommodation is inadequate. It is not aimed at addressing affordability, although this will be a contributing factor. Most State House tenants do receive affordability assistance.

When analysed on a "cost per bedroom" basis, houses of 2, 3 or 6 bedrooms were the most cost-effective. Conversely, houses of 1 or 4 bedrooms were the least cost-effective. This means that stocks of 1 and 4 bedroom houses should be matched as closely as possible to the demand for these houses.

Leasing was the most cost-effective way of acquiring a house for State Housing by a large margin. Building a house is slightly better than buying an existing house. Leasing became even more cost-effective when financing and tax are taken into consideration, while building and buying became slightly more expensive.

It was noted that an accounting analysis of acquisition options would show that leasing incurred losses in every year, while building or buying would be profitable. However, from an economic perspective, the accounting losses arising from leasing were less than the opportunity costs of capital associated with building or buying State Houses.

Under-utilised State Houses generate opportunity costs in the form of additional capital requirements to provide the house, and additional operating costs to maintain a larger house.

Analysis indicated that empty houses have far higher opportunity costs than houses that are under-utilised by one bedroom. In the short term, it is better to use the house in a (slightly) under-utilised state than leave it empty. In the longer term, persistent house under-utilisation suggests a rebalancing of the housing portfolio is required.

A central tenet of State Housing is that it provides "non-financial" benefits to the tenant and society that are greater than the cost of providing the service. One implication of this is that the higher those "non-financial" benefits are valued, the greater the imperative to fully utilise houses so that those non-financial benefits are maximised.

An extension of this analysis notes that State House tenants who improve their position such that they would no longer be accepted into the State Housing programme gain fewer non-financial benefits from State Housing than would people who remain in A or B priority status. This reinforces the need for active management of State House tenancies.

The cost-effectiveness of State Housing improves as house prices increase above the general inflation rate. This generates a conflict between the cost-effectiveness of State Housing and a general desire for affordable housing. Essentially, those conditions which make State Housing most cost-effective will also make housing less affordable than at present, and vice-versa.

Income-Related Rent

The Income-Related Rent programme provides affordability assistance to most State House tenants.

The cost of any State House under-utilisation is compounded by an Income-Related Rent. This is because the subsidy to bring the actual rent up to the market level increases with the size of the house, for a given family income. This is further reinforcement of the need for matching of house sizes to family groupings.

Single Income-Related Rent recipients have a high cost per person. Typically, the Income-Related Rent subsidy for a single person is greater than the total subsidy for a couple.

Accommodation Supplement

The Accommodation Supplement provides affordability assistance to people not in State Houses. It provides assistance to home owners, boarders, and council renters, as well as private market renters.

The Accommodation Supplement has the same general cost characteristics regarding matching and the cost of assistance to single people as outlined above. However, there are critical differences:

- Government exposure is limited by the maximum Accommodation Supplement rate.
- The Accommodation Supplement recipient pays a share of any "excess" accommodation cost and therefore has an incentive to keep accommodation costs reasonable.

These differences mean the Accommodation Supplement programme has a degree of self-regulation which is not present in the State Housing and Income-Related Rent programmes.

Mortgage Insurance Scheme

Welcome Home Loans aim to reduce the risk for lenders of lending to low equity borrowers. Housing New Zealand receives an insurance premium to cover the potential claims.

A simulation exercise revealed that:

- risk of a claim is highest in the early years of the loan
- risk decreases as house prices increase
- risk decreases as deposit levels increase
- the highest risk comes from no deposit loans made in an environment of stable or falling house prices
- the insurance premium was adequate in all but the most extreme scenario tested. This scenario coupled high default rates, no deposit loans, and a sustained fall in real house prices. This is considered an unlikely eventuality.

Overall, house prices only need to keep pace with inflation for the risk of the scheme to be minimal.

Further analysis suggested that the provisioning in the Housing New Zealand balance sheet to allow for future claims appears higher than necessary. This means recognition of profits may have been too low.

Housing Innovation Fund

The Housing Innovation Fund aims to increase the quantity and quality of social housing provided by Community Based Organisations and Local Governments.

Assistance to Community Based Organisations is assessed on a case by case basis, and can vary widely. Consequently, the general conclusion is that the

cost-effectiveness of a particular project will depend on the structure of the assistance.

The cost-effectiveness of loans to Local Governments would normally be expected to be better than loans to Community Based Organisations.

Shared Equity Scheme

The major cost of the proposed Shared Equity scheme is that the Government's equity is expected to grow more slowly than the opportunity cost of the capital used (discount rate). The longer each investment is in place, the greater the expected cost. However, the scheme is expected to show accounting profits.

The Government will carry some risk arising from the possibility of house price declines.

Comparisons between Programmes

At the boundary between State Housing and the private market, it was found that the cost to the Government of a State House and Income-Related Rent relative to the Accommodation Supplement was around $6,700 per year for a single person with one child. This marginal cost varies by family type and house size. This difference in cost may well be justified if the tenants are deemed to be "in need" as measured by the Social Allocation System. But if they are no longer "in need" then this represents an excess cost borne by Government.

It was noted that the Income-Related Rent scheme was more generous than the Accommodation Supplement for families in similar circumstances. For example, for a single person with one child, the extra cost to Government was assessed at $2,100 per year. In essence, this is the extra net rental that State House tenants would need to pay if they moved to the private rental market and onto the Accommodation Supplement.

Limited information on Housing Innovation Fund funded projects was available, and it was unclear whether these were fully comparable with State Housing. On the information available, Housing Innovation Fund funded projects were less cost-effective than State Housing. However, this assumes on-going increases in house prices above the general inflation rate. If house prices simply keep pace with inflation, then Housing Innovation Fund funded projects compare favourably with State Housing.

Conclusions

From the Government's perspective, the provision of State Housing plus Income-Related Rent is more cost effective than the Housing Innovation

Fund plus the Accommodation Supplement. This conclusion is subject to assumptions on house price appreciation.

The Accommodation Supplement is cheaper to Government than Income-Related Rent. The difference in cost is borne by the tenant in the form of higher rent.

The importance of matching houses to needs was a key theme. Poor house utilisation causes excess capital requirements, higher maintenance costs, and higher affordability subsidies. Realisation of maximum non-financial benefits is also dependent on good house utilisation.

This implies that State House tenancies should be actively managed to ensure good house utilisation and that the benefits of State Housing go to those most "in need". The portfolio of State Houses may need periodic rebalancing to ensure a good match between supply and demand.

The analysis does not yet take into account the considerable wider benefits from being a state tenant. Adding such benefits is likely to improve the cost-effectiveness of state housing plus Income-Related Rents: the greater the need as defined using the Social Allocation System, and the better the match, the more cost effective this option is likely to become.

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Part I

Analysis Overview

1. Introduction

1.1 Operational Areas and Programmes

Housing New Zealand Corporation is the Government's principal agency for delivering housing assistance to the New Zealand population, and for delivering policy advice to Government regarding housing issues.

As a provider of housing assistance, Housing New Zealand operates in four main areas, with each of these areas containing a number of different programmes or initiatives. In turn, each initiative targets a different sector of the population. An overview of these operational areas, programmes, and target groups is shown in Table 2 below:

Table 2 Operational Areas and Programmes

	Low Income	Special Needs	At Risk	First Home Buyers
Provision of Housing				
State Housing	✓	✓	✓	
Affordability Assistance				
Income-Related Rents	✓			
Accommodation Supplement[1]	✓			
Home Ownership Programmes				
Mortgage Insurance Scheme				✓
Low Deposit Rural Lending	✓			✓
Work Based Savings Scheme (planned)				✓
Shared Equity Scheme (planned)	✓			✓
Community Housing Programmes				
Housing Innovation Fund	✓	✓	✓	
Local Government Fund	✓	✓	✓	

Source: NZIER
Housing New Zealand

[1] The Accommodation Supplement is actually administered by the Ministry of Social Development rather than Housing New Zealand. Nevertheless, it is included in this analysis as one of Government's major housing assistance programmes.

Note the above table is generalised. It does not intend to capture all programmes or target groups.

The main target groupings of the interventions are summarised in the table below:

Table 3 Target Groups for Interventions

Target group	Description
Low income	High reliance on benefits
Special needs	Elderly People with disabilities (physical and mental) Large family groups
At risk	People who have been in dysfunctional relationships People recovering from drug or alcohol abuse Refugees and recent migrants Others who have difficulty coping with society
First home buyers	Young people with good incomes but no deposit People who previously owned property but can no longer afford a deposit following a relationship breakdown

Source: NZIER

Looked at from a wider perspective, the target groupings could be said to be:

- those whose needs are not adequately met by the private rental market (low income, special needs, and at risk)
- first home buyers.

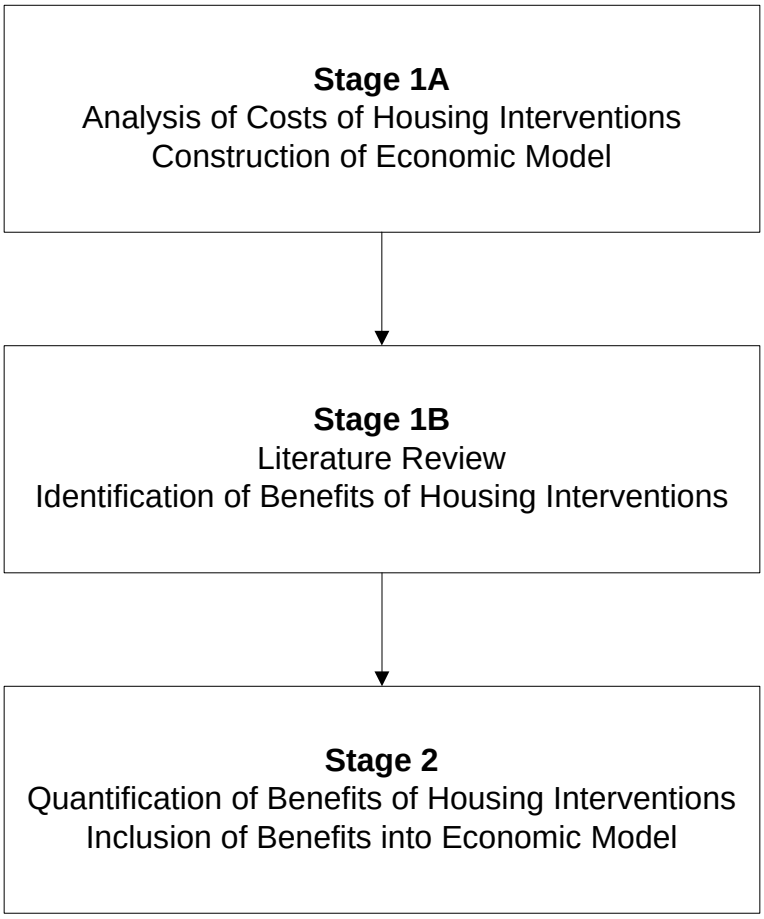
The first broad category addresses a (perceived) market failure whereby certain groups of society do not have access to adequate housing. The second broad category addresses the Government's desire to increase home ownership rates in New Zealand.

1.2 Economic Analysis of Housing Programmes

Housing New Zealand carries out its range of housing programmes because Government wishes to provide assistance in those areas. However, from a number of perspectives – notably policy effectiveness and efficiency of use of taxpayer's funds – it is necessary to periodically review programmes.

Housing New Zealand has planned a three stage analysis of its housing programmes. These stages are:

Figure 1 Analysis of Housing Programmes



Source: Housing New Zealand
NZIER

This study is intended to cover Stage 1A of this analysis of housing interventions. However, parts of Stage 2 have been included where benefit streams are obvious, such as rental payments for State Housing.

1.3 Report Structure

The report has been split into two parts. Part I contains this introduction and an overview of the analysis results, while Part II contains the full analysis of each intervention.

The remainder of Part I presents the key findings of the research. Each intervention is described in general terms and the results of the analysis of each intervention are discussed.

Results will be of limited value at this stage because the analysis is limited to a consideration of costs. Clearly, for meaningful results to come from the analysis, benefits must be included.

Nevertheless, the model structure will be there to allow inclusion of benefits as the later stages of the Economic Analysis project are completed. Anticipated final output of the Economic Analysis will be similar to the chart shown on the next page. Note that the data shown in this table is completely hypothetical, and is for illustration only.

Part II of this document has the following structure:

Section 3 covers some general issues about the nature of the analysis, analysis viewpoints, and qualifications regarding the nature of the analysis.

Sections 4 through 9 are the analysis sections of the report. Each section analyses one of the interventions. The general structure of each of these analysis sections is to first describe the characteristics of the housing intervention, and then analyse the effects of the intervention. Particular characteristics examined in these sections include:

- who is the intervention targeting?
- what are the characteristics of the intervention?
- what are the cost drivers of the intervention?

Section 10 moves into an overall discussion of the results and presents ways in which these interim results can be useful for decision-making.

The qualification noted earlier regarding the omission of benefits from the research should be kept in mind when reading these sections.

Table 4 Anticipated Final Output Format

Output type	Accommodation services				Access to home ownership			Accommodation/community improvement		
			Value ($m)	BCR		Value ($000)	BCR		Value ($000)	BCR
State Housing	Provide rental housing on priority-basis where need is not matched by commercial sector				**Mortgage insurance**			**Healthy Housing**		
	Costs to HNZ	$	700		Costs to HNZ			Costs to HNZ		
	Costs to others	$	100		Costs to others			Costs to others		
	Costs	$	800		**Costs**			**Costs**		
	Benefits to HNZ		$800		Benefits to HNZ			Benefits to HNZ		
	Benefits to others		$79		Benefits to others			Benefits to others		
	Benefits		$879	**1.10**	**Benefits**		**1.80**	**Benefits**		
	Non-monetised benefits or costs				**Non-monetised benefits or costs**			**Non-monetised benefits or costs**		
	item a	description			item a			item a	description	
	item b	description			item b			item b	description	
	Quantity assisted pa		65,000		**Quantity assisted pa**			**Quantity assisted pa**		
	Cost drivers: describe… eg population, income, interest				**Cost drivers**			**Cost drivers**		
Income-Related Rent Subsidy	Difference between market rental and 25 percent of tenant's household income				**Deposit assistance**			**Community renewal**		
	Costs to HNZ	$	400		Costs to HNZ					
	Costs to others	$	50		Costs to others					
	Costs	$	450		**Costs**					
	Benefits to HNZ		$50		Benefits to HNZ					
	Benefits to others		$420		Benefits to others					
	Benefits		$470	**1.04**	**Benefits**		**1.05**			
	Non-monetised benefits or costs				**Non-monetised benefits or costs**					
	item a	description			item a					
	item b	description			item b					
	Quantity assisted pa		30,000		**Quantity assisted**					
	Cost drivers: describe… eg population, income, interest				**Cost drivers**					
Accommodation Supplement	Income-tested and family-size related supplement for 70% of rent or mortgage costs to a maximum				**Education and support**			**Etc**		
	Costs to HNZ	$	-							
	Costs to others	$	735		etc…					
	Costs	$	735							
	Benefits to HNZ									
	Benefits to others		$760							
	Benefits		$760	**1.03**						
	Non-monetised benefits or costs									
	item a	description								
	item b	description								
	Quantity assisted pa		240,000							
	Cost drivers, describe… eg interest rates, population, income, etc									

Source: NZIER

2. Key Findings

2.1 Qualifications

2.1.1 Analysis Structure

The findings in this analysis are subject to a number of qualifications (see Section 3.4). These include:

- limited analysis of overhead and administration costs
- overheads and administration have been applied on a uniform basis through time
- the analysis assumes a mature, on-going programme and excludes product development and startup costs
- non-financial benefits have been excluded
- most programmes have different target markets, which limits the direct comparability of the schemes.

These qualifications need to be borne in mind when considering the results of the analysis.

2.1.2 Discount Rate

The analysis used a discount rate of 7.5 per cent real. This rate was chosen because the analysis was principally from the Government's perspective, for which the Departmental Capital Charge rate (an approximation of the Government cost of capital) is an appropriate discount rate (see Section 3.2).

Using different discount rates has the following effects (see Section 10.4):

- a higher discount rate would favour annual subsidy interventions
- a lower discount rate would favour asset ownership schemes
- schemes where the major cash flows occur in the first few years show only modest sensitivity to the choice of discount rate.

2.2 State Housing

2.2.1 Overview

State Housing provides accommodation to people in society who would not otherwise be housed, or whose alternative accommodation is inadequate. Their need for housing extends beyond simple affordability (which could be addressed by the Accommodation Supplement), although this typically forms part of their need.

Eligibility for a State House is based on the Social Allocation System. This ranks applicants according to their level of unmet housing needs on a scale of A (high) to D (low). Housing New Zealand aims to house all applicants with an A or B priority (see Section 4.1).

State Housing is a long-term intervention on two counts. Firstly, the lifespan of a house is 50 years or more; and secondly, State House tenancies have a half-life of around 4½ years.

From an economic viewpoint, it is desirable to match the timeframes of solutions with that of the problem they are intended to solve. It is questionable whether the State Housing solution is fully matched to the problem it is supposed to solve (see Section 4.2).

Economic growth was identified as a key driver of housing costs. Wages, profits, and net migration all tend to increase in times of good economic growth, with each of these factors tending to increase demand for housing.

Demand for State Houses is inversely related to economic growth. Poor economic conditions can lead to lower wages, job losses, and increased stress amongst working families. These conditions can result in increased demand for State Houses (see Section 4.3).

2.2.2 Analysis

The costs associated with State Housing were analysed in two dimensions: firstly, by the size of the house; and secondly, by the means of acquisition. Three means of acquisition were analysed: build, buy, or lease.

Although this was an analysis of costs, the market rental of State Houses is known and was included as a readily measurable benefit. House prices were assumed to increase at a rate of 2½ per cent real per annum. The increase in asset values was counted as a benefit on project termination. No attempt was made to quantify the non-financial benefits arising from State Housing.

Results of this financial analysis (see Sections 4.4 and 4.5) indicate that:

- houses of 2, 3, or 6 bedrooms have the least cost per bedroom, while houses of 1 or 4 bedrooms have the highest cost per bedroom
- leasing a house is the most cost-effective way of providing a house for State Housing purposes using a resource-costing approach, while buying a house is the least cost-effective method
- from a corporate viewpoint (allowing for financing cost and taxation), leasing a house becomes more viable (relative to the resource costing approach), while the viability of building and buying worsens

- from a corporate accounting viewpoint, leasing will generate cash losses in every year, while building and buying will be profitable. However, the accounting rate of return on building or buying would be low
- from a national perspective, all acquisition methods showed similar costs which amounted to the administrative and overhead costs introduced by Government processes
- buying and leasing houses becomes more favourable when house prices increase rapidly and less favourable when house prices are stable.

Further analysis of the State Housing results was carried out to determine the regrets (marginal cost) associated with a mismatch between house size and family size. For example, what is the additional cost incurred by Housing New Zealand when a couple is housed in a 3-bedroom house rather than a 1-bedroom house? (see Section 10.2.1).

Two main points emerged from this analysis.

- Empty houses have high regrets.
- Regrets from under-utilisation increase with the degree of under-utilisation.

It is far more costly to have a house empty, than to have it under-utilised. The cost of an empty house is typically 5 to 10 times the cost of under-utilisation by one bedroom.

This implies management strategies should be in place to minimise empty houses while still having houses available to cover emergency housing needs. Short term strategies would place tenants in the house, perhaps on a short-term basis, even if the house was not fully utilised. Longer term strategies would rebalance the housing portfolio to match the level of demand.

This does not mean that the costs of under-utilisation should be overlooked. A simple example calculated that the cost to Housing New Zealand of under-utilisation by 1-bedroom across 10 per cent of the portfolio would be around $11.5 million per year.

It is important to note that the marginal costs identified in this analysis are simply the capital and operating costs associated with a larger house size. Any additional Income-Related Rent subsidy required for a larger house is over and above these costs.

The analysis was repeated with the Income-Related Rent subsidy added in. Empty houses were still more costly than under-utilised houses, but the cost of under-utilisation increased.

The analysis was then extended to include hypothetical non-financial benefits. This analysis found that the higher the value attributed to non-

financial benefits, the higher the "cost" of house under-utilisation. This cost was comprised of capital and operating expenditure, Income-Related Rent subsidy, and non-financial benefits foregone by not having all bedrooms utilised.

Finally, a special case of the non-financial benefits analysis was tested. In this case, the State House was assumed to be occupied by people who no longer met the Social Allocation System entry requirements and the net non-financial benefits of housing these people was assumed to be zero (on the basis that they could obtain equivalent non-financial benefits in the private market). In this case, there were regrets at all levels of utilisation.

The issues raised by this series of analyses are relevant, even if the scenarios used to extract those issues are unusual. These issues include:

- management of the portfolio to minimise empty houses while still having houses available to cover emergency housing needs
- matching of house size to family groupings to minimise under-utilisation of the housing resource
- management of tenancies to maintain good house utilisation when family groupings change
- management of tenancies to ensure that State Houses are for the benefit of those people who are "in need".

2.3 Income-Related Rent

2.3.1 Overview

Income-Related Rent is an affordability measure that is only available to State House tenants. Over 90 per cent of State House tenants are on an Income-Related Rent, while almost all (99 per cent) of new lettings qualify for an Income-Related Rent.

The basic principle of the Income-Related Rent is that, below a threshold level of income, the rent paid for the State House will be 25 per cent of household income. Above the threshold level of income, rental paid will increase at the rate of 50 per cent of marginal income until the market rental is reached. No tenants will pay more than market rental (see Section 5.2).

Cost drivers for the Income-Related Rent programme can be split into 2 parts – the size of the Income-Related Rent subsidy, and the demand for State Housing. The size of the Income-Related Rent subsidy is dependent on three things (see Section 5.3):

- market rental of the house
- household income
- family type.

See the summary of State Housing above for factors driving demand for State Houses.

2.3.2 Analysis

The difference between the market rental and the rental paid by the tenant is paid to Housing New Zealand by the Department of Building and Housing. The ultimate effect of this is to make State Housing affordable to the tenant.

A matrix of family type and house sizes was drawn up to calculate the Income-Related Rent subsidy in each situation. The net present value of these subsidies was then calculated, and the results are shown in the table below:

Table 5 Summary of Income-Related Rent Results

Net Present Value ($ per person per year) - Government perspective

Family Type	Person Count	House Size (bedrooms)				
		1	2	3	4	5
Single	1	-5,300	-7,500			
Single + 1	2		-3,600	-4,400		
Single + 2	3			-2,600	-3,300	
Couple	2	-2,300	-3,400			
Couple + 1	3		-2,200	-2,800		
Couple + 2	4			-1,900	-2,400	
Multi-Adult	4		-1,500	-2,000	-2,500	
Multi-Adult + 1	5			-1,500	-2,000	-2,200
Multi-Adult + 2	6				-1,500	-1,700

Source: NZIER

As the Income-Related Rent is a subsidy scheme, all values in the table are negative.

The results are shown on an annual basis to make the figures more meaningful. Note that the total cost of the subsidy is the figure shown times the number of people in the house.

Key points to take from the table are that:

- single people have high Income-Related Rent costs
- Income-Related Rent costs increase as families are housed in larger houses than are strictly necessary.

The first point reflects the nature of accommodation costs where there is a core of fixed costs that are incurred regardless of the size of house or number of people using the house. Having more than one person in the house allows those fixed costs to be shared.

The second point recognises that market rentals increase with house size. As the Income-Related Rent depends on the household income, then the rental

paid by the tenant does not change with the house type, but the Income-Related Rent subsidy does.

A further analysis of the joint State Housing and Income-Related Rent programmes was carried out (see Section 5.6). These results are effectively the sum of the costs of the State Housing programme and the Income-Related Rent programme, and are shown in the table below.

Table 6 State Housing plus Income-Related Rent

Net Present Value ($ per person per year) - Government perspective

	Person	House Size (bedrooms)				
Family Type	**Count**	**1**	**2**	**3**	**4**	**5**
Single	1	-8,300	-12,200			
Single + 1	2		-5,900	-7,800		
Single + 2	3			-4,800	-7,000	
Couple	2	-3,800	-5,700			
Couple + 1	3		-3,800	-5,000		
Couple + 2	4			-3,500	-5,200	
Multi-Adult	4		-2,700	-3,600	-5,300	
Multi-Adult + 1	5			-2,900	-4,200	-4,700
Multi-Adult + 2	6				-3,400	-3,800

Source: NZIER

The key points to take from the table are the same as those taken from the Income-Related Rent programme result table above. However, the magnitude of the numbers is larger because two programmes are included rather than one.

Note that the cost of providing a larger size house increases significantly above the level shown in Table 5. This is because the increase includes not only the higher cost of the Income-Related Rent subsidy, but the higher costs associated with the larger house. This leads to a general conclusion that there are high opportunity costs associated with a mismatch of house size to family type.

2.4 Accommodation Supplement

2.4.1 Overview

The Accommodation Supplement is Government's affordability assistance measure for those people not in State Housing. It is available to boarders and home owners as well as those renting their houses.

Rules governing the scheme are complex. In general, basic Accommodation Supplement eligibility is for 70 per cent of accommodation costs over a threshold level, where the threshold level is dependent on benefit status, age, marital status, number of dependent children, and the type of accommodation. This basic eligibility is subject to regional maxima, and abatement for income and assets (see Section 6.2).

The following comparisons can be made between the Income-Related Rent and the Accommodation Supplement.

- The Income-Related Rent is more generous than the Accommodation Supplement at all income levels where affordability assistance is paid. This may be Government's way of targeting housing assistance to those most in need.
- The gap between the Income-Related Rent and Accommodation Supplement is greatest at low incomes and narrows as income increases – particularly once income abatement commences for the Income-Related Rent.
- The rental paid by an Income-Related Rent recipient is not influenced by house size, whereas an Accommodation Supplement recipient must pay more as house size (rental) increases.

Economic growth was a significant factor identified as a cost driver. This affects not only accommodation costs but also the incomes and assets of potential Accommodation Supplement recipients. In the longer term, education was suggested as a driver of the number of people requiring Accommodation Supplement assistance (see Section 6.3).

2.4.2 Analysis

The analysis used data available for State Housing and Income-Related Rent to calculate Accommodation Supplement payments for equivalent groups of tenants. These calculated Accommodation Supplement payments were then compared with the actual payments by family group. While actual Accommodation Supplement payments tended to be slightly lower than those calculated, they confirmed the figures were approximately correct (see Section 6.4 and Appendix C).

In terms of this analysis, no financial benefits were present for the Accommodation Supplement programme.

The net present values of the cash flows associated with the Accommodation Supplement programme are shown in the table below (see Section 6.5).

Table 7 Summary of Accommodation Supplement Results

Net Present Value ($ per person per year) – Government perspective

Family Type	Person Count	House Size (bedrooms)			
		1	2	3	4
Boarders	1	-2,200			
Single	1	-4,600	-5,200		
Single + 1	2		-2,500	-2,800	
Single + 2	3			-2,000	-2,300
Couple	2	-2,000	-2,600		
Couple + 1	3		-1,600	-2,100	
Couple + 2	4			-1,500	-1,800

Source: NZIER

Conclusions that can be reached from this table are similar to those obtained from the Income-Related Rent analysis:

- Single people have high Accommodation Supplement costs
- Accommodation Supplement costs increase when there is a mismatch between house size and family type.

This second observation must be balanced by the fact that as accommodation costs increase, then the family shares in those higher accommodation costs. Further, once the regional maximum Accommodation Supplement payment is reached, the family bears all the increased accommodation costs. Therefore, the degree to which the Government is exposed to house/family mismatches is limited compared with the Income-Related Rent. Further, the family has an incentive to minimise accommodation costs which in turn acts to minimise the Government's costs.

2.5 Mortgage Insurance Scheme

2.5.1 Overview

The Mortgage Insurance Scheme goes by the working name of Welcome Home Loans. The programme aims to increase home ownership levels amongst young people and low to moderate income earners by reducing the risk to the lender of lending to these groups (see Section 7.1).

Welcome Home Loans allow participants to borrow up to $200,000 without a deposit, and up to $280,000 with a deposit of 15 per cent of the loan amount in excess of $200,000. Housing New Zealand insures the lender against any losses they may incur on the loan. The insurance premium amounts to 3 per cent of the loan amount with 1 per cent paid by the lender and 2 per cent by Government.

The cost drivers of the scheme are the probability of loan default and the size of any claims made on the scheme. At the aggregate level, the probability of loan default is primarily a function of economic growth, although individual borrowers experience many more factors such as sickness, accidents, death, relationship breakdown, and financial mis-management. (See section 7.3).

The size of claims will be influenced by the house price at the time of sale relative to purchase price, and the amount of the loan that has been repaid to the time of sale. House prices have a dominant influence on the size of claims.

2.5.2 Analysis

A simulation exercise was carried out to analyse the scheme. Default rates were set at high levels to test the robustness of the scheme (see Section 7.5).

General conclusions from this analysis were:

- risk is highest in the early years of the loan
- risk decreases as house prices increase
- risk decreases as deposit levels increase
- the insurance fund remained intact in all but the most extreme scenario tested.

Some more specific observations were:

- under a scenario of increasing house prices (+2.5 per cent real p.a.), few claims would be made on the scheme beyond year 3
- under a scenario of stable house prices (declining real prices), few claims would be made on the scheme beyond year 10
- a combination of no deposit loans and stable (or falling) house prices is a high risk combination. This has potential to exhaust the insurance fund, but only if the house market experienced a sustained fall in real prices.

The analysis was re-run using parameters based on the actuarial valuation of the required insurance fund in the Housing New Zealand accounts. The scheme was shown to be robust using these parameters also.

The programme has been running since September 2003 either in pilot form or as the full Welcome Home Loans programme. Since that time, $6.7 million has been collected in premium income, and the Corporation's accounts contain a provision of $4.8 million for potential insurance claims (see Section 10.2.2).

An analysis of the 3 annual cohorts of loans was carried out to assess the risk of default given the rapid increases in house prices experienced over the

3 year period. This analysis suggested that the provisioning in the accounts was greater than was really necessary to cover the risk of loan default.

It is acknowledged that the analysis methodology was crude. Nevertheless, it suggests that further investigation is warranted on the level of provisioning. Should provisioning be too high, then this means that recognition of profits has been too low.

2.6 Housing Innovation Fund

2.6.1 Overview

The Housing Innovation Fund aims to encourage Community Based Organisations and Local Governments to provide Social Housing in their local communities. This Social Housing should target people with special needs such as pensioners, people with disabilities, iwi, Maori, and Pacific peoples; or low to moderate income households who cannot find suitable accommodation in the private rental market (see Section 8.1).

Assistance provided to Local Government is normally in the form of a 20-year suspensory loan of up to 50 per cent of the project costs. Provided the housing remains in use as Social Housing for at least 20 years, the loan is never repaid (see Section 8.2).

A variety of grants and loans are available for Community Based Organisations. Typically, Housing New Zealand provides a conditional grant which matches the Community Based Organisation contribution (up to 15 per cent of project cost), a feasibility grant of up to $15,000, and a Housing Innovation loan of up to 70 per cent of the project cost. Suspensory loans and other grant types are also available. The actual bundle of assistance provided to each Community Based Organisation is tailored to what the project can afford.

The Housing Innovation loans offered to Community Based Organisations must be repaid. Typically, these loans are offered interest free for the first 10 years, and then convert to a 15 year table loan for the outstanding balance (25 year term in total). Suspensory loans granted to Community Based Organisations are on the same terms to those granted to Local Governments.

Both types of projects appear to have significant setup costs where Housing New Zealand works with the Local Government or Community Based Organisation to ensure the project meets Housing New Zealand objectives. This process may take from 4 to 26 months, with Community Based Organisations typically having longer lead times than Local Governments.

The key cost driver for this programme is the rate at which Local Governments and Community Based Organisations bring suitable projects

forward. This will largely depend on the degree of unmet housing need in the community which is indirectly a function of economic growth (see Section 8.3).

2.6.2 Analysis

Two projects were analysed – one from a Community Based Organisation, and the other from a Local Government. The unit cost of each project was similar suggesting that the projects were reasonably comparable (see Section 8.4).

The Local Government project received the "typical" assistance package consisting of a suspensory loan for 50 per cent of the project costs. The Community Based Organisation received less assistance than appears typical for Community Based Organisations, with only an Innovation Fund loan for 53 per cent of project costs being received.

To test the effect of the structure of the Community Based Organisation assistance, the assistance package was reconfigured to a more typical pattern. This involved a feasibility grant, a conditional grant of 15 per cent of the project cost, and the Innovation Fund loan was extended to 70 per cent of the project cost (see Section 8.5).

The results of these projects are shown in the table below.

Table 8 Results from the Housing Innovation Fund
Net Present Value ($ per bedroom per year) – Government perspective

	Net Present Value per Bedroom	Benefit Cost Ratio
Local Government Housing	-4,800	0.00
Community Based Organisation - original	-3,600	0.35
Community Based Organisation – typical	-5,800	0.31

Source: NZIER

The Local Government loan is shown to have a Benefit Cost ratio of zero because the loan is never repaid. In contrast, the Community Based Organisation lending has a positive Benefit Cost ratio because some of the loan value is repaid.

On its original loan structure, the Community Based Organisation lending is more cost-effective than the Local Government lending (see the Net Present Value per Bedroom column). However, if the Community Based Organisation lending is reconfigured to a more typical structure, then the Community Based Organisation lending becomes less cost-effective than the Local Government lending.

The only useful generalisation to come from this analysis is that the cost-effectiveness of Community Based Organisation lending will depend on the structure of the assistance package. This generalisation will also hold true for Local Government lending, although there tends to be less structural variation in Local Government lending.

It should not be forgotten that this only captures the costs to Government (Housing New Zealand). The other parties to this lending will also have costs, although they will also have financial benefits to defray their costs or make the whole project financially viable from their perspective.

2.7 Shared Equity

2.7.1 Overview

While the Shared Equity programme is not yet operational, the key design parameters have been approved by Cabinet. The analysis here is based on those key design parameters (see Section 9).

Shared Equity aims to address the issue of housing affordability by making the State an equity partner in the house purchase. This reduces the financing requirements of the main purchaser. It is proposed that the Government provide up to 30 per cent of house value as Shared Equity, with that equity secured by way of second mortgage.

On eventual sale of the house, the net proceeds would be split according to the initial value shares. If the sale proceeds are less than the purchase price, it is anticipated that the Government will share in this loss rather than having its capital protected. In all cases, the lender has first priority over sale proceeds, with the Government ranked second ahead of the purchaser.

In most years, it is anticipated that the growth in the Government's equity will be less than the opportunity cost of the capital (discount rate). The real rate of house price increase determines the degree to which the Government's equity "loses" value, and the duration of the equity sharing determines the absolute cost.

2.7.2 Analysis

Analysis of the proposed scheme confirmed the importance of real house price increases and the duration of the agreement. Other factors that emerged were that costs could be high if the house were sold at a loss. This was most likely to occur in the early years of the agreement (see Section 9.5).

2.8 Further Analysis

2.8.1 The State Housing / Private Market Boundary

Over time, it is hoped or expected that the situation of State House tenants will improve. Some of these tenants will leave State Housing and enter the private market, either as renters or owners. Other State House tenants may stay beyond the time when they would qualify for a State House if they had to re-apply – sometimes for extended periods.

For those tenants whose situation has improved but who remain in the State Housing system, there is a valid comparison between their current position and being in the private rental market. In their current position, they have a State House and an Income-Related Rent. In the private market, they would receive an Accommodation Supplement.

From the analyses of State Housing, the Income-Related Rent, and the Accommodation Supplement, a regrets matrix was drawn up showing the regrets (marginal cost) of housing a family in a State House with an Income-Related Rent instead of providing them with an Accommodation Supplement (see Section 10.3.1).

The result table from this analysis is shown below.

Table 9 Regrets: State Housing plus Income-Related Rent
Dollars per household per year – Government perspective

	House Size (bedrooms)			
Family Type	**1**	**2**	**3**	**4**
Single	-3,700	-7,000		
Single + 1		-6,700	-9,800	
Single + 2			-8,500	-14,100
Couple	-3,700	-6,300		
Couple + 1		-6,400	-8,800	
Couple + 2			-8,100	-13,600

Notes: (1) No non-financial benefits have been included in these results.
Source: NZIER

This table compares each family type living in a State House receiving an Income-Related Rent with the same family type living in similar sized private accommodation receiving an Accommodation Supplement.

These results can be generalised to say that it costs between $3,700 and $14,100 more per household per year to house a family group in a State House and provide them with an Income-Related Rent than it would to provide them with an Accommodation Supplement.

Note that this cost differential can increase above the figures shown in the table if the State House is under-utilised, but the private accommodation is

not. While the reverse would also hold true, this is less of a concern as Accommodation Supplement recipients share in higher accommodation costs and therefore have an incentive to match their house to their family size.

The key point from the above table is that it is substantially more costly to house someone in a State House and provide them with an Income-Related Rent, than it is to provide them with an Accommodation Supplement alone. This difference in cost may well be justified if the tenants are deemed to be "in need" as measured by the Social Allocation System. But if they are no longer "in need" then this simply represents an excess cost borne by Government.

The above analysis is not meant to imply that this is a common situation. This is simply an analysis of the excess cost borne by Government if it does occur.

2.8.2 Affordability Programmes

The Government has two affordability programmes – one for State House tenants, and the other for private market accommodation. The analysis of the Accommodation Supplement programme noted that it was less generous to the tenant than the Income-Related Rent programme. This raises the questions of why there are two affordability programmes and what is the additional cost involved in running the Income-Related Rent programme? (See Section 10.3.2).

A regrets matrix of this information is presented in the table below:

Table 10 Regrets: Income-Related Rent

Dollars per household per year – Government perspective

	House Size (bedrooms)			
Family Type	**1**	**2**	**3**	**4**
Single	-700	-2,400		
Single + 1		-2,100	-3,200	
Single + 2			-1,800	-3,000
Couple	-700	-1,700		
Couple + 1		-1,800	-2,200	
Couple + 2			-1,500	-2,500

Notes: (1) No non-financial benefits have been included in these results.

Source: NZIER

This table tells us that it costs the Government between $700 and $3,200 per household per year more to use the Income-Related Rent programme rather than the Accommodation Supplement programme. In essence, this is the extra annual rental that State House tenants would need to pay if the

Income-Related Rent programme was replaced by the Accommodation Supplement.

2.8.3 Social Housing

Comparison of the cost of providing State Houses with the cost of encouraging social housing through the Housing Innovation Fund showed that the total cost of each type of housing was similar. However, the housing appeared to be different (units vs houses) meaning the comparison may not be on a like-with-like basis.

From a Government perspective, the net cost of State Housing was less than that of social housing funded through the Housing Innovation Fund. This was because Government could capture the benefit of rental payments and the value of the housing asset under the State Housing programme. In contrast, these benefits accrue to other organisations for social housing funded using the Housing Innovation Fund. However, under a scenario of stable house prices (thereby reducing the "benefit" of asset ownership), the cost of State Housing increased to be comparable to that provided by Housing Innovation Fund funding.

2.9 Comparison Summaries

The following tables summarise the cost of housing assistance by the three major family groupings in the Accommodation Supplement and Income-Related Rent programmes.

Each table is split into three parts. The first shows the costs of the relevant housing programmes; the second part shows the cost of the relevant affordability programmes; and the third shows the combined costs of the two types of programmes.

All tables show the Net Present Value expressed as an annual equivalent from the Government perspective.

The cost of building, owning and maintaining a State House is the same for all family types. The costs of the Housing Innovation Fund projects are included only for the single person family type because of the nature of the Housing Innovation Fund projects analysed.

The first parts of the tables show that – under the analysis assumptions – State Housing is the lowest cost method of providing accommodation for single people. Key factors in this conclusion are the inclusion of house price appreciation as a benefit of building a State House, and the collection of rental revenue from State Houses. Exclusion of the house price appreciation benefit would put State Housing in between the two Housing Innovation Fund projects in terms of cost-effectiveness. It should also be recalled from

the earlier analysis that leasing a house is more cost effective than building or buying.

Table 11 Cost Summary: Single – No Children

Dollars per household per year – Government perspective

	House Size (bedrooms)			
Family Type	**1**	**2**	**3**	**4**
State House (build)	-3,000	-4,600		
HIF - LG	-4,800			
HIF - CBO	-5,800			
IRR	-5,300	-7,500		
AS	-4,600	-5,200		
State House + IRR	-8,300	-12,200		
State House + AS	-7,600	-9,800		
HIF - LG + AS	-9,400			
HIF - CBO + AS	-10,400			

Source: NZIER

Table 12 Cost Summary: Single plus 1 Child

Dollars per household per year – Government perspective

	House Size (bedrooms)			
Family Type	**1**	**2**	**3**	**4**
State House (build)		-4,600	-6,600	
IRR		-7,100	-8,900	
AS		-5,000	-5,700	
State House + IRR		-11,800	-15,500	
State House + AS		-9,600	-12,300	

Source: NZIER

Table 13 Cost Summary: Single plus 2 Children

Dollars per household per year – Government perspective

	House Size (bedrooms)			
Family Type	**1**	**2**	**3**	**4**
State House (build)			-6,600	-11,200
IRR			-7,700	-10,000
AS			-5,900	-7,000
State House + IRR			-14,400	-21,100
State House + AS			-12,500	-18,200

Source: NZIER

The second parts of the tables show that the Accommodation Supplement has lower costs than an Income-Related Rent for a family in identical circumstances. This section also shows the additional costs added by a mismatch of house size to family grouping.

The third section shows the combined impact of the combinations of assistance. Although the separation of the table into three parts shows the Accommodation Supplement to be separate from the combined results, when looking at the population at large there are many people only receiving the Accommodation Supplement without any other form of assisted housing. Therefore, the Accommodation Supplement results should also be compared with the other results to see the bigger picture.

Overall, this third section shows the Housing Innovation Fund projects with an Accommodation Supplement to be more expensive than State Housing with an Income-Related Rent. However, if housing prices were stable, then Housing Innovation Fund plus Accommodation Supplement would be comparable with State Housing plus Income-Related Rent. Combined housing and affordability costs could be reduced by replacing the Income-Related Rent with the Accommodation Supplement. The most cost-effective housing assistance is the Accommodation Supplement on its own – for those tenants who are not in need of greater housing assistance.

2.10 Conclusions

The importance of house utilisation was a key theme throughout the State Housing, Income-Related Rent, and Accommodation Supplement analyses. Costs associated with poor house utilisation included excess capital requirements, higher maintenance costs, and higher affordability subsidies. It was also demonstrated that non-financial benefits were dependent on good house utilisation.

This implies that State Houses tenancies should be actively managed to ensure good house utilisation and that the benefits of State Housing goes to those most "in need". Further, the portfolio of State Houses may need periodic rebalancing to ensure a good match between supply and demand.

Cost comparisons can be made across the various housing programmes to ensure the maximum benefit is being obtained from the limited funds available. In making such comparisons, it needs to be acknowledged that costs do not reveal the whole picture.

Where the programmes target the same segments of the population, direct cost comparisons are possible. Where the targets are different, a judgement must be made whether the cost differences revealed are justified.

The inclusion of non-financial benefits in a future study will aid in some of these inter-programme comparisons.

Part II

Detailed Analysis

3. General Analysis Issues

3.1 Discounted Cash Flow Analysis

3.1.1 What is a Discounted Cash Flow Analysis?

This analysis of housing interventions uses a *discounted cash flow analysis*. This type of analysis is particularly suitable for multi-year projects.

A discounted cash flow analysis is based on the principle of a *time value of money*. That is, a dollar in the hand today is worth more to us than an equivalent value in one year's time, and even more than an equivalent value in 10 years time.

Most discounted cash flow analyses use *real values* – that is, inflation is removed from the units of monetary expression. This means that one dollar will purchase the same quantity of goods in 10 years time as it does today. However, even with this equivalence of purchasing power, we value the dollar we have today higher than the dollar we would have in 10 years time.

There are various reasons why we have a preference for money today rather than in the future:

- we can invest the money today so that we have a greater value of money in the future
- we can enjoy the benefits of the dollar now
- there is uncertainty over future outcomes.

Turning the investment framework around, we could say we have a choice to receive a dollar in a year's time, or a dollar plus some level of investment earnings. Viewed this way, it is obvious that we would prefer to receive the dollar plus the investment earnings rather than only the original dollar.

Given that we know that a dollar today is worth more than the same dollar value in the future, we can then ask what level of investment earnings makes us indifferent between receiving a dollar today, or a dollar plus investment earnings in the future. We could then say that if we were offered more than this amount at that future time, then we would choose to receive the money in the future. On the other hand, if we were offered less than this amount, we would choose to keep the dollar we have in our hands now and invest it elsewhere to achieve our required rate of return.

This earnings rate is known generally as the *rate of time preference*, and in a discounted cash flow analysis is represented by the discount rate. We can use the discount rate to convert any *future value* to its equivalent *present value* using the following formula:

$$PV = \frac{FV_i}{(1+r)^i}$$

where: PV = Present Value
FV = Future Value
i = Year number
r = Discount rate (expressed as a decimal)

For example, at a 10 per cent discount rate, one dollar in one year's time is worth approximately 91 cents today (1 / (1 + 0.1)), or one dollar in two year's time is worth approximately 83 cents today $(1 / (1 + 0.1)^2)$.

More generally, projects consist of a series of cash flows occurring over an extended period of time. Each of these cash flows must be discounted by the appropriate amount to bring the project back to its Present Value. This can be expressed as follows:

$$PV_{project} = \sum_{i=0}^{n} \frac{CF_i}{(1+r)^i}$$

where: PV = Present Value
CF_i = Cash Flow in year i
i = Year number
r = Discount rate (expressed as a decimal)

Essentially, this formula says that the Present Value of the project is equal to the sum of its discounted cash flows. Hence the name, discounted cash flow analysis.

3.1.2 Relationship to Cost-Benefit Analysis

A *Cost Benefit Analysis* is a particular type of discounted cash flow analysis. In particular, a cost-benefit analysis is expected to:

- capture all benefits and costs regardless of to whom they accrue
- use a social rate of time preference as the discount rate.

The current analysis does not meet these criteria. In particular, it:

- does not capture all benefits
- some analyses do not capture all costs
- typically takes either a Government or a Corporation viewpoint of the projects
- uses the Departmental Capital Charge Rate as the discount rate.

While future extensions to this analysis will bring the analysis closer to a cost benefit analysis in nature, at this stage it is more appropriate to term it a discounted cash flow analysis rather than a cost benefit analysis.

3.2 Discount Rate

The Treasury guidelines for Cost Benefit Analysis[2] suggest use of a 10 per cent discount rate for Public Sector projects where no sector specific discount rate has been agreed with the Treasury. For financial analysis at the departmental level, the Treasury suggests use of the Departmental Capital Charge rate as an estimate of the Government's average cost of capital. This is set at 7.5 per cent for 2006-07.

Housing New Zealand staff were not aware of a sector specific discount rate for housing. In light of the above comment regarding departmental level analysis, the standard discount rate was set at 7.5 per cent.

3.3 Analysis Viewpoint

The analysis of housing interventions can take place from a number of perspectives. Three perspectives will be considered in this document. These are:

- financial analysis from the viewpoint of the Government. This analysis places costs in the year in which the resource use occurs (i.e. the effects of financing arrangements are ignored). Tax and depreciation are excluded from the analysis
- financial analysis from the viewpoint of Housing New Zealand. This analysis includes the effects of financing arrangements, tax, depreciation, and inflation
- national perspective. This analysis removes transfer payments (tax, benefit payments) and places costs in the year in which resource use occurs. It also allows the introduction of non-financial benefits arising from the intervention. These non-financial benefits are usually difficult to quantify.

Note that this study is restricted to considering the cost side of the economic/financial analysis. Later studies are planned to identify and value the benefits, and complete the analysis.

Where information on benefits is readily available, this will be commented on. However, it should be remembered that this is not a complete analysis of the benefits of housing interventions.

3.4 Qualifications

This is a "broad-brush" overview of various housing interventions. As such, the analysis has some limitations and requires some qualification. In particular:

[2] See 'Cost Benefit Analysis Primer', Version 1.12, The Treasury 2005, p27.

- the analysis of administrative and overhead costs is limited. The method by which administrative and overhead costs are calculated is outlined in Appendix A. While this method is somewhat arbitrary, generating better estimates would require a major dissection of the Housing New Zealand accounts – which is beyond the scope of this analysis
- administrative and overhead costs are assumed to be (mostly) uniform throughout the life of an intervention. Most of the interventions analysed are multi-year programmes. As such, the profile of administrative and overhead costs may vary through the life of the intervention. Once again, generating such profiles is beyond the scope of this analysis
- product development and startup costs have been excluded. Therefore, the analysis presented is one which considers the on-going operation of a mature programme.

  For example, the Shared Equity programme has been "in the pipeline" for about 4 years and the broad nature of the scheme has only just been approved by Cabinet. Significant product development is still required, before the Pilot scheme commences in July 2008. None of these costs have been included in the programme analysis. Further, the Pilot scheme is expected to incur significant marketing costs, which will be spread over a small number of loans. These marketing costs will far exceed the allowance made for overheads

Readers should also be aware that even if the analysis shows one scheme to be more costly than another, it does not automatically follow that the more expensive scheme should be discarded. There are two main reasons for this:

- Firstly, this analysis does not consider the non-financial benefits of any of these schemes. Therefore, no assessment can yet be made on the value of these schemes to society.
- Secondly, many of these schemes operate in different target areas. Direct comparison of schemes is only possible where the target areas are broadly similar. On this basis, the affordability assistance schemes (Income-Related Rent and Accommodation Supplement) are comparable, but the home ownership schemes (Mortgage Insurance Scheme and Shared Equity) may not be because they are addressing different target markets.

3.5 Counterfactual Definition

A key element of any Cost-Benefit type of analysis is the definition of the *counterfactual* case. This is *what would have happened if the particular action being analysed did not occur*.

The importance of this is that the counterfactual provides the measurement base of the analysis.

There are several things to note here: Firstly, the counterfactual is not necessarily a continuation of the environment as at the start of the intervention. For example, one of the benefits of the Community Renewal programme is that it increases the value of Housing New Zealand stock, and of houses in the community in general. However, as the value of all property has increased over the period that the Community Renewal programme has been in effect, the effect of the general value increase must be removed so that the increased value attributable to the Community Renewal programme can be assessed. Therefore, the counterfactual against which value change must be measured is the value change that would have occurred if the Community Renewal programme did not proceed.

Secondly, the counterfactual will change depending on the viewpoint and circumstances. For example, if Housing New Zealand increases its housing stock by leasing a property from someone in the private sector, then several counterfactuals are available from the Housing New Zealand viewpoint depending on what the alternative action is, and yet another from the national viewpoint. From the Housing New Zealand viewpoint, possible counterfactuals include doing nothing (i.e. with/without analysis), or increasing their housing stock by another means (build/buy).

From the national viewpoint, the counterfactual of Housing New Zealand leasing a house is that the house stays in the private sector. In this case, no change occurs in the overall housing stock – all that has changed is who is using the house, and as long as the house is in use, then similar benefits will flow from the house usage (although the benefits may accrue to different parts of society).

The results of the analysis hinge directly on the definition of the counterfactual position. Changes to the counterfactual can and do change the results of the analysis. As such, it is critical that the counterfactual position be reasonable and understood.

4. State Housing

4.1 Overview

The aim of State Housing is to provide affordable accommodation for those people whose accommodation needs are not being met by the market. In particular, State Housing is aimed at those on low incomes, those with disabilities or special needs, those seeking a way to escape dysfunctional relationships, and others who are not coping well in society.

Housing New Zealand had around 65,400 standard[3] properties as at 30 June 2006. This number has been increasing in recent years, and the Corporation has a stated objective of increasing this number further[4]. The recent trend in State House numbers is shown in the table below:

Table 14 Trend in State House Numbers
As at 30 June

Year	Number
2001	59,796
2002	60,388
2003	62,750
2004	63,668
2005	64,670
2006	65,613

Notes: (1) 2001 numbers as at 31 July
Source: Housing New Zealand

The stock of Housing New Zealand houses can be increased through a mixture of new building, purchase of existing houses, and leasing houses from the private sector, local government, or Community Based Organisations. Sales of existing Housing New Zealand units (where Housing New Zealand holds excess units in a particular area) and lease terminations partially offset the additions to the stock.

The Corporation uses the Social Allocation System to determine eligibility for State Housing. Key criteria in the Social Allocation System include:

- whether the members of the household live lawfully within New Zealand
- household income

[3] In addition to standard properties, Housing New Zealand also has about 200 relocatable units, and 145 carparks and garages. Community group housing projects add another 1,560 properties.

[4] Building the Future: The New Zealand Housing Strategy, p.24.

- assets of the applicant(s)
- the household's level of need.

Applicants are grouped into one of four groups (A through D) according to their level of need. Brief definitions[5] of these four groups are given below:

- A-priority households have severe and persistent housing needs that must be addressed immediately
- B-priority households have significant and persistent housing needs
- C-priority households have moderate housing needs
- D-priority households may be able to function in the market.

Once applicants have been assessed, they go onto a waiting list. As suitable houses become available amongst the Housing New Zealand stock, they are offered to people on the waiting list with the greatest urgency being given to those with A or B priority.

4.2 Characteristics

4.2.1 Links with Other Programmes

Income-Related Rents are associated with State Housing. Nearly all new tenancies are eligible for the Income-Related Rent, and over 90 per cent of the total let properties have tenants eligible for the Income-Related Rent[6].

The Income-Related Rent is an affordability measure, whereby low income households will pay no more than 25 per cent of their income as house rental. As tenants' income increases above the low income threshold, their rental is progressively increased until it reaches the market rental.

Considering the two schemes we could say that:

- state housing provides accommodation for groups in society that either would not be housed in the private market, or have some housing need that is not adequately met in the private market
- Income-Related Rent makes that accommodation affordable to the tenant.

In a policy sense, this is a strict separation of purpose. This allows the provision of housing to be run as a commercial operation, while the Income-Related Rent represents the subsidy cost of making that housing affordable. This separation of purpose aids the analysis of the programmes.

[5] More complete definitions may be found in the Housing New Zealand document: "Social Allocation of Housing New Zealand Corporation Housing".

[6] See "Key Facts – Month Ending: 30 June 2006", Housing New Zealand Corporation

4.2.2 Timeframe

The provision of a State House represents a long term intervention. Houses would be expected to have a minimum lifespan of 50 years, and potentially could last much longer.

Of course, Housing New Zealand does not need to maintain ownership throughout the life of the house. The house represents an asset that could be sold as circumstances change. Nevertheless, the building (or purchase) of the house represents an intention to provide a long term intervention.

During its lifetime, the house will provide accommodation for multiple families. However, even from the family (tenant) perspective, the timeframe of the intervention is moderately long.

Recent Housing New Zealand data[7] shows that the annualised turnover rate of all Housing New Zealand properties is just over 14 per cent. This equates to an expected half-life of tenancies of around 4½ years. If this turnover rate is constant through time, it would suggest that a quarter of tenants stay 9 years or more, and one in every 8 tenants stays 14 years or more.

One element of economic efficiency is the matching of interventions with the nature of the problem being addressed. Therefore, it is desirable that short term solutions are provided for short term problems, and longer term solutions for longer term problems.

Given that some tenants are apparently staying in State Houses for extended periods of time, the question must be asked whether these tenants actually have long term problems, or whether they continue to be a tenant in a State House long after their period of need has been addressed. The first case shows a matching of the solution with the problem, while the second case shows a mismatch between the solution and the problem.

The consequences of a timeframe mismatch in State Housing are significant. Likely outcomes include longer waiting lists to gain access to a State House, increased capital requirements to enlarge the stock of State Houses, and increased operating costs to maintain and administer the stock of houses.

4.2.3 Types of Tenants

As the State Housing scheme targets low income families and "people in need", it is not surprising to find that a large proportion of tenants are beneficiaries. The table below shows a simple breakdown of tenancies in terms of their benefit type. This is contrasted with the equivalent breakdown of Accommodation Supplement recipients.

[7] Key Facts – Month Ending 30 June 2006

Table 15 Tenants by Benefit Type

Per Cent

Type	State House	Accommodation Supplement
National Superannuation	19	8
Domestic Purposes Benefit	25	30
Other Beneficiary	42	47
Non-Beneficiary	14	15
Total Per Cent	100	100
Total Number	64,200	256,000

Notes: (1) Numbers rounded to nearest 100
(2) State House numbers as at March 2006, Accommodation Supplement numbers as at Dec 2005

Source: Housing New Zealand

This table shows that 86 per cent of State House tenants receive some form of benefit. This shows a close correlation with the 91 per cent of tenants who qualify for Income-Related Rents.

At first glance, the high proportion of beneficiaries in State Houses, and the high proportion of Income-Related Rents being paid essentially confirm that the Social Allocation System is delivering the type of tenants targeted by the intervention. However, comparison with Accommodation Supplement recipients shows reliance on benefits is broadly similar between the two groups.

Both groups have around 85 per cent beneficiaries, and 15 per cent non-beneficiaries. The major difference between the two groups is that State House tenants include a higher proportion of Superannuitants, while Accommodation Supplement recipients have a higher proportion of other beneficiaries.

The similarity of structure in terms of benefits begs questions of how State House tenants are different from Accommodation Supplement recipients. Table 16 shows State House tenancies by household composition compared with Accommodation Supplement recipients.

Note that the Accommodation Supplement data in Table 16 is not fully comparable with the State Housing data, as Accommodation Supplement recipients include boarders. In fact, 22 per cent of all Accommodation Supplement recipients are boarders. In this sense, some of the Accommodation Supplement recipients represent subsets of overall households, whereas State Housing definitely measures households.

Table 16 shows State Housing caters for multi-adult housing whereas the Accommodation Supplement does not – or does not record that aspect of the household if it does. State Housing also has a higher proportion of couples and couples with children, while the Accommodation Supplement has a higher proportion of single people, and singles with children.

Table 16 Tenancies by Household Composition
Per Cent

Type	State House	Accommodation Supplement
Single	27	49
Single with children	23	36
Couple	13	6
Couple with children	19	9
Multi-adult	6	-
Multi-adult with children	12	-
Total Per Cent	100	100
Total Number	64,600	256,000

Notes: (1) Numbers rounded to nearest 100
(2) State House numbers as at March 2006, Accommodation Supplement numbers as at Dec 2005

Source: Housing New Zealand

Perhaps the key difference is that State Housing is provided to those people who are "in need", whereas the Accommodation Supplement is strictly an affordability measure. In this context, "need" has dimensions beyond simple affordability. State Housing tenants and Accommodation Supplement recipients may well be in similar financial circumstances, but State House tenants have been assessed as being in need of additional assistance. This "need" does not get measured in statistics about the financial status or composition of the household.

4.3 Cost Drivers

Identifying the cost drivers for State Housing is a 2-step process. First, the actual cost categories are identified; and then the factors that drive those costs can be identified.

4.3.1 Cost Categories

The general cost categories involved in providing State Housing are shown in Table 17.

In essence, all variants of the State Housing programme have a core set of costs consisting of Maintenance, Rates and Administration. Building has a land and construction cost while the cost of buying is the market value. The market value would normally be expected to be higher than the land plus construction costs due to the addition of developer margins. [Note, however, that the cost data in Appendix A is ambiguous on this point].

Table 17 Cost Categories for State Housing

	Build	Buy	Lease
Land	✓		
Construction	✓		
Market Value (= Land + Construction)		✓	✓
Maintenance	✓	✓	✓
Rates	✓	✓	✓
Administration	✓	✓	✓
Size of programme (number of houses)	✓	✓	✓
Housing New Zealand Cost of Funds	✓	✓	
Housing New Zealand Tax status	✓	✓	✓

Source: NZIER

The cost of leasing a house is the rental value. However, as this is normally a function of the market value, the market value is shown as the key variable in the above table.

4.3.2 Cost Drivers

To move from the cost factors identified in Table 17 to the cost drivers of the State Housing, we need to consider:

- what causes those cost factors to change?
- what drives demand for State Housing?

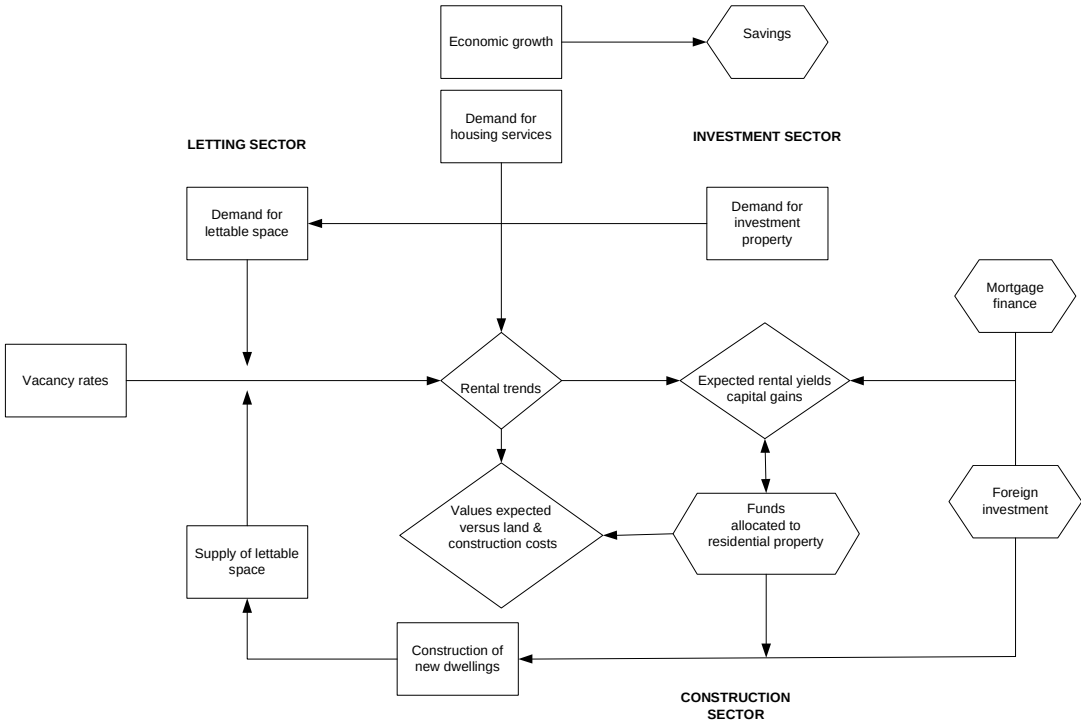
These two factors determine the cost per unit of intervention, and the number of interventions required.

a) What causes housing costs to change?

Housing costs change through a complex interaction between many factors. Some of these are shown in Figure 2 on the next page.

A key driving force behind many of these factors is economic growth. A strongly growing economy will increase demand for houses due to growth in wages and profits, and increased net migration to New Zealand. At the same time, labour availability for housing construction is likely to be low leading to higher building costs. Material and finance costs may also be increasing. Slow growth in the economy will reverse all of these factors.

Figure 2 Residential Property Sector Interactions



Source: NZIER

b) What drives demand (and supply) for State Houses?

The demand for State Houses is part of the overall market illustrated in Figure 2. However, it is a special part of that market where market failure exists (or is perceived to exist). This is because State Housing is intended as means of housing those people who cannot be housed in the private market, or housing people who cannot get appropriate housing in the private market.

Therefore, the issue becomes, what drives this market failure. While economic growth is a contributing factor through incomes and rentals, these really impact on affordability which is not the defining factor for State Housing (see section 4.2.3). Affordability assistance does not require a State House.

If there is any overall characteristic of this market failure, it is perhaps the "health of society" – taken in a very broad context. A healthy society not only has healthy individuals in a literal sense, but good levels of education, low rates of crime, and socially well-adjusted individuals and families. This

set of characteristics would remove many of the "in need" categories, and should also reduce the number of low income families.

4.4 Analysis of State Housing

4.4.1 Costs

The individual cost components of State Housing were identified in Table 17, while Table 18 below summarises the costs attributed to each of these components. These represent average costs of the current State Housing programme. Details of the cost derivations of these components are contained in Appendix A.

Table 18 Selected State Housing Costs

	Number of bedrooms			
Cost Element	2	3	4	6
Cost of land ($)	80,000	120,000	140,000	160,000
Cost of construction ($)	121,000	135,000	210,000	255,000
Maintenance 1-5 yrs (% of construction)	0.39%	0.39%	0.39%	0.39%
Maintenance 6-15 yrs (% of construction)	1.24%	1.24%	1.24%	1.24%
Maintenance 16+ yrs (% of construction)	1.58%	1.58%	1.58%	1.58%
Rates (% of capital cost p.a.)	0.50%	0.50%	0.50%	0.50%
Admin cost ($ p.a.)	350	420	490	630
Overheads ($ p.a.)	385	465	545	705

Source: NZIER
Housing New Zealand

In addition to these general cost assumptions, the following assumptions are made in the analysis variations:

a) Building a State House

Building a house is assumed to take six months. For timing purposes, the land purchase and half the construction costs are shown in year 0, with the remainder of the construction costs appearing in year 1. The Rates bill in year 1 is assumed to be based on land value only for half the year, and land plus construction costs for the second half of the year. Maintenance costs apply for only half of year 1.

On the benefit side, rent is received for only six months in year 1.

b) Purchasing a house

The purchase takes place at year 0. All other costs are recorded in full for year 1 onwards. As maintenance is age related, the house is assumed to be 5 years old, and therefore the age 6 maintenance rate applies from year 1, and the age 16 maintenance rate applies from year 11.

c) Leasing a house

The rental paid for leasing the house is assumed to be the same as the market rental received for letting the house to State House tenants. The house is assumed to be 5 years old when initially leased. On this basis, maintenance follows the pattern outlined under purchasing a house (above).

4.4.2 Benefits

State Housing is one of the few interventions being analysed in this paper for which a benefit stream is directly available – namely the value of the housing services provided (market rental of the house). Most of the other interventions are subsidies of one sort or another whereas State Housing provides a service for which payment is received.

Note that the value of the service being provided (accommodation) is the market rental – whether or not this is the rental paid by the tenant. The State Housing programme *always* receives the market rental for the house, whether that is paid wholly by the tenant, or partly by the tenant and partly by an Income-Related Rent subsidy.

The rental values used for the analysis are the average market rentals of all Housing New Zealand properties as listed in the June 2006 "Key Facts" document. These are shown in Table 19 below:

Table 19 Selected State Housing Benefits

Number of bedrooms	2	3	4	6
Market rental ($/week)	200	235	280	320
Real capital appreciation (% p.a.)	2.5%	2.5%	2.5%	2.5%

Notes: (1) Rentals for 4 and 6 bedroom houses estimated.
Average rental of 4+ bedroom units was $294 per week.

Source: NZIER
Housing New Zealand

Where a house is built or purchased, the house becomes an asset of Housing New Zealand. For analysis purposes, it is assumed this asset is sold at the end of the analysis period (20 years). The (real) price at which it is sold depends on the rate of appreciation of the asset relative to the general rate of inflation. Historically, house prices have increased faster than the rate of

inflation, and for a base scenario, this is assumed to continue over the analysis period.

4.5 Summary of Results

A discounted cash flow analysis generates a variety of results – basic measures include the Net Present Value, the Internal Rate of Return, and the Benefit Cost Ratio. These measures can then be manipulated to show results in a form more convenient for comparing different programmes – for example an equivalent annual return for comparing programmes of differing duration, or Net Present Value per bedroom to compare different size houses.

Table 20 Selected State Housing Results
Government viewpoint using resource costing

Number of bedrooms		Build	Buy	Lease
	Net Present Value (Annual Equivalent)	-3,000		
1	Net Present Value (Annual Equiv) per bedroom	-3,000		
	Benefit Cost Ratio	0.82		
	Net Present Value (Annual Equivalent)	-4,600		
2	Net Present Value (Annual Equiv) per bedroom	-2,300		
	Benefit Cost Ratio	0.79		
	Net Present Value (Annual Equivalent)	-6,600	-7,100	-4,000
3	Net Present Value (Annual Equiv) per bedroom	-2,200	-2,400	-1,300
	Benefit Cost Ratio	0.76	0.75	0.75
	Net Present Value (Annual Equivalent)	-11,200		
4	Net Present Value (Annual Equiv) per bedroom	-2,800		
	Benefit Cost Ratio	0.71		
	Net Present Value (Annual Equivalent)	-12,700		
5	Net Present Value (Annual Equiv) per bedroom	-2,500		
	Benefit Cost Ratio	0.70		
	Net Present Value (Annual Equivalent)	-14,000		
6	Net Present Value (Annual Equiv) per bedroom	-2,300		
	Benefit Cost Ratio	0.69		

Notes: (1) These results include the financial benefits of providing accommodation (rent) and asset appreciation but exclude non-financial benefits.

Source: NZIER

Table 20 above gives a summary of the results for the analysis of State Housing. The results view State Housing from the Government's perspective as the funder of the activity. Note these results do not include any non-financial benefits that are attributable to the State Housing programme.

Even without the full array of benefits included in the analysis, these results do provide some interesting insights into the State Housing programme. Some of these insights include:

- Benefit Cost Ratios[8] fall into two groups. Houses of 1 to 3 bedrooms have Benefit Cost Ratios of around 0.8 while houses of 4 to 6 bedrooms have Benefit Cost Ratios nearer 0.7. This difference is probably attributable to the requirement for second bathrooms in larger houses leading to increased capital costs.
- On a Net Present Value per bedroom basis, houses of 2, 3 or 6 bedrooms have the least cost, while 1 or 4 bedroom houses have the highest cost. This effectively says that the more bedrooms that the core costs of a house can be spread across, the lower the overall delivery cost per bedroom. Once again, there is a break in the series at 4 bedrooms because of the additional capital requirement at that point.
- Building a house has a slightly lower financial cost than buying a house. This is largely attributable to a lower stream of maintenance costs for the new build house. However, the comparison between buy and build will depend on individual circumstances.
- Leasing a house for State Housing has significantly lower costs on a Net Present Value basis than building or buying. This is because leasing does not have the large upfront capital investment required for building or buying.

These financial results will apply regardless of the utilisation of the housing resource. That is, the cost of providing the house would be same whether one person occupied a 3 bedroom house, or whether a couple and 2 children occupied the same house. In this analysis, the market rental is paid in each case, therefore the financial results are the same.

However, once non-financial benefits are included, house utilisation rates will matter. The non-financial benefits from housing a couple and 2 children are expected to be higher than that of housing only one person. To show that State Housing is a worthwhile activity, it will be important to demonstrate that there is a good match between actual and potential tenancy.

This echoes the point made in Section 4.2.2 regarding the matching of problem and solution timeframes. The non-financial benefits of housing tenants who have outgrown their period of need will be much lower than housing those who remain in need, or those who are currently in need but not adequately housed.

[8] The Benefit Cost ratio is the ratio of discounted benefits to discounted costs. This represents an efficiency measure of the investment. Ratios of greater than 1 mean that benefits exceed costs, while ratios of less than one indicate that costs exceed benefits.

4.6 Other Costing Perspectives

4.6.1 Government, Corporation, National

The results shown in Table 20 looked at State Housing from the Government viewpoint using resource costing. This means, for example, that the purchase of the house was assumed to be fully paid for in year 0.

Two other viewpoints can be considered in addition to this base viewpoint. These are:

- a Housing New Zealand financial viewpoint. This takes account of financing arrangements and tax payments
- the national viewpoint. This is similar to resource costing in that it records full expenditures for resources as they are used, but it ignores any transfers between different parts of society. For example, a national analysis will include the building of a house (resources consumed) but not the purchase of a house (transfer of ownership).

The financial costing analyses require some additional assumptions. These include level of debt funding (15 per cent), the cost of debt (7.1 per cent), the inflation rate (2.25 per cent), and the corporate tax rate (33 per cent). It was assumed that no debt is repaid (interest only) and that tax losses could be realised immediately by writing off against other income.

The table below shows selected results for the 3 different house acquisition strategies from 3 different viewpoints. The results are all for a 3 bedroom house to provide a common basis for comparison.

Table 21 Alternative Viewpoints for State Housing
3 bedroom house

Viewpoint		Build	Buy	Lease
Government Resource Costing	Net Present Value (Annual Equivalent)	-6,600	-7,100	-4,000
	Net Present Value (Annual Equiv) per bedroom	-2,200	-2,400	-1,300
	Benefit Cost Ratio	0.76	0.75	0.75
Corporation Financial Costing	Net Present Value (Annual Equivalent)	-6,900	-7,300	-2,700
	Net Present Value (Annual Equiv) per bedroom	-2,300	-2,400	-900
	Benefit Cost Ratio	0.75	0.75	0.82
National Viewpoint	Net Present Value (Annual Equivalent)	-900	-900	-900
	Net Present Value (Annual Equiv) per bedroom	-300	-300	-300
	Benefit Cost Ratio	0.00	0.00	0.00

Notes: (1) These results include the financial benefits of providing accommodation (rent) and asset appreciation but exclude non-financial benefits.

Source: NZIER

As with Table 20, no non-financial benefits have been included in the results, meaning these results will understate final results.

Some results that can be taken from this table include:

- The performance of the build and buy options under the financial costing are similar to their performance under resource costing. In contrast, leasing performs better. This is discussed further below.
- Buying a house continues to be the highest cost option. This is partly due to the full acquisition cost being realised in year 0 (rather than being spread between year 0 and year 1 under a new build scenario), and a higher stream of maintenance costs.
- From the national perspective, there is no difference between buying and leasing as both the purchase costs and the lease costs represent transfers within society.
- National Benefit Cost ratios are shown to be zero because the benefits that accrue under Housing New Zealand stewardship (rental payments and capital gains) are the same as would have occurred anyway. i.e. no additional benefits occur because Housing New Zealand has bought or leased the house.

The financial costing results are sensitive to the amount of debt funding. In general, the financial results improve (from the Housing New Zealand perspective) as the amount of debt financing increases. This is principally because debt funding reduces the capital outlay to build or purchase a property, and leverages the growth of the asset. Debt funding also impacts on the amount of tax paid.

The build/buy financial results shown in Table 21 are similar to the government perspective because the benefits from capital reduction and leveraged asset growth are offset by taxes paid on accounting profits. At higher levels of debt funding, interest expenditure increases faster than tax decreases, but the increased leverage of the investment increases the overall return (or in this case, reduces the overall cost).

In the case of leasing, tax losses are generated in every year. The tax credits created act to improve the financial return from leasing (relative to the government perspective) – provided income is available from other activities to utilise the tax credits.

4.6.2 Accounting vs Economic

All of the above analyses use an economic framework – even in the financial viewpoint analysis. It should be noted that an accounting framework will report these analyses differently:

- Building or buying a house would require an initial capital investment. Thereafter, the State Housing programme would show annual profits as rental income exceeds operating costs and depreciation.
- Leasing a house would show operating losses in every year, as the rental income is less than the lease and operating costs. However, no capital investment is required.

On this basis, an accounting viewpoint might say that building or buying is profitable while leasing is not profitable.

Accounting separates capital transactions from the on-going revenue transactions. It also tends to look at a set of transactions over a defined timeframe (1 year). In contrast, the economic perspective looks at the resource usage – regardless of whether it is capital or revenue in nature, and looks at the transactions on a project lifetime basis. The difference between the two is particularly important in this analysis of State Housing.

An accounting analysis will say that leasing is not worthwhile because it incurs cash losses every year. In contrast, building or purchasing a house is profitable in every year. It might note that the annual profit was about 1.6 per cent of the initial investment. It might also note that the asset grew in value by 4.8 per cent (including inflation). Due to the leverage effect of debt financing this would increase the firm's equity in the asset by about 5.6 per cent, giving a total return of 7.2 per cent on equity. If the accounting analysis provides these additional performance measures then some judgement on the adequacy of that return can be made. However, there is a risk that the profit will be noted but the implied rates of return will not.

The economic analysis always measures the returns received against the investment required to achieve that return. If the returns are greater than the initial investment, then an economic analysis will show a positive Net Present Value. Leasing cannot show a positive Net Present Value because all of the cash flows are negative. But the Net Present Value from building or buying a house shows an even larger loss. On this basis, the economic analysis says that leasing is the preferable way to carry out this activity.

4.7 Key Issues

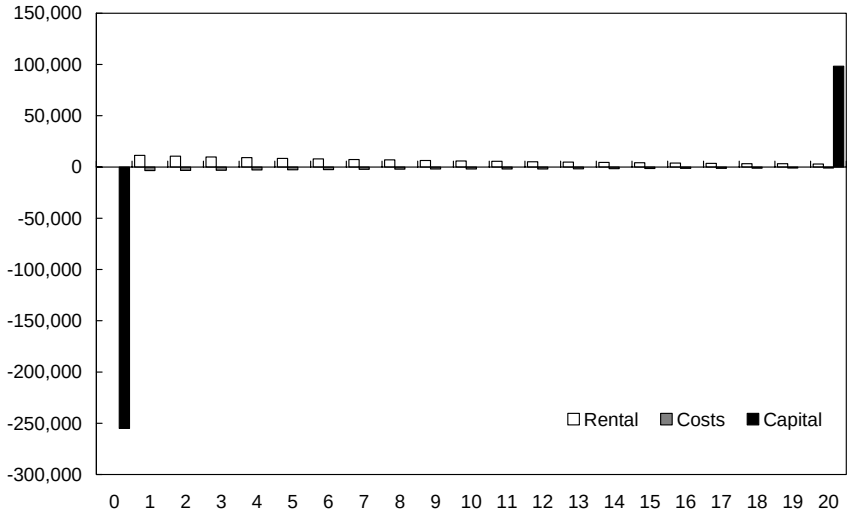
There are two particular issues that need highlighting. These are:

- Building or buying State Houses have high upfront capital costs
- The assumptions regarding capital growth are important.

The significance of the upfront capital cost can be seen in Figure 3. This shows the discounted cash flows arising from the purchase[9] of a 3 bedroom house, renting that house for 20 years, and then selling it.

Figure 3 Relative sizes of discounted cash flows

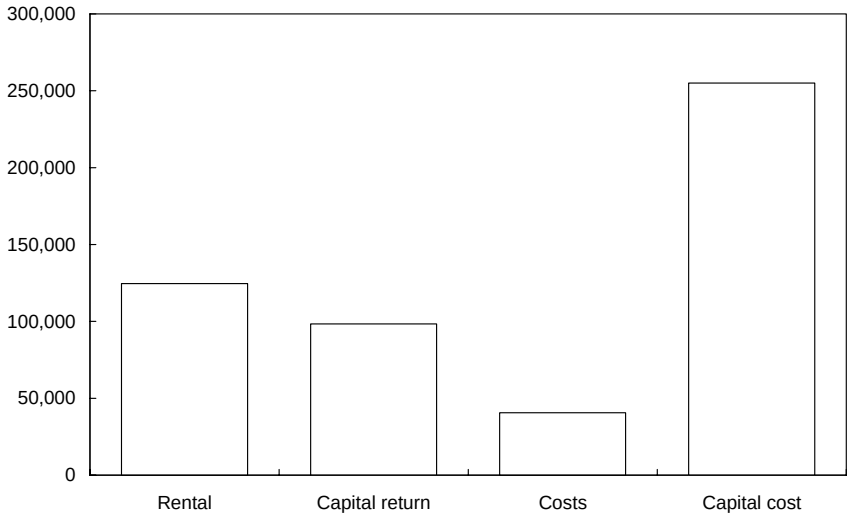
Purchase 3 bedroom house – Government perspective



Source: NZIER

Figure 4 Summarised discounted cash flows

Purchase 3 bedroom house – Government perspective



Note: Costs are shown as absolute values to aid comparison with benefits

Source: NZIER

The profile of the cash flows is dominated by the initial outlay for the house. Further, because the purchase occurs in year 0, it has a large impact on the

[9] A purchase is illustrated rather than a build because all of the cost occurs immediately. This makes the relative sizes of the costs more apparent. (The 'build' analyses spread the initial cost between year 0 and year 1).

discounted cash flow analysis. In contrast, the sale of the house in year 20 has a much smaller impact – even though the house has increased in value in real terms over the 20 year period.

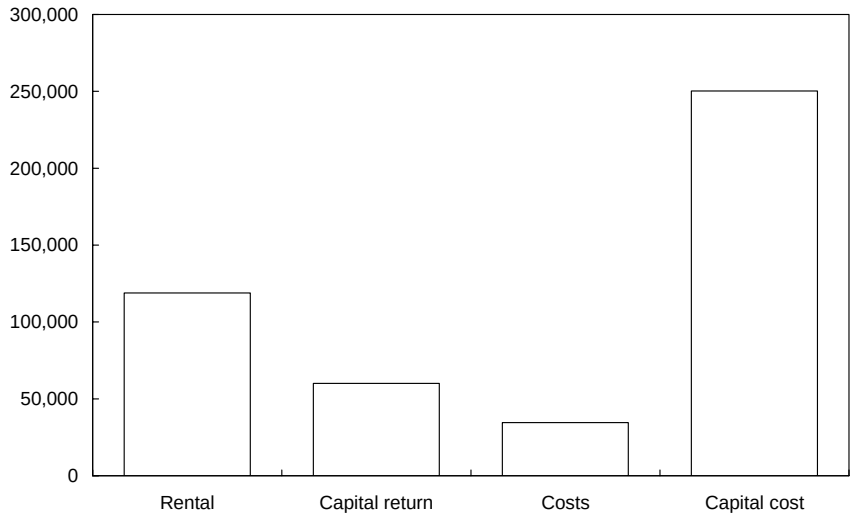
Figure 4 summarises the cash flows shown in Figure 3. This clearly shows the relativity of the initial capital outlay to the ultimate capital return. Rental received comfortably exceeds operating costs, but does not offset the gap between capital outlay and return.

Consider now the significance of the capital growth element in this analysis. House prices were assumed to increase at a rate of 2.5 per cent annually over and above inflation. This is slightly less than the typical growth rates over the last 25 years. Under this scenario, the house purchased for $255,000 in year 0 is sold for $417,850 in constant dollar terms in year 20. The effect of discounting at 7.5 per cent reduces that terminal value to $98,350 in present value terms.

The policy implications of this assumption of continued real growth in house prices need to be acknowledged. Firstly, housing affordability is already an issue concerning Government. This level of asset growth will make houses even less affordable in the future. Secondly, this asset growth represents part of the investment return on State Housing. The greater the increase in house prices, the better the investment return on State Housing.

Figure 5 Summarised discounted cash flows (2)

Purchase 3 bedroom house – Government perspective – no capital growth



Note: Costs are shown as absolute values to aid comparison with benefits

Source: NZIER

Clearly, there is a conflict between housing affordability, and generating a good return on housing investments. Or, if houses remain at current levels of affordability, then the "cost" of providing State Houses will increase.

Figure 5 shows the summarised discounted cash flows that would result from a scenario where no capital growth occurs.

Comparing Figure 5 with Figure 4, it can be seen that the 'Capital return' is markedly lower when housing affordability is maintained at current levels.

The cost of providing a State House when capital growth was included as a benefit was estimated at $7,100 per year (see Tables 7 and 8). If capital growth is set to zero, then this cost increases to $10,900 per year. Effectively, the lack of capital growth adds $3,800 per year to the "cost" of providing the State House.

5. Income-Related Rents

5.1 Overview

The Income-Related Rent scheme is one of two housing affordability programmes run by Government. The other is the Accommodation Supplement. Whereas the Income-Related Rent is only available for State Houses, the Accommodation Supplement is only available in the private rental market.

5.2 Characteristics

The underlying principle of the Income-Related Rent is that low income tenants of State Houses should pay no more that 25 per cent of their after tax income on rent. Once the household income moves above the low income threshold, the Income-Related Rent subsidy is progressively abated until such time as the rent paid reaches the market rent for the property. No tenant will pay more than the market rent.

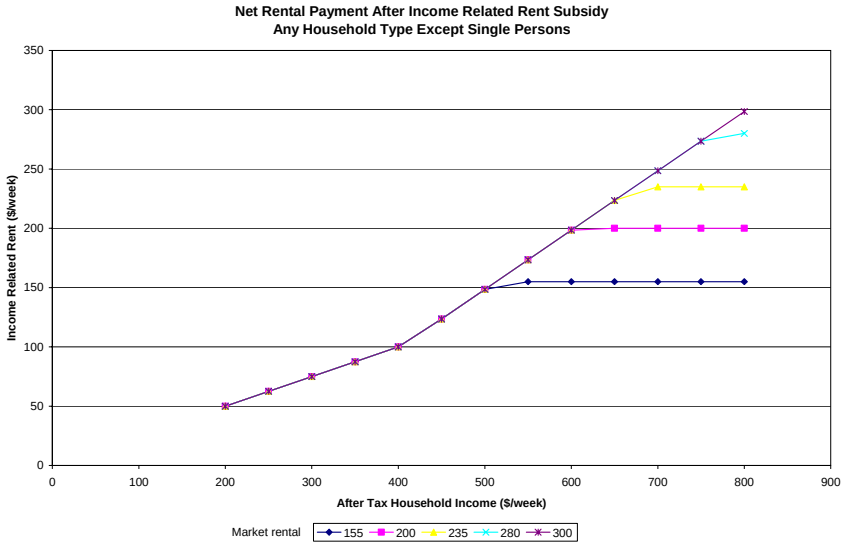
Note that at low income levels, the actual rental paid is independent of the house size. That is, a low income family would pay the same rent for a 2 bedroom house as a 4 bedroom house, provided they were not paying market rent for either property.

The difference between the rental paid (Income-Related Rent) by the tenant and the market rental of the property is paid by the Government as a subsidy to Housing New Zealand. Internally, this subsidy gets transferred to the State Housing programme so that the State Housing programme effectively receives the market rent regardless of the actual rental paid by the tenant.

The following two figures show the effect of the Income-Related Rent from the perspective of the tenant (rental paid) and the Government (subsidy paid). The charts apply for any family grouping except a single person. The different rental prices shown are the average Housing New Zealand market rentals for 1, 2, 3, 4 and 5 bedroom houses.

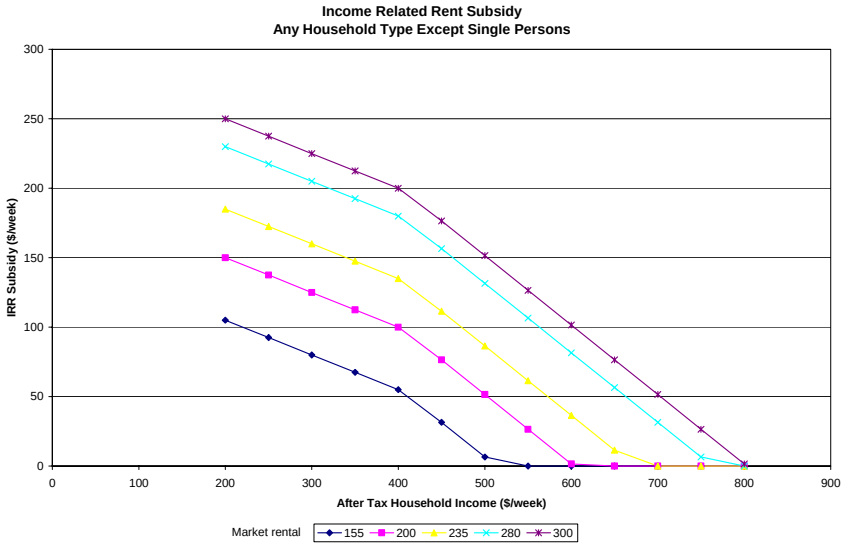
Figure 6 illustrates that up to an income of $406 per week (after tax), rental makes up 25 per cent of income, regardless of the market rental of the house. Above this threshold amount, the rental paid amounts to 50 per cent of marginal income until the market rental is reached. The figure shows that tenants would not pay the average market rental for a 1 bedroom house of $155 per week until they reached an after tax income of $513 per week. Likewise, market rental for a 2 bedroom house of $200 per week would not be reached until household income reached $603 per week after tax.

Figure 6 Income-Related Rent: Tenant's Perspective



Source: NZIER

Figure 7 Income-Related Rent: Government Perspective



Source: NZIER

Figure 7 shows the amount of subsidy the Government is paying under the scenarios illustrated in Figure 6. Whereas house size does not matter to the tenant until the market rental is reached, the house size impacts directly on the level of subsidy paid by the Government at any given income level. For example, at an income level of $500 per week after tax, the subsidy is negligible ($7 per week) for a 1 bedroom house, $52 per week for a 2 bedroom house, and $152 per week for a 5 bedroom house.

5.3 Cost Drivers

5.3.1 Size of Income-Related Rent Subsidy

The subsidy paid by Government for each Income-Related Rent is dependent on three things:

- market rental of the house
- household income
- family type.

The relationships of the market rental and household income to the Income-Related Rent subsidy have already been explained above.

Family type determines the low income threshold below which the rent paid is no more than 25 per cent of income. If a tenant is single with no dependent children, then the threshold is the "Single, living alone" rate of New Zealand Superannuation. For all other tenants, the threshold is the "Married couple" rate of New Zealand Superannuation. As at 1 April 2006, these rates were $263.90 and $406.00 per week after tax respectively.

5.3.2 Number of Income-Related Rent Recipients

Income-Related Rent recipients are a subset of State House tenants. Nearly all new tenancies qualify for an Income-Related Rent[10]. Therefore, the factors that drive demand for State Houses (see Section 4.3.2 (b)) are also the key drivers of demand for Income-Related Rents.

As tenants' circumstances improve, some make the transition to paying full market rental – which means they no longer receive Income-Related Rent assistance. As at June 2006, around 9 per cent of State House tenants were paying market rental.

Note that the proportion of tenants not receiving an Income-Related Rent subsidy can be viewed from two different perspectives. Firstly, as this number increases, then the cost of the Income-Related Rent programme reduces.

Secondly, the purpose of State Housing is to assist those most in need. Those people most in need usually require housing affordability assistance. On this basis, the proportion of State House tenants in receipt of an Income-Related Rent subsidy is an indicator that State Housing assistance is being directed to the right people.

If the proportion of tenants paying market rental (i.e. not paying an Income-Related Rent) is too high, then it may indicate that some State Houses are

[10] See "Key Facts – Month Ending: June 2006". 99 per cent of new lettings in June 2006 qualified for an Income-Related Rent.

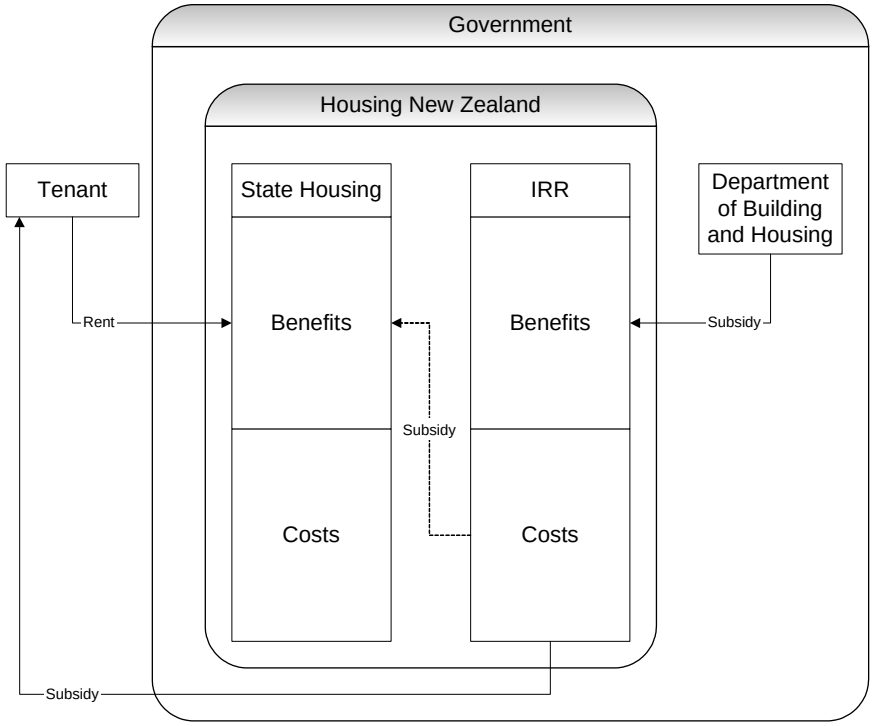
being occupied by people who no longer require the level of assistance provided by State Housing. If that is the case, then either some people on the waiting list are being deprived of that assistance, or the stocks of State Houses (in that locality) are higher than is strictly necessary to house all those judged to be "in need".

5.4 Analysis of Income-Related Rents

5.4.1 General

Figure 8 shows two alternative views of the cash flows in the Income-Related Rent and State Housing programmes.

Figure 8 Analysis Viewpoints for Income-Related Rent



Source: NZIER

The actual cash flow that occurs is from the Department of Building and Housing to the Income-Related Rent programme within Housing New Zealand. In turn, the Income-Related Rent subsidy is transferred from the Income-Related Rent programme to the State Housing programme. These cash flows are all contained within Government. While this is the correct cash flow, it does not capture the essence of the programme.

An alternative viewpoint is that the Income-Related Rent programme is a cost to Government. This is represented by the subsidy going from the Income-Related Rent programme to the tenant. This is not an accurate portrayal of the actual cash flow, but it does capture the cost to Government

and the benefit to the tenant. It is this portrayal of the Income-Related Rent programme that will be analysed. Note this is a Government perspective – not a Housing New Zealand perspective.

5.4.2 Costs

Section 5.3.1 identified the following factors as determining the size (cost) of the Income-Related Rent subsidy:

- market rental of the house
- household income
- family type

The family type determines the "low income" threshold.

An estimation of actual Income-Related Rent subsidies is shown in Table 22 below. This takes the actual rent paid by family type for State Housing and combines this with market rental data by size of house. The difference between the two sets of figures is the Income-Related Rent subsidy.

Table 22 Rent Subsidy by Family Type and House Size

Dollars per week

Family Type	Average Rent	House Size (bedrooms)				
		1	2	3	4	5
Market rent		155	200	235	280	300
Single	65	90	135			
Single + 1	73		127	162		
Single + 2	96			139	184	
Couple	79	76	121			
Couple + 1	83		117	152		
Couple + 2	102			133	178	
Multi-Adult	94		106	141	186	206
Multi-Adult + 1	98			137	182	202
Multi-Adult + 2	111				169	189

Source: NZIER
Housing New Zealand

The data in the table may not be completely accurate as it is derived as the difference between two sets of averages. However, it will be indicative of the overall situation.

The administration and overhead expenses are expected to be constant for all Income-Related Rent subsidy payments meaning the cost of administering a small Income-Related Rent subsidy should be the same as administering a larger subsidy. These costs are shown in the table below:

Table 23 Income-Related Rent Administration Costs
Dollars per subsidy per year

Cost Element	$ per Year
Administration	420
Overheads	465

Source: Housing New Zealand
NZIER

5.4.3 Benefits

The Income-Related Rent programme is essentially a subsidy administration scheme. Its purpose is to allow the benefits of the State Housing programme to be enjoyed by people who would not otherwise be able to afford them. For the purposes of this analysis, no financial benefits accrue to the Income-Related Rent programme itself.

5.5 Summary of Results

5.5.1 Actual Cash Flows

When looking at the actual cash flows, most viewpoints collapse back to the administration and overhead costs (because the Income-Related Rent subsidy is actually a transfer within Government). These costs are the same for all sizes of Income-Related Rent subsidy, therefore a single result covers all variations.

This single result says that the Net Present Value of the Income-Related Rent programme is $-900 per household per year. This is simply the annual stream of administration and overhead costs.

5.5.2 Implied Cost

If we take the viewpoint that the Income-Related Rent subsidy flows to the tenant, then the Income-Related Rent subsidies shown in Table 22 give rise to the following Net Present Values (see Table 24):

These results have been presented on an Net Present Value per person per year basis so that comparisons can be made on a reasonable basis. Comparisons made on a per house basis show that the net present cost increases with the size of the house. While this is true, it takes no account of the fact that larger houses are normally associated with more tenants who derive benefits from the house. Expressing the cost on a per person basis provides a measure of the cost per unit of benefits, while expressing costs on an annual basis makes the figures more meaningful.

Table 24 Summary of Income-Related Rent Results

Net Present Value ($ per person per year) - Government perspective

Family Type	Person Count	House Size (bedrooms) 1	2	3	4	5
Single	1	-5,300	-7,500			
Single + 1	2		-3,600	-4,400		
Single + 2	3			-2,600	-3,300	
Couple	2	-2,300	-3,400			
Couple + 1	3		-2,200	-2,800		
Couple + 2	4			-1,900	-2,400	
Multi-Adult	4		-1,500	-2,000	-2,500	
Multi-Adult + 1	5			-1,500	-2,000	-2,200
Multi-Adult + 2	6				-1,500	-1,700

Source: NZIER

This table suggests that the Income-Related Rent cost for single people is high relative to the Income-Related Rent cost of other family groupings. This reflects the nature of the accommodation costs in general where there is a core of fixed costs that are incurred regardless of the size of house or number of people using the house. Having more than one person in the house allows those fixed costs to be shared.

It also suggests that the Income-Related Rent costs of housing specific family types increases as they are placed in larger house sizes. This reflects the higher Income-Related Rent subsidy necessary to house a given family in a larger house with a higher market rental.

It needs to be emphasised that these results have not valued any non-financial benefits of these interventions. Therefore, care should be exercised with these results.

These results only show the costs associated with achieving given results. They make no judgement on whether those results are worthwhile.

5.6 State Housing plus Income-Related Rent

5.6.1 Build, Buy, Lease

The State Housing programme was initially analysed on the basis of the means of house acquisition. This can be extended to include the Income-Related Rent programme.

Three perspectives of these joint programmes can be analysed. These are:

- Housing New Zealand perspective. This could further be split into resource costing and financial costing
- Government perspective
- National perspective.

The best way to visualise these perspectives is to refer back to Figure 8 – Analysis Viewpoints for Income-Related Rent.

Table 25 compares the results from these three perspectives. In comparison with the previous results for State Housing alone, the Housing New Zealand results show a lower net present value ($-900) across all options (build, buy, lease). This is the impact of the additional administration and overhead costs from the Income-Related Rent programme identified in Section 5.4.2.

The Government viewpoint has a much lower net present value than the Housing New Zealand viewpoint. This is because the financial benefits are lower – the rental benefit is measured as the actual rent paid by the State House tenants rather than the market rent received by Housing New Zealand.

Table 25 State Housing plus Income-Related Rent (1)
3 bedroom house

Viewpoint		Corporation	Govt	National
Build	Net Present Value (Annual Equivalent)	-7,500	-13,900	-1,700
	Net Present Value (Ann Equiv) per bedroom	-2,500	-4,600	-600
	Benefit Cost ratio	0.74	0.52	0.00
Buy	Net Present Value (Annual Equivalent)	-8,000	-14,700	-1,700
	Net Present Value (Ann Equiv) per bedroom	-2,700	-4,900	-600
	Benefit Cost ratio	0.73	0.51	0.00
Lease	Net Present Value (Annual Equivalent)	-4,800	-11,600	-1,700
	Net Present Value (Ann Equiv) per bedroom	-1,600	-3,900	-600
	Benefit Cost ratio	0.72	0.32	0.00

Notes: (1) These results include the financial benefits of providing accommodation (rent) and asset appreciation but exclude non-financial benefits.

Source: NZIER

The national viewpoint shows only modest Net Present Value losses. This is because most costs and benefits are the same as if the house had stayed in private ownership. On this basis, the net costs of State Housing and Income-Related Rents are the administration costs of the two schemes.

5.6.2 Government Viewpoint by Family Type

Section 5.5.2 showed the costs of providing the Income-Related Rent on a family type and house size basis. This approach can be extended to show the combined impact of family type and house size on the joint State Housing and Income-Related Rent programmes.

The results of this analysis are shown in the table below:

Table 26 State Housing plus Income-Related Rent (2)

Net Present Value ($ per person per year) - Government perspective

Family Type	Person Count	House Size (bedrooms) 1	2	3	4	5
Single	1	-8,300	-12,200			
Single + 1	2		-5,900	-7,800		
Single + 2	3			-4,800	-7,000	
Couple	2	-3,800	-5,700			
Couple + 1	3		-3,800	-5,000		
Couple + 2	4			-3,500	-5,200	
Multi-Adult	4		-2,700	-3,600	-5,300	
Multi-Adult + 1	5			-2,900	-4,200	-4,700
Multi-Adult + 2	6				-3,400	-3,800

Notes: These results include the financial benefits of providing accommodation (rent) and asset appreciation but exclude non-financial benefits.

Source: NZIER

The conclusions that can be reached from this table are similar to those reached from looking at the Income-Related Rent alone in Table 24 – namely:

- single people have high costs per person
- there are significant additional costs incurred when family groups are housed in larger houses than they strictly require.

In the case of this second point, the additional costs come from two sources: firstly, the capital and operating costs of the State House increase with the size of the house; and secondly, the Income-Related Rent subsidy increases because the market rental is higher while household income is unchanged.

5.7 Other Issues

The Income-Related Rent subsidy is determined when the tenant first moves into the State House, and is updated annually through a review process. The rent can be reviewed if the tenant's circumstances change. These processes place a significant administrative burden on the Income-Related Rent scheme.

It is expected that there will be a degree of asymmetry in rent reviews between subsidy increases (tenant applies for this as soon as circumstances change) and subsidy decreases (tenant waits for annual review). This asymmetry is also apparent within Housing New Zealand rent changes with rent reductions being applied immediately but 60 days notice is given of any rent increases.

There is little that can be done about these characteristics other than note they exist. Decreasing the asymmetry would increase administrative and compliance costs, and vice-versa.

6. Accommodation Supplement

6.1 General

The Accommodation Supplement programme is a housing affordability programme aimed at those people who are not in State Houses. A summary of Accommodation Supplement recipients is shown in the table below:

Table 27 Accommodation Supplement Recipients
As at December 2005

Type	Number	Per Cent
Private renters	152,200	59
Boarders	56,200	22
Home owners	42,900	17
Council renters	4,700	2
Totals	256,000	100

Notes: (1) Numbers rounded to nearest 100
Source: Ministry of Social Development

The following points should be noted from this table.

- The Accommodation Supplement programme is much larger than the State Housing and Income-Related Rent programmes.
- The Accommodation Supplement is available to boarders and (some) home owners as well as renters.

Family types and benefit groupings of Accommodation Supplement recipients were shown in Tables 15 and 16 in the State Housing section (Section 4.2.3). Amongst other things, these tables showed that nearly half of all Accommodation Supplement recipients are single, and about 85 per cent are in receipt of some other benefit.

The Accommodation Supplement programme is administered by the Ministry of Social Development through their Work and Income branch. This means the major costs of the programme appear in the Ministry of Social Development budget, although policy development is shared with Housing New Zealand.

6.2 Characteristics

General rules for the Accommodation Supplement include:

- Basic eligibility is for an amount equal to 70 per cent of accommodation costs over a threshold level. The threshold level is dependent on benefit

status, age (if single), marital status, whether the recipient has dependent children, and whether the accommodation costs are rental or mortgage in nature.

- The basic eligibility calculated above is subject to maxima depending on region and family size.
- If income is over a threshold level, then the basic eligibility is abated at the rate of 25 cents per dollar of income over the threshold level. [Note that different rules apply if the recipient is on a main benefit such as the unemployment benefit. In this case, the main benefit is abated at the rate of 70 cents in the dollar over the (different) income threshold level, and the Accommodation Supplement is not abated].
- If cash assets are above a threshold level, then the assets are deemed to add to income (at a rate of 1 per cent above the threshold level) for abatement purposes. If cash assets are above specified maxima, then no Accommodation Supplement is payable.
- Eligibility for the Accommodation Supplement is reviewed annually.

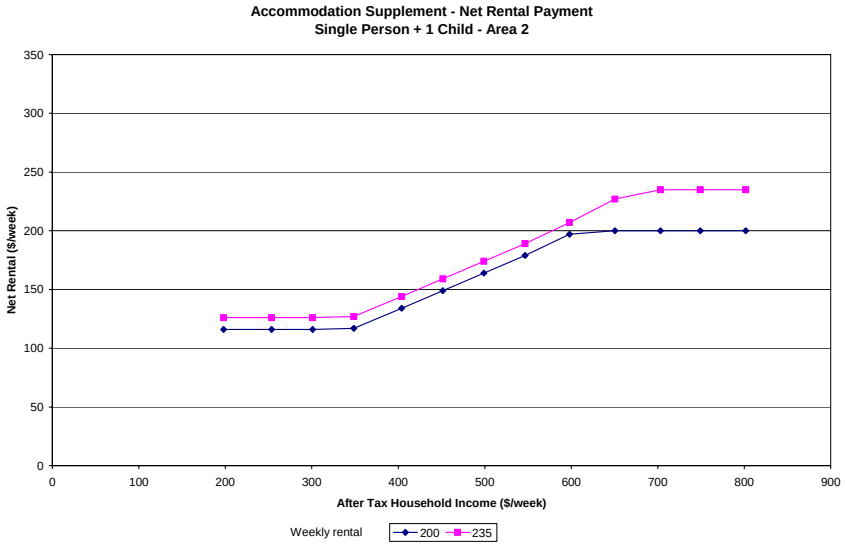
The general effect of these rules is that recipients are low income earners with limited assets. A large proportion of recipients are beneficiaries (see Table 15).

The two figures on the next page show the effect of the Accommodation Supplement from the perspective of the recipient and the Government. The charts assume that the recipients are a single person with 1 child living in Area 2 (for example, Johnsonville, Strathmore Park, Karori Park). The two lines represent 2 and 3 bedroom houses. The house rental payments are set to be the same as used in the Income-Related Rent analysis (see Figures 6 and 7) to allow comparison with the Income-Related Rent.

Comparison of Figures 9 and 10 (Accommodation Supplement) with Figures 6 and 7 (Income-Related Rent) show that:

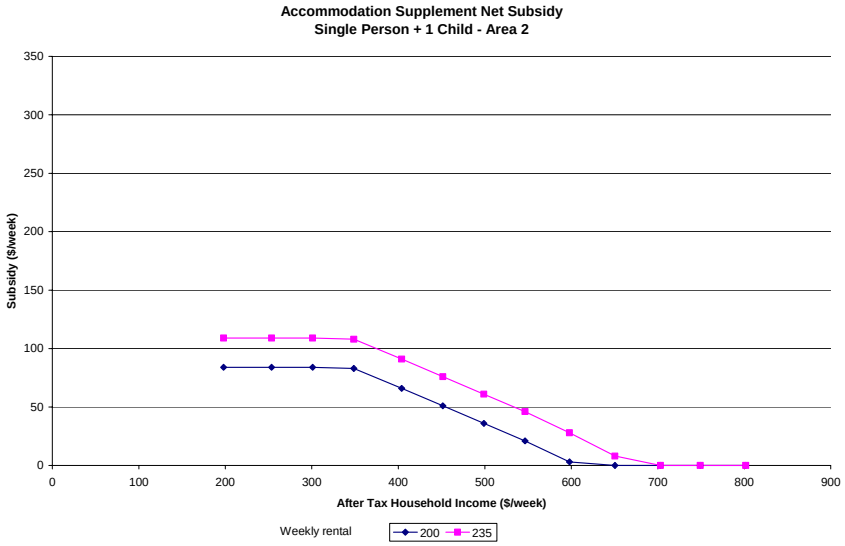
- at income levels below the point at which abatement begins, the Income-Related Rent is significantly more generous than the Accommodation Supplement
- at income levels between the onset of abatement and full payment of market rental, the gap between the Income-Related Rent and Accommodation Supplement narrows significantly
- whereas the rental paid by an Income-Related Rent recipient is the same regardless of house size up until the income level where market rental is paid, an Accommodation Supplement recipient has to pay more as house size (market rental) increases.

Figure 9 Accommodation Supplement: Tenant's Perspective



Source: NZIER

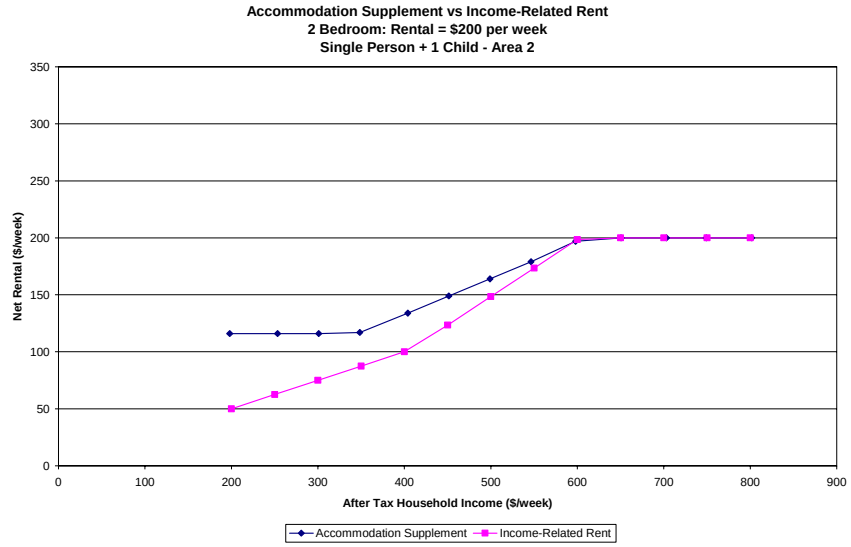
Figure 10 Accommodation Supplement: Government's Perspective



Source: NZIER

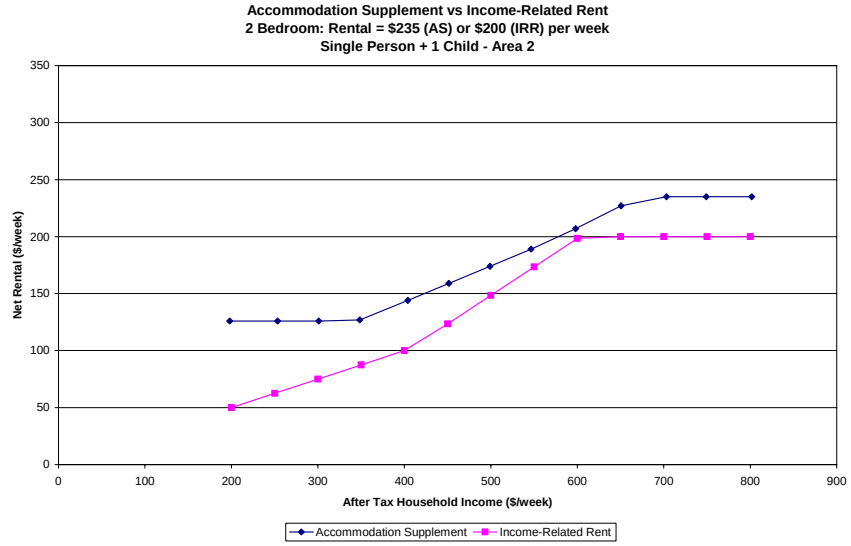
Figures 11 and 12 show two direct comparisons between the Accommodation Supplement and Income-Related Rent. Figure 11 shows the situation where the market rental is the same for both the Accommodation Supplement and Income-Related Rent tenants. In this case, Income-Related Rent recipients have a financial advantage over Accommodation Supplement recipients up until the time when each group has to pay the market rental.

Figure 11 Accommodation Supplement and Income-Related Rent: Same Rent



Source: NZIER

Figure 12 Accommodation Supplement and Income-Related Rent: Different Rent



Source: NZIER

Figure 12 shows the case where both sets of tenants are in a 2 bedroom house, but the market rentals are different. The market rental for the Accommodation Supplement recipient ($235 per week) is similar to the median rental for 2 bedroom houses[11] ($240 per week), whereas the market

[11] Source: Market Rental information from Department of Building and Housing, 01 Feb 2006 to 31 Jul 2006.

rental for the Income-Related Rent recipient is the Housing New Zealand average ($200 per week). In this case, Income-Related Rent recipients are advantaged at all income levels. However, it is not clear whether the houses being rented by the two groups are comparable. While they are both 2 bedroom houses, size, features, quality, and location factors may explain the $35 per week difference in rent.

For this analysis, it is enough to note that although the Accommodation Supplement and the Income-Related Rent address similar issues, the outcomes are different. The above analysis is only to establish the differences between the schemes without making any judgement on whether those differences are intentional, justified, or otherwise.

6.3 Cost Drivers

6.3.1 Size of the Accommodation Supplement Subsidy

Principal determinants of the size of the Accommodation Supplement subsidy include:

- accommodation costs (rental, board, or mortgage payments)
- benefit status (including effects of age and marital status)
- income
- assets
- family status (number in family, with/without children)
- location of accommodation

Given the number of factors outlined above, calculation of the Accommodation Supplement amount is a complex process.

Looking at the above factors, accommodation costs are principally driven by the price of the house. The factors that drive house prices were covered in Section 4.3.2. Economic growth was identified there as a key driver of house prices.

Looking at the remaining factors, benefit status, income and assets will all be influenced by economic growth in the short term, and education in the long term. Family status and location are largely independent variables as far as determining cost drivers is concerned.

6.3.2 Number of Accommodation Supplement Recipients

The number of people eligible to receive the Accommodation Supplement is determined by the same set of eligibility rules that govern the size of the supplement received. These rules were outlined above, and are influenced and set by Government policy.

While the rules determine the eligibility, factors such as economic growth and education determine the number of people falling within the eligibility criteria.

It also needs to be borne in mind that not all people eligible for the Accommodation Supplement actually apply for it[12]. Reasons for this include lack of awareness of the Accommodation Supplement, social stigma associated with benefit assistance, unwillingness to disclose their financial position and spending habits to a Government department, and a general belief that they don't need assistance.

6.4 Analysis of Accommodation Supplement

6.4.1 General

There is no Housing New Zealand viewpoint in the analysis of the Accommodation Supplement. This is because the Accommodation Supplement is administered by the Ministry of Social Development.

Unlike the Income-Related Rent, Accommodation Supplement payments go to the tenant. This means there is a genuine cash flow out from Government rather than the implied cash flow analysed in the Income-Related Rent section.

On this basis, the viewpoints available in the analysis of the Accommodation Supplement are restricted to Government and National.

6.4.2 Costs

In order to assess the costs of the Accommodation Supplement programme, a large number of assumptions need to be made regarding family type, house rental (which implies size), and household income. On top of this, different Accommodation Supplement payments are available in different parts of the country.

A derivation of Accommodation Supplement payments by family type is shown in Appendix B. The basis of this process is to derive representative Accommodation Supplement payments for equivalent family groupings to those used in the Income-Related Rent analysis. The results of this derivation are summarised in the table below:

[12] See for example: Colmar Brunton (2006), "Finding a Place To Live: A Qualitative Exploration of the Housing Choices of Low and Middle Income New Zealanders".

Table 28 Accommodation Supplement by Family Type

Dollars per week

Family type	Boardr	Single	Sngl +1	Sngl+2	Couple	Cpl+1	Cpl+2
Per cent of total	22	27	18	18	6	3	6
1 bedroom ($155)	25	72			59		
2 bedroom ($200)		83	80		83	77	
3 bedroom ($235)			92	97		102	97
4 bedroom ($280)				118			122
Actual average Accommodation Supplement	25	56	77	99	73	84	88

Notes: (1) Actual average Accommodation Supplement payments are for renters, or single boarders.

Source: NZIER

The final line of this table shows the actual average Accommodation Supplement payment made by the Ministry of Social Development for renters. This shows that in most cases, the actual Accommodation Supplement payments were either at the low end of the range calculated in the table, or were lower than the minimum level calculated.

Given the complexity of the calculations for Accommodation Supplement payments, there are many reasons for the lower actual outcome. Two possibilities are that income abatement was higher than estimated, and/or accommodation costs of Accommodation Supplement recipients were lower than estimated. This partly accords with the view expressed by Housing New Zealand staff that they believe Accommodation Supplement recipients generally have higher incomes than Income-Related Rent recipients.

As with other programmes, there are administration costs and overheads. In the absence of specific programme costs from Ministry of Social Development for these items, the administration and overhead costs for the Income-Related Rent programme have been used in this analysis. These were detailed in Table 23.

6.4.3 Benefits

There are no financial benefits of the Accommodation Supplement programme to Ministry of Social Development or Housing New Zealand. All benefits delivered by the programme are expected to be non-financial. As such, these are beyond the scope of this project.

6.5 Summary of Results

The following table shows a summary of results for the Accommodation Supplement by family type.

Table 29 Analysis of Accommodation Supplement
Net Present Value ($ per person per year)

Family Type	Person Count	House Size (bedrooms)			
		1	2	3	4
Boarders	1	-2,200			
Single	1	-4,600	-5,200		
Single + 1	2		-2,500	-2,800	
Single + 2	3			-2,000	-2,300
Couple	2	-2,000	-2,600		
Couple + 1	3		-1,600	-2,100	
Couple + 2	4			-1,500	-1,800

Source: NZIER

These results suggest that:

- single people (other than boarders) have the highest Accommodation Supplement costs per person
- Accommodation Supplement costs per person increase as families choose larger house sizes for a given family type.

Singles have high costs because all the support is allocated to a single person, rather than being spread across a number of people as in the other cases. In turn, the level of support given to single people reflects the fact that a core set of accommodation costs are fixed, regardless of the number of people using the accommodation.

The observation that Accommodation Supplement costs per person increase as the family grouping moves to a larger (higher rent) house needs to be balanced by the observation that the family will bear a share of such increased accommodation costs. Further, the increase in Accommodation Supplement costs is strictly limited – once the regional maximum Accommodation Supplement eligibility is reached, the family will need to pay all of the higher accommodation costs.

As with earlier analyses, it must be emphasised that this is an analysis of costs, and makes no judgements on the overall worth of the programme.

6.6 Other Issues

As with the Income-Related Rent subsidy, there is a significant administrative cost burden associated with the Accommodation Supplement. This comes about not just from the complexity of the thresholds, maxima, and abatements, but also the need to monitor recipients to ensure that they

remain eligible for the level of support being provided. Further work is required each year for revisions of the thresholds and regional maxima used in the calculation of Accommodation Supplement eligibility.

7. Mortgage Insurance Scheme

7.1 General

The Mortgage Insurance Scheme goes by the working name of Welcome Home Loans. A pilot scheme was run with Kiwibank from 2003 to 2005. The full programme began in 2005 with a number of lenders participating.

The scheme is aimed at encouraging home ownership. It does this by reducing the risk to the lender of granting a mortgage to a borrower with low equity. Borrowers must have sufficient income to service the mortgage, but have insufficient savings for a normal deposit.

The risk reduction takes the form of an insurance scheme. Housing New Zealand receives a one-off insurance premium (3 per cent of the loan value) at the commencement of the loan in return for an undertaking to cover any losses incurred by the lender should the borrower default, die, or sell the property at a loss. The borrower pays one-third of the insurance premium and the Government pays two-thirds. "Losses" are strictly defined by the agreement between Housing New Zealand and participating lenders.

It is important to recognise that the insurance scheme covers the lender. In contrast, the borrower gains no protection from the scheme. In the event of default, the borrower may still lose some or all of the equity that they have put into the house.

By October 2006, more than 850 loans had been underwritten by the pilot scheme and the Welcome Home Loans scheme. No claims had been received for any of these loans.

7.2 Characteristics

Cash flows that occur in this scheme are:

- the insurance premium
- income from the accumulated insurance premiums
- administration costs
- insurance claims.

The insurance premium is received at the start of the loan; the investment income and administration costs occur throughout the life of the loan; and the insurance claim – if one is received at all – will occur at some period after loan commencement.

This means that the benefits are received first, while the major cost – an insurance claim – may never be received. This structure – receiving the

benefits before paying the costs – is the inverse of a "standard" investment structure where an initial investment generates future returns.

The large costs in the Welcome Home Loans scheme occur when a borrower defaults on their loan. If no default occurs, then ultimately, the entire insurance premium plus investment earnings (net of administration costs) will be transferred to income in the Housing New Zealand accounts.

If default occurs, then this does not automatically result in a claim on the insurance fund. A claim will only occur if a loss is incurred on the sale of the house.

If the 'Net house value' is negative, then this amount can be claimed under the insurance arrangement with Housing New Zealand. However, even if a claim occurs, the size of the claim may still be less than the accumulated value of the premium and investment earnings.

7.3 Cost Drivers

The profitability of any insurance scheme depends on the premium and investment income from the entire portfolio exceeding the claims arising from the portfolio. On this basis, the key cost drivers of the scheme are the number (proportion) of loans where an insurance claim is made, and the size of the claims made. On the benefits side, the key drivers are the size of the insurance premium and the investment earnings rate of the accumulated premiums.

7.3.1 Size of Claims

The calculation of the net house value at the time of default is:

	House sale price
less	Sales commission
less	Outstanding principal
less	Outstanding interest
less	Legal fees incurred by lender on default
less	Maintenance costs incurred by lender on default
equals	Net house value

This formula is defined (although not in the form shown) in the agreement between Housing New Zealand and the lenders participating in the Welcome Home Loans scheme. Most of these items are commented on below.

As time goes by, the probability that 'Net house value' will be negative should diminish. This is because:

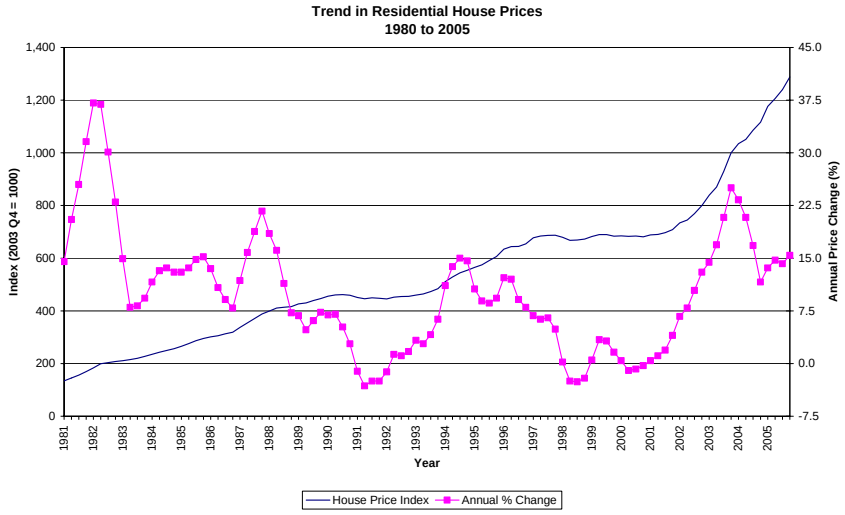
- house values trend upwards through time

- the loan will reduce as loan payments are made.

Note that a trend of increasing house prices does not mean that house prices will increase every year. It simply means that over a long enough timeframe, increases in house prices are greater than decreases in house prices. House prices may remain stable or decline for significant periods in between the periods of increase.

The trend in house prices over the last 25 years is shown in the graph below. The line without markers shows the overall level of house prices and uses the left axis. The line with markers shows the annual percentage change in house prices and uses the right axis. Note that the "zero line" on this axis is above the bottom of the graph.

Figure 13 Trend in House Prices



Source: RBNZ
QVNZ

Key points to take from this figure include:

- house prices have only declined for brief periods
- there have been some extended periods when house prices have been relatively stable
- house prices have increased rapidly from 2001 to the present time.

This past history should give reasonable confidence that any future price declines will be modest in size and of short duration. On the other hand, given the strength of the recent price increases, it is possible that there will be a period of price stability in the near future to allow some recovery in housing affordability.

The first of these points suggests that the risk of house prices declining below the loan value is modest. However, the second point suggests that the

chances of house prices appreciating to generate equity and provide comfort for the lender (and Housing New Zealand) may also be modest in the near future. In this situation, much of the gain in equity has to come from actual debt repayment.

It is assumed that any loans insured under the Welcome Home Loans scheme will be table mortgages rather than interest-only mortgages. This is because an interest-only mortgage will perpetuate a low equity position if house prices are not rising – meaning that the loan will remain permanently "at risk". Even though debt repayment under a table mortgage is initially slow, the fact that the loan balance is being reduced will steadily reduce the risk associated with the loan.

The actual loan balance outstanding at the time of default will depend on three things:

- the amount initially borrowed
- the terms of the loan (length and interest rate)
- how many payments have been made.

In turn, the amount initially borrowed will depend on the house purchase price, and the size of any deposit made.

Any deposit made by the borrower will significantly reduce the risk of the loan to the lender and Housing New Zealand as this provides an additional buffer of equity before the insurance scheme is called upon. The impact the level of deposit has on the analysis will be demonstrated in Section 7.5.3.

Outstanding interest occurs once the loan goes into default. It is the interest due on the loan balance, and may accumulate for several months – as the house will take time to sell. Under the agreement between Housing New Zealand and the lenders, this interest can only be charged at the normal (not penalty) rate.

A loan going into default will trigger a series of legal costs as the lender moves to protect its financial position. While the agreement between Housing New Zealand and the lenders does not limit these costs to a specific maximum, the costs must be "reasonable and necessary".

The agreement also allows for expenses incurred in "maintaining and preserving the property". Presumably, this means keeping the house and grounds in good condition so that the sale price of the property is not adversely affected by poor presentation. In addition to the "reasonable and necessary" provision, these costs are limited to a maximum of $1,500 unless the prior permission of Housing New Zealand has been sought and granted.

In general, the likely size of any payout under the Welcome Home Loans scheme:

- will get smaller as more loan payments are made
- will get smaller as house prices increase
- will get smaller as the initial deposit increases
- will get larger the longer it takes to sell a house once in default.

7.3.2 Proportion of Loans Ending with a Claim

Determining the size of likely insurance claims is only part of the story. The other part is: "What proportion of the total loans taken out end with a claim being made?" This question can also be extended to ask: "When is a claim made in the lifetime of a loan?"

The significance of the second part of this question is that size of claims is expected to become smaller as the loan progresses through its lifetime. On this basis, ALL loans could end in default with no call on the insurance fund – provided the default occurred far enough into the lifetime of the loan that the lender incurred no loss on the loan.

On the other hand, a small proportion of high value losses early in the loan lifetime could deplete the accumulated insurance funds.

Before suggesting possible rates of default, it is worth stepping back from the detail and looking at the bigger picture. In this bigger picture, Housing New Zealand is not the agency dealing with the borrower – but is simply the insurer for the lender. Further, the insurance offered by Housing New Zealand is limited in scope to defined areas of loss.

The reality of the situation is that from a lender's perspective, the existence of insurance from Housing New Zealand does not remove the requirement to exercise prudence in lending. A loan going into default will trigger significant administrative expenses for the lender. These expenses will generally not be recoverable from either the borrower or Housing New Zealand, although the borrower is likely to face honour fees and penalty interest in the short term.

If a loan does go into default, a lender will usually try to manage the default, allowing the borrower the opportunity to recover from default, and continue repaying the loan. Possible options for management include an extension of the loan term to reduce payment levels, a temporary switch to interest only payments to reduce payment levels, or a temporary suspension of mortgage payments while the borrower regains their financial footing. The opportunities for management of a default situation expand as the loan progresses and the borrower builds equity in the property.

It is traditional for lenders to require life insurance to cover the mortgage in case of death of the primary income earner. Some lenders also offer (or some borrowers will have) their own insurance products to pay the

mortgage (for limited periods) in case of accident, ill health, or redundancy. In these situations, the default is unlikely to result in an insurance claim on Housing New Zealand.

Important points to note from this are that:

- lenders will be prudent in granting mortgages because of the expense and loss of goodwill associated with default situations
- lenders will actively protect their situation by encouraging borrowers to insure their loan, irrespective of the backup cover offered by Housing New Zealand
- even when default occurs, lenders will often provide the borrower with opportunities to recover from the default
- foreclosure is the last resort, although with low equity situations this point will be reached more quickly than with normal loans.

Overall, the Welcome Home Loans do not eliminate the risks of lending for the lender – they only reduce the consequences of loan default. Because the lenders still face lending risk, and still suffer consequences beyond what is insured by the Welcome Home Loans, their lending policies will still be geared to minimising the risk to the lending institution.

Given this set of circumstances, the Housing New Zealand may see relatively few claims on the insurance fund.

To reiterate a point made earlier: claims on the insurance fund will get smaller as house prices increase. In periods of rapidly increasing house prices, Housing New Zealand may see absolutely no claims on the insurance fund – even if defaults are occurring.

Conversely, in periods of price decline, recent loans will carry relatively high risk. If house prices are declining, then a default involving a recent low equity loan will almost certainly result in an insurance claim.

What drives the level of defaults on loans? At the aggregate level, the main factors influencing default rates include:

- economic growth
- job losses (related to economic growth).

Individuals may experience many other factors which affect them personally without affecting the overall portfolio of loans. These factors include:

- accident (death, disability, recuperation)
- death (natural causes)
- other health issues (heart attack, stroke)
- relationship breakdown

- financial mismanagement.

As can be seen, there are a significant number of drivers of default – particularly at the individual level – but initial default does not necessarily mean that Housing New Zealand will receive a claim.

7.4 Analysis of Mortgage Insurance Scheme

7.4.1 General

The Mortgage Insurance Scheme (Welcome Home Loans) was analysed using a computer based simulation exercise. From a basic set of assumptions, the computer generates a large number of alternative outcomes for the loan. The pattern of these outcomes provides information about the risks of the overall programme, and the likelihood of the insurance fund being inadequate.

Sensitivity can be tested by repeatedly running the simulation using different assumptions.

7.4.2 Costs

The basic costs of the programme are the administration and overhead costs. If the loan proceeds without any problems, then these are the only costs charged to the programme.

In the event of a default, the house is assumed to be sold. This starts with an estimation of the sale value of the house. Real estate fees, the outstanding loan balance, unpaid interest (based on the time taken to sell the house), and default costs are deducted from the sale value to determine the net value of the house. Default costs are the legal fees and maintenance costs allowed to be charged against the sale price as specified in the contract between Housing New Zealand and the lender. If the net value of the house is negative, then this amount is claimed against the insurance fund.

For example, a house bought for $200,000 with a $5,000 deposit has a total initial loan of $198,061 (after legal fees, bank fees, and the insurance premium). The loan defaults in month 30 by which time the loan balance has been reduced to $191,358. The house takes 1 month to sell, in which time it accumulates $1,268 of unpaid interest. The house sells for $189,000 (i.e. less than the purchase price) and incurs commission of $6,142. Default costs (legal and maintenance) of $2,500 are applied. This means the house is sold for a net loss of $12,268 which is then claimed against the insurance fund.

Some other assumptions are made regarding “costs”:

- If a house is voluntarily sold rather than the loan going into default, then it is assumed that the loan is not in arrears, and as a consequence, there is

no unpaid interest. However, there may still be a loss to be covered by the insurance.

- If one (or more) of the borrowers dies, then this triggers a loan default situation. It is assumed that the borrowers do not have life insurance to cover the loan balance on the basis that the Welcome Home Loan insurance provides this cover to the lender. [Note that the model can be set to assume insurance is present].
- The probability of death is assessed using standard mortality tables. Factors affecting death rates include age, sex, and ethnicity. Where there is more than one borrower, it is assumed that one-quarter of the death probability of the second and subsequent borrowers is "joint" with the first borrower.
- If there is low equity in the house at the time of sale, the sale will be "stressed" – that is the house will sell at a discount to market value.
- House values are calculated using an annual appreciation rate and a variability factor (standard deviation). If the house appreciation rate is set at 2 per cent per annum and the variability is set at 3 per cent, then the actual appreciation in any given year will usually lie between -4 per cent and 8 per cent (± 2 standard deviations).

The probability of a sale or default occurring in any year was set as follows:

Table 30 Probability of House Sale or Loan Default
Per cent

Year	House Sale	Loan Default
1	2%	3%
2	4%	3%
3	6%	3%
4	7%	3%
5	8%	3%
6	9%	2%
7	9%	2%
8 - 13	9%	2%
14	7%	2%
15+	5%	2%

Notes: The above rates are purely hypothetical
Source: NZIER

It should be noted that these are not forecasts of the actual level of default that will/should occur. These default levels are set at moderately high levels to assess the robustness of the scheme.

There were two underlying themes in setting these sale and default rates. Firstly, initial sale/default rates are low as borrowers work hard to meet their commitments. Sale and default rates increase in following years as financial commitments become too great, and then start falling as the owners build equity in the property, which provides a financial buffer. Secondly, the sale/default rates aimed to provide a half-life of house ownership of around 7 years.

It is questionable whether the Welcome Home Loans would be politically viable with this level of default occurring. In this profile, approximately 13 per cent of loans will default in the first 5 years; 22 per cent of houses will be sold; and 1 per cent of loans will experience a death event. On this basis, 36 per cent of loans will terminate in the first 5 years.

By way of comparison, actual default rates in the United States have averaged around 1 per cent over the last 20 years[13], although regional peak rates could approach 2 per cent. Informal comment from one of the trading banks indicated New Zealand default rates over the last decade have been less than 0.2 per cent. Even though low equity loans will carry a higher risk than normal loans, the default rates shown in Table 30 are still moderately high.

7.4.3 Benefits

There is a set of readily identifiable financial benefits in this scheme. They are the initial premium received from the Government and the lender; and the investment earnings from the accumulated premium funds.

The premium amount is 3 per cent of the loan value, one-third of which is paid by the lender and two-thirds by the Government.

According to Housing New Zealand, the investment funds are invested in Bank Bills. Over the last 20 years, Bank Bill rates have had average returns of between 6.40 and 6.47 per cent depending on the duration (30, 60, or 90 days). This analysis assumes the fund earning rate is 6.4 per cent and has fund administration costs of 0.5 per cent. This leaves a net return of 5.9 per cent per annum. Housing New Zealand report that the fund earnings are taxable – the tax impact has been omitted here, partly to show the real resource costs, and partly because these earnings are largely balanced by the overall administration and overhead costs of the scheme.

7.5 Summary of Results

A number of different scenarios will be summarised below. The first scenario will look at the long term position where house prices are assumed

[13] Residential Mortgage Default – Federal Reserve Bank of Philadelphia, Business Review, Third Quarter 2006.

to increase at 2.5 per cent per annum on average. The second scenario looks at the effect of having stable house prices, while the third scenario looks at the effect of the deposit amount on the scheme risk.

NOTE: All results for the Mortgage Insurance Scheme are in nominal terms – that is, they include inflation. This is because the financing of the house is expressed in nominal terms – the loan value and mortgage repayments are always nominal. Inflation is assumed to be 2.25 per cent per annum. On this basis, the discount rate is set at 10.0 per cent (nominal) as the equivalent of a 7.5 per cent real rate.

7.5.1 Long Term House Price Increases

This base scenario assumes that the house value is $200,000. Under the terms of the scheme, this could be purchased with no deposit. However, the borrowers make a deposit of $5,000. After bank fees of $350 and legal fees of $750, the base loan amount is $196,100. The lender's insurance premium of $1,961 is added to this to give a total loan amount of $198,061. The loan is financed over 25 years at an interest rate of 7.95 per cent giving monthly repayments of $1,522.

There are two borrowers – a male aged 32 and a female aged 30. This defines the profile of death rates.

The total insurance premium is $5,883. The lender pays $1,961 of this, and passes this cost on to the borrower. The Government pays $3,922. The earning rate of the accumulated insurance premiums is 5.9 per cent net of fund administration costs.

Houses prices increase at 2.5 per cent per annum (over and above the inflation rate of 2.25 per cent) with a standard deviation of 3.0 per cent. This means that most years, house prices will increase by between -3.5 and +8.5 per cent real (-1.25 to +10.75 nominal). Real estate commission fees are 3.25 per cent.

Summary results of this scenario are shown in Table 31 below:

The first column of the above table shows the year of the analysis, while the second column shows the number of loans in place at the start of the year. The third column shows the total fund value as at the start of the year.

The next 4 columns show the number of loan terminations that occur during the year. Loan terminations are categorised into deaths, defaults, and house sales.

The 'Claims' column shows the number of claims made on the insurance fund. This number is less than the number of terminations because claims will only be made where a loss is incurred on loan termination.

Table 31 Mortgage Insurance Scheme – Base Scenario

Year	No. of Loans	Fund Value at Open	Loan Terminations				Claims	Losses	Cash Flow
			Deaths	Defaults	Sales	Total			
1	1,000	5,723,000	2	34	21	57	53	43	-802,795
2	943	4,920,205	0	24	31	55	19	10	-407,999
3	888	4,512,206	4	33	52	89	8	2	-324,277
4	799	4,187,929	2	19	39	60	2	0	-297,474
5	739	3,890,455	0	16	54	70	0	0	-299,262
6	669	3,591,193	1	9	62	72	0	0	-298,170
7	597	3,293,023	0	16	45	61	0	0	-290,206
8	536	3,002,817	4	7	54	65	0	0	-285,239
9	471	2,717,578	0	13	43	56	0	0	-272,325
10	415	2,445,253	3	9	31	43	0	0	-259,260
		Totals	**16**	**180**	**432**	**628**	**82**	**55**	
								NPV	**3,357,621**

Notes: (1) House prices increasing at a real rate of 2.5 per cent p.a.

(2) Based on a $200,000 house with a $5,000 deposit

Source: NZIER

The ‘Losses’ column shows the number of times that the claim exceeds the value of the insurance premium plus any investment earnings to date. The number of losses is less than the number of claims because some claims are for amounts less than the initial insurance premium plus accumulated investment income.

The final column is the cash flow that occurs for the year. This is the net cash flow arising from the investment income, scheme administration costs, and any claims made on the insurance fund. The inflow of insurance premiums in Year 0 is not shown as a cash flow. However, they can be seen in the table as the opening fund value in Year 1.

The half-life of loans is shown to be around 7 years (536 loans left at the start of year 8). This is consistent with the anecdotal comment that New Zealanders change their houses every 7 years. This does suggest that the overall termination rate is about right, although the breakdown between sales and defaults may differ. The timing of sales may also differ, and it may be argued that people borrowing using a Welcome Home Loan may be discouraged from selling early in the loan life-cycle if their equity position is negative. The current analysis does not stop the sale if a loss is about to be incurred, whereas in practice, people would try to avoid this situation.

Claims initially make up a large proportion of loan terminations. However, this proportion falls rapidly to be fairly minimal for year 3 and beyond.

Likewise, losses (where the value of the claim exceeds the value of the insurance premium and investment income) fall steadily as a proportion of claims. No losses are experienced beyond year 3.

The cash flow is negative in all years. This is because the cost of administration and overheads exceeds the fund earnings – even before any

claims are made. However, the fund value remains positive, and at the start of year 10 was still 43 per cent of the original premium amount.

Note however, that the administration and overhead costs will exhaust the fund completely by year 13. Under most conceivable circumstances, most loans should be out of the danger zone by this time.

The Net Present Value of this series of cash flows is $3.36 million, or $3,360 per loan.

These results appear very good. However, some warnings are necessary.

The levels of default assumed have no actuarial basis. The levels of default and sales were simply selected on the basis that they appeared high and would "stress" the system.

A key reason for the declining levels of claims and losses was the house price appreciation that is assumed (2.25 per cent inflation + 2.50 per cent real gain). Increasing house prices generate equity in the house for the borrower, and minimise the risk to the lender and Housing New Zealand. Of the 55 losses shown in the table, just 8 of them occurred when the house sale price exceeded the purchase price ($200,000). In other words, if house prices increase, there are low risks to the Mortgage Insurance Scheme.

Given the strength of the housing market in recent years, there is some uncertainty whether house prices will continue to increase in the short to medium term. The next scenario will address this issue.

7.5.2 House Prices Stable

If house prices remain stable, then increases in equity are dependent on debt repayment. This means it will take longer to move the loan out of the danger zone where losses could be realised on the sale of the property.

In this scenario, the only change is that house prices are assumed to be stable in nominal terms over the first 10 years (-2.2 per cent real price change) and stable in real terms thereafter. However, the variability of 3 per cent continues. This means that in the first 10 years, the house price change is typically between +6 and -6 per cent nominal.

Summary results of this analysis are shown in Table 32 below:

This result is somewhat different from the base scenario.

The last claims against the fund were made in year 10, up from year 4 in the base scenario. In total, 33 per cent of loans ended with a claim against the insurance fund.

Table 32 Mortgage Insurance Scheme – Stable House Prices

Year	No. of Loans	Fund Value at Open	Loan Terminations				Claims	Losses	Cash Flow
			Deaths	Defaults	Sales	Total			
1	1,000	5,723,000	1	32	20	53	52	50	-945,153
2	947	4,777,847	2	26	37	65	63	52	-955,777
3	882	3,822,070	6	25	52	83	60	40	-840,640
4	799	2,981,430	1	24	59	84	52	37	-708,553
5	715	2,272,877	5	30	55	90	39	26	-605,912
6	625	1,666,965	1	14	59	74	25	20	-452,289
7	551	1,214,676	1	9	47	57	15	7	-353,921
8	494	860,755	2	10	53	65	12	6	-344,552
9	429	516,203	2	9	38	49	4	3	-271,268
10	380	244,935	1	9	33	43	6	5	-270,725
		Totals	**22**	**188**	**453**	**663**	**328**	**246**	
								NPV	**1,765,032**

Notes: (1) Nominal house prices assumed to be stable
(2) Based on a $200,000 house with a $5,000 deposit

Source: NZIER

Likewise, losses were experienced through to year 10, up from year 3 in the base scenario. In total, about 25 per cent of loans ended in a loss situation. As with the base scenario, few losses occurred where house prices increased (3 out of 246).

Larger cash outflows were experienced in every year than in the base scenario. This had the effect of reducing the fund value to just 4 per cent of the original premium value by the start of year 10.

The Net Present Value of the cash flows was reduced to $1,765 per loan.

This is an acceptable result. Despite high proportions of loans ending in claims (32 per cent) or losses (24 per cent), the fund survived throughout the period of insurance need.

The probability of this scenario needs to be considered. Ten years of static house prices in nominal terms with inflation running at 2.25 per cent would reduce real house prices by 20 per cent from today's levels. Despite concerns that today's housing market is overheated, a drop in real price of this magnitude seems unlikely.

7.5.3 Effect of Deposit on Results

Both of the above analyses assume the borrower has $5,000 for a deposit. How important is that deposit, and how does the risk of the Welcome Home Loans programme change as the level of deposit changes?

Under the Welcome Home Loans programme, a borrower can borrow up to $200,000 without a deposit. For amounts above $200,000, the borrower must contribute 15 per cent of the amount over $200,000. Therefore, if a borrower was purchasing a house worth $250,000, then the borrower must contribute at least $7,500 as a deposit.

The following tables continue the analysis using the $200,000 house used in earlier tables. The first table shows the impact of reducing the deposit to zero; the second table shows the impact of increasing the deposit to $10,000. Both tables assume stable house prices, making Table 32 the appropriate base table for comparison.

The No Deposit scenario shows a worse result than the Table 32 scenario. More payouts were required (39 per cent), more loans ended in a loss (33 per cent), the negative cash flows were larger, and the insurance fund was exhausted by the start of year 7.

Table 33 Mortgage Insurance Scheme – No Deposit

Year	No. of Loans	Fund Value at Open	Loan Terminations				Claims	Losses	Cash Flow
			Deaths	Defaults	Sales	Total			
1	1,000	5,873,000	5	31	26	62	61	60	-1,275,544
2	938	4,597,456	3	23	35	61	60	54	-1,154,522
3	877	3,442,934	5	22	49	76	65	56	-1,069,095
4	801	2,373,839	5	23	68	96	68	55	-1,039,501
5	705	1,334,338	1	18	55	74	50	35	-692,366
6	631	641,972	0	16	54	70	33	30	-573,242
7	561	68,730	2	13	45	60	20	16	-426,524
8	501	-357,794	1	8	35	44	12	11	-383,714
9	457	-741,508	0	8	42	50	10	7	-312,451
10	407	-1,053,959	0	8	31	39	6	5	-276,150
		Totals	**22**	**170**	**440**	**632**	**385**	**329**	
								NPV	**855,702**

Notes: (1) Nominal house prices assumed to be stable.
(2) Based on a $200,000 house with no deposit.

Source: NZIER

Table 34 Mortgage Insurance Scheme – Larger Deposit

Year	No. of Loans	Fund Value at Open	Loan Terminations				Claims	Losses	Cash Flow
			Deaths	Defaults	Sales	Total			
1	1,000	5,573,000	2	31	24	57	53	45	-759,858
2	943	4,813,142	2	31	38	71	57	42	-766,144
3	872	4,046,998	5	18	53	76	37	27	-557,192
4	796	3,489,806	3	18	58	79	28	15	-464,723
5	717	3,025,083	2	25	55	82	26	18	-459,743
6	635	2,565,340	2	7	50	59	14	6	-361,604
7	576	2,203,736	2	6	55	63	11	7	-360,670
8	513	1,843,066	2	12	51	65	8	5	-315,876
9	448	1,527,190	0	10	37	47	1	1	-265,812
10	401	1,261,378	3	5	43	51	2	2	-284,738
		Totals	**23**	**163**	**464**	**650**	**237**	**168**	
								NPV	**2,468,476**

Notes: (1) Nominal house prices assumed to be stable.
(2) Based on a $200,000 house with a $10,000 deposit.

Source: NZIER

In contrast, the higher deposit scenario shows improved results across all measures. Fund payouts were down to 24 per cent of loans, with losses down to 17 per cent. The cash outflows were smaller than other stable house price scenarios, but not as small as the increasing house price scenario. The fund value was 23 per cent of the initial premium amount at the start of year

10, providing a reasonable degree of security. Net Present Value was $2,470 per loan.

7.5.4 Key Points from these Results

Summarising the key points from this analysis of the Welcome Home Loans:

- Risk is highest in the early years of the loan
- Risk decreases as house prices increase
- Risk decreases as deposit levels increase
- No deposit loans in an environment of stable (or falling) house prices are a high risk combination, and could exhaust the fund if such conditions persisted for periods in excess of 5 years.

It is believed that the loss rates used in this analysis are higher than are likely to be observed in practice. To put the default rates used into context, none of the 850+ loans written since September 2003 under the pilot scheme and initial Welcome Home Loans scheme have defaulted.

This suggests the analysis has taken a pessimistic view of the likelihood of defaults.

However, it also needs to be acknowledged that the period since 2003 has been characterised by a rapid increase in house prices. Annual percentage changes in house prices have ranged between 12 and 25 per cent over this period. At these rates of increase, all loans will be lifted out of the "danger zone" as far as this loan insurance scheme is concerned within a year. On this basis, claims during the pilot scheme would have been unlikely – even if a default had occurred.

7.6 Comparison with Actuarial Analysis

Each year, Housing New Zealand obtains an actuarial analysis of the outstanding Welcome Home Loans to determine the prudent size of the investment fund necessary to cover all likely claims. This section examines the most recent actuarial analysis and compares it with the analysis in this paper.

The main differences between the actuarial analysis and this analysis are:

- the actuarial analysis assumes lower rates of default and house sales
- the actuarial analysis assumes higher losses on any loans that do go into default. Specifically:

  - houses will sell for 75 per cent of their market value[14]
  - recovery costs will be 10 per cent of the gross recovery
  - the default process takes 12 months

- scheme administration costs are funded externally (i.e. they are not expensed against the fund).

These assumptions were entered into the model and run. Two scenarios were tested – house prices keep pace with inflation and house prices remain stable. The results of these analyses are shown below:

Table 35 Mortgage Insurance Scheme – Actuarial Assumptions (1)

Year	No. of Loans	Fund Value at Open	Loan Terminations				Claims	Losses	Cash Flow
			Deaths	Defaults	Sales	Total			
1	1,000	5,883,000	4	1	22	27	19	18	-145,162
2	973	5,737,838	0	2	34	36	9	8	147,573
3	937	5,885,411	1	12	32	45	15	14	-429,315
4	892	5,456,096	3	14	57	74	19	19	-626,843
5	818	4,829,253	2	14	66	82	17	17	-397,515
6	736	4,431,738	2	10	38	50	12	12	-115,263
7	686	4,316,475	1	10	47	58	11	11	-78,291
8	628	4,238,184	2	7	48	57	9	9	66,653
9	571	4,304,837	4	5	54	63	7	6	129,108
10	508	4,433,945	0	7	29	36	4	3	225,955
		Totals	**19**	**82**	**427**	**528**	**122**	**117**	
								NPV	**4,943,203**

Notes: (1) House prices keep pace with inflation
(2) Based on a $200,000 house with a $5,000 deposit

Source: NZIER

Table 36 Mortgage Insurance Scheme – Actuarial Assumptions (2)

Year	No. of Loans	Fund Value at Open	Loan Terminations				Claims	Losses	Cash Flow
			Deaths	Defaults	Sales	Total			
1	1,000	5,883,000	1	0	27	28	24	24	23,397
2	972	5,906,397	4	2	26	32	21	21	-232,756
3	940	5,673,641	5	14	54	73	39	36	-1,119,165
4	867	4,554,476	0	14	43	57	23	22	-689,177
5	810	3,865,299	4	15	60	79	27	26	-924,186
6	731	2,941,113	0	12	55	67	17	16	-376,090
7	664	2,565,023	1	6	51	58	16	14	-151,166
8	606	2,413,857	0	8	55	63	13	12	-115,667
9	543	2,298,190	4	4	45	53	11	10	-20,576
10	490	2,277,614	0	6	36	42	7	7	53,955
		Totals	**19**	**81**	**452**	**552**	**198**	**188**	
								NPV	**3,494,752**

Notes: (1) Nominal house prices assumed to be stable
(2) Based on a $200,000 house with a $5,000 deposit

Source: NZIER

These results compare favourably with those calculated earlier. The fund values remain strongly positive, and the Net Present Value is positive.

[14] The wording actually notes that "the gross amount realised on default will average 75 per cent of the market value of the cases being modelled …". It is unclear whether this refers to the house value or the loan value, so the house value has been assumed here.

However, this is not comparing like with like. The main analysis deducts scheme administration costs whereas the actuarial analysis does not.

If the actuarial analysis is adjusted to deduct scheme administration costs, then the insurance fund is exhausted by year 9 if house prices keep pace with inflation, and is exhausted by year 6 if house prices remain stable in nominal terms. Even if house prices increase, the fund will be depleted by year 10, although under this scenario, no claims would be expected beyond this period.

The following conclusions can be drawn from these two analyses:

- Each analysis assesses the Welcome Home Loans to be adequately funded using their own sets of assumptions
- Combining the pessimistic value recovery assumptions of the actuarial analysis with the administration cost assumptions of the NZIER analysis results in the fund being depleted within a 6 to 9 year timeframe. This could be viewed as an acceptable (or even good) result on the basis that the scheme has achieved its objective of providing security for lenders at the cost of the initial insurance premium plus the cost of any claims after the fund has been exhausted. (In most scenarios, few claims occur beyond the point of fund exhaustion – and they are some years into the future).

7.7 Other Issues

From a financial perspective, this scheme provides better returns to Housing New Zealand if house prices are increasing. As noted in the State Housing analysis, this potentially places the scheme at odds with a Government desire to have affordable housing.

On closer examination, the conflict is not as acute with this scheme. As long as reductions in house prices are minimised, this scheme carries a low overall risk. House prices only need keep pace with inflation for the risk of the scheme to be minimal.

It has been noted that uptake of this scheme has been slow. Possible reasons for this include:

- relatively few properties are available within the scheme limits
- the scheme does not make those properties any more affordable – it only improves access to finance if purchasers can sustain the payments of a low equity purchase.

Increasing the limits of the scheme will improve the first issue, but still do nothing to improve affordability. This may also tend to increase the risk profile of the scheme.

8. Housing Innovation Fund

8.1 Overview

The Housing Innovation Fund has two parts – the Local Government Housing Fund and the Housing Innovation Fund for community groups. The aim of both parts is to increase the quantity and/or quality of social housing available in the community.

8.1.1 Housing Innovation Fund for Community Groups

The Housing Innovation Fund for community groups aims to increase involvement of community groups and organisations in providing housing to specific groups such as people with special needs or those on low incomes.

Community groups must be non-government, and not-for-profit. Typical target groups include Church groups, Iwi, and Community Trusts.

The housing to be supplied by these community groups should be targeted at either:

- households whose housing needs are not fully met by Housing New Zealand or the private market, such as pensioners and people with disabilities, iwi, Maori and Pacific peoples
- low or moderate-income households whose housing needs are not met in the private market but for whom no suitable accommodation exists.

8.1.2 Local Government Housing Fund

The Local Government Housing Fund aims to encourage councils to maintain and increase their existing rental housing. The fund helps councils to buy, modernise or reconfigure properties.

The target groups for this housing are the same groups identified above for the Housing Innovation Fund for community groups.

8.1.3 Criteria

Proposals under either arm of the Housing Innovation Fund are measured against specific criteria. They must:

- meet an identified housing need
- expand the social housing options available in a region
- meet financial criteria
- provide housing to an acceptable and agreed quality standard
- show a commitment to sustain the housing in the long term

- show evidence of strong community support and involvement.

In general, Housing New Zealand is looking to support well-managed projects that support people in-need into the long-term future.

8.2 Characteristics

More support is available to Community Based Organisations than to Local Government. This is based on the assumption that Local Government's have both greater organisational capacity and greater financial resources than do Community Based Organisations. Types of support available include:

- development grants. Available only to Community Based Organisations. Up to three grants of up to $15,000 including GST are available for building capacity (business processes, planning capability etc) in the organisation
- feasibility grants. Available only to Community Based Organisations. One grant of up to $15,000 including GST for a feasibility study on the proposal
- Innovation loans (Community Based Organisations). Up to 85 per cent of the project cost. Terms are typically 25 years with 10 years interest free
- Innovation loans (Local Government). Up to 50 per cent of the project cost for new housing, or $30,000 per unit for reconfiguration. Typically, 20 year suspensory loans
- suspensory loans. Available only to Community Based Organisations. Up to 35 per cent of the project cost. Granted when required to make the project sustainable and affordable
- conditional grants. Available only to Community Based Organisations. Up to 15 per cent of the project cost. These grants match the contribution made by the Community Based Organisation. However, these are discretionary grants, and are only offered if they are necessary to make the project viable
- growth/seeding grants. Available only to Community Based Organisations. Not part of the on-going programme, as money is a carryover from an earlier year. Up to $100,000 per grant.

A key characteristic of all loans and grants made is that they will be tailored to the requirements of the organisation and project. The following table provides an overview of the funding provided to a number of projects[15] assisted by the Housing Innovation Fund.

The first six organisations listed in the table are Community Based Organisations, while the final two are Local Government organisations. It is apparent from this table that the assistance given to Local Government is much less than that given to Community Based Organisations. On the other

[15] See: "The Outcomes Evaluation of the Housing Innovation Fund" – draft report from PS Services.

hand, Community Based Organisations are required to repay a significant portion of their loans whereas Local Government loans are suspensory, and therefore will never be repaid unless the terms of the loan are breached. On this basis, the overall cost to Government of each type of assistance may be similar.

Table 37 Housing Innovation Fund: Assistance Types
Per cent of project value

	Loan/Grant type					
	Development	Feasibility	Innovation	Suspensory	Conditional	Total
Fowler Trust		✓	70		15	85
Just Housing		✓	45	23	15	83
Wellington Housing Trust	✓✓	✓	70		15	85
ComCare Charitable Trust		✓	44	12	15	71
Community of Refuge Trust			70		15	85
Nelson-Tasman Housing Trust	✓✓	✓	68	2	15	85
Timaru District Council				50		50
Dunedin City Council				50		50

Source: Housing New Zealand
NZIER

All of the Community Based Organisations received a conditional grant of 15 per cent of the project cost. Further, most Community Based Organisations received additional grant funding provided as a mix of feasibility and development grants. Main project funding ranged from 56 to 70 per cent of total project costs, with the funding being a mix of Housing Innovation Fund loans and suspensory loans. The ultimate amount to be repaid by the Community Based Organisations ranged from 44 to 70 per cent of the project cost.

In both of the local government examples, funding consists of a suspensory loan amounting to 50 per cent of the project costs.

The gestation of these projects appears significant. In the case of the projects above, there was typically an 18 month gap between initial application to the fund and acceptance of the funds offered. Application-acceptance timeframes ranged from 7 to 22 months. Housing New Zealand staff indicate that some projects are accepted within 4 months.

The local government projects also had timeframes of 8 and 18 months. However, with only two projects, it is not clear what the typical timeframe will be for local governments.

The implications of these long timeframes are that there are significant administrative and overhead costs in the programme. There are references to this in the draft evaluation report – for example: "Some CBO's describe the fund's application and assessment process as excessive and risk averse. In contrast, Housing New Zealand uses the application and assessment process to build CBO's capability as social housing providers.[16]"

8.3 Cost Drivers

In general, the value of loans provided for social housing is determined by:

- the number of loans
- the size of loans.

In addition, the cost of administering this scheme must also be considered.

For local governments, the number and size of loans are very much in the hands of the individual local government agencies. Each local government accords a different priority to social housing, affecting both the number and size of social housing projects in their region.

On this basis, the main driver of costs for local government loans is the priority each local government gives to social housing.

The situation is more complex for Community Based Organisations. A wider array of financial assistance measures is available to these organisations. A Community Based Organisation will typically receive a "bundle" of assistance measures with the contents of the bundle tailored to the individual Community Based Organisation and project. Factors affecting the bundle of assistance measures include:

- the current skill set of the Community Based Organisation administrators
- the financial resources the Community Based Organisation has available to commit to the project
- the degree of project planning that has preceded application to the fund
- the degree to which the project is financially viable under commercial financing.

In general, the larger the organisation, the less the assistance that will need to be provided under the first three bullet points. The fourth bullet point partly relates to the financial resources available to the Community Based

[16] "The Outcomes Evaluation of the Housing Innovation Fund" – draft report, p.168.

Organisation, but also relates to what the proposed tenants of the social housing can afford to pay. The more disadvantaged the group that is being served by the social housing, the greater the assistance likely to be needed for the project.

More general factors such as land prices and house construction costs also impact on the cost of the projects, and therefore on the amount of assistance provided under the programme.

8.4 Analysis

8.4.1 Costs

Two "typical" Housing Innovation Fund projects were analysed – one for Local Government Housing, the other for a Community Based Organisation. Details of these projects are as follows:

a) Local Government Housing

6 social housing units: 2 x 1-bedroom units and 4 x 2-bedroom units
Total value of project: $945,000
Housing New Zealand contribution: $472,500 – 20 year suspensory loan
Lead time before loan drawdown: 15 months

b) Community Based Organisation

19 x 1-bedroom studio units
Total value of project: $1,890,000
Housing New Zealand contribution: $1,002,000 – 25 year Innovation loan,
Lead time before loan drawdown: 21 months

At the time of writing, a good analysis of the setup costs of these loans was not available. However, it is expected that these will be significant due to the high degree of involvement of Housing New Zealand staff. It is also expected that the setup costs will be higher for Community Based Organisations than for Local Government.

Given those expectations, the following setup costs were used:

- Local Government: $2,500 per month
- Community Based Organisations: $3,750 per month

Actual costs could be much higher than this.

Once the loan is established and the project is complete, Housing New Zealand involvement reduces to a general oversight level to ensure that the project continues to meet the loan conditions. As an approximation of these costs, the administration and overhead costs for State Housing were used in this analysis.

8.4.2 Benefits

In the case of the Local Government project, Housing New Zealand receives no financial benefits from the project.

In the case of the Community Based Organisation, the Community Based Organisation must repay the Housing Innovation loan. The cashflows from these repayments constitute a financial benefit or cost reduction. Note, however, that while the full "amount" of the loan will be repaid, the full "value" will not – as the 10-year interest free period means that some of the value of the loan is transferred to the Community Based Organisation.

8.5 Summary of Results

The results of this analysis are summarised in the table below:

Table 38 Housing Innovation Fund Analysis

	Net Present Value (Annual)	Net Present Value Annual) per Bedroom	Benefit Cost Ratio
Local Government Housing	-47,900	-4,800	0.00
Community Based Organisation	-68,700	-3,600	0.35

Source: NZIER

The Benefit Cost Ratios are as expected at this stage of the analysis. The Local Government lending has a benefit cost ratio of zero because the suspensory loan is never repaid, while the Benefit Cost Ratio for the Community Based Organisation is positive because some of the value of the Housing Innovation Fund loan is repaid.

The Net Present Value per bedroom suggests that the cost-effectiveness of the Community Based Organisation project is better than the Local Government project, with unit costs at around 75 per cent of the Local Government level. This lower cost for Community Based Organisations appears to be largely driven by the repayment of some of the loan value, whereas the suspensory loan granted to the Local Government is never repaid under normal conditions.

As Community Based Organisations can receive a variety of assistance measures, the cost-effectiveness of the assistance could vary significantly. It is noted that this particular Community Based Organisation did not receive any grants or suspensory loans, both of which would tend to increase the net present cost as they occur early in the timeframe and are never repaid.

The Local Government results may be more representative than the Community Based Organisation results. Most Local Government loans appear to follow this same basic structure. Therefore, variability in the results will come mainly from the unit cost of construction (or acquisition), with some minor variability being added in through setup costs.

To test the sensitivity of these results, the Community Based Organisation lending was reconfigured to a more typical scenario. A feasibility grant of $13,000 and a conditional grant of $283,500 (15 per cent of the project cost) were added in to the package. In addition, the Innovation Fund loan was increased to $1,323,000 (70 per cent of the project cost). The effect of this assistance package is compared with the original package in the table below:

Table 39 Community Based Organisation: Loan Structures

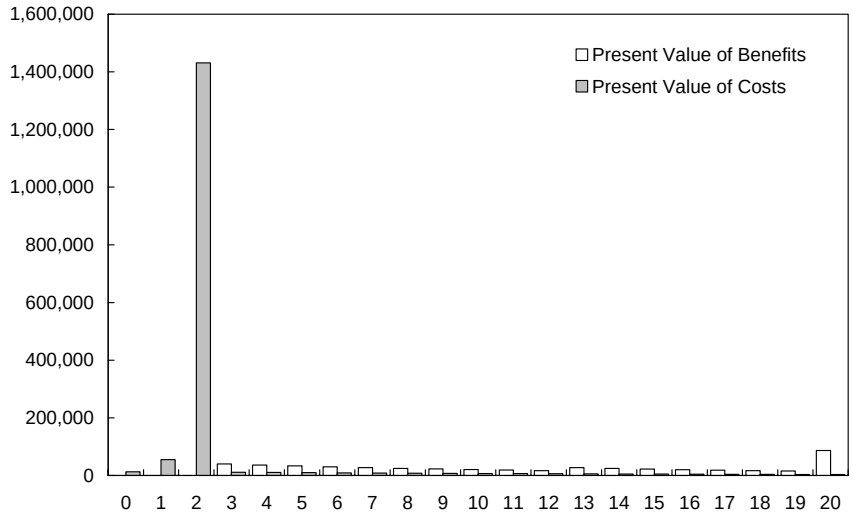
	Net Present Value (Annual)	Net Present Value (Annual) per Bedroom	Benefit Cost Ratio
Local Government Housing	-47,900	-4,800	0.00
Community Based Organisation - original	-68,700	-3,600	0.35
Community Based Organisation – typical	-109,300	-5,800	0.31

Source: NZIER

If the typical package of Community Based Organisation lending is applied to this Community Based Organisation project, then the cost-effectiveness of the project falls below that of the Local Government project. Instead of having costs that were 25 per cent below those of the Local Government project, the typical package pushes costs to be 20 per cent above the Local Government project.

A key factor making the Local Government lending more cost effective in this case was that the Local Government suspensory loan was for only half the project value, whereas the amount loaned to the Community Based Organisation was 85 per cent of the project value. Even though the Community Based Organisation had to repay some of this, the net cost to Government was greater. The Community Based Organisation cash flow is illustrated below:

Figure 14 Cash flows of Housing Innovation Fund Loan
Community Based Organisation – Dollars



Source: NZIER

Overall, the loan repayments make up around one-third of the value of the Housing Innovation Fund loans plus expenses. Given that Housing Innovation Fund loans typically make up 85 per cent of the total project value, this means that the net Government contributions amount to around 57 per cent of the total project value. This is more expensive than contributing 50 per cent of the project value to Local Government projects via a suspensory loan.

Generalising the cost-effectiveness of the whole programme on the basis of a comparison between two projects is fraught with difficulties. Nevertheless, it is apparent that the cost-effectiveness of the Community Based Organisation lending varies significantly with the assistance package provided. At lower rates of assistance, Community Based Organisation lending may be more cost effective than Local Government lending.

It should not be forgotten that the measurement of costs in this exercise only captures those costs accruing to Housing New Zealand. Both the Community Based Organisation and the Local Government also incur costs in providing the social housing – but they also receive the rental benefits which will act to reduce their net cost, or make the project financially viable from their viewpoint.

9. Shared Equity

9.1 Overview

The Shared Equity programme is still under development. While Cabinet has agreed on the broad parameters of the scheme, the final product is still to be developed. Therefore, the results of this Shared Equity analysis must be considered tentative.

The Shared Equity programme has been proposed as one possible solution to the issue of housing affordability. Lower quartile house prices in some territorial authorities are now in excess of $350,000. Many working families have neither the income nor the deposit to purchase a house at this price point.

The Shared Equity programme aims to solve the affordability problem by making the Government an equity partner in the purchase of the house. This reduces the amount of finance required by the purchaser, and therefore the house can be afforded at a lower level of income. While not strictly aimed at solving the deposit problem, the scheme does reduce the amount of deposit that a buyer requires to purchase a house. On sale of the house, the Government is paid a share of the sale proceeds proportionate to the initial share of equity.

9.2 Characteristics

The target demographic group for this programme is quite different from those targeted by the other housing programmes. It is clearly aimed at middle income earners who still struggle with housing affordability because of where they live and work.

There are potential philosophical issues about extending assistance to this demographic group. Likewise, the impact this type of scheme will have on house prices is also open for discussion. As a generality, subsidies such as this typically become capitalised into the asset price which negates the impact of the subsidy and makes housing even less affordable to those without access to the subsidy. While these issues are beyond the scope of this study, it is important that they be noted.

While the details of the scheme are yet to be finalised, the broad structure for the proposed scheme is:

- the Government will take an equity share of between 10 and 30 per cent of the house value
- the purchaser will be required to make a deposit of at least $5,000
- the Crown's equity loan will be secured by way of a second mortgage

- the Crown will not charge interest or require any regular repayments on the equity loan.

A number of other eligibility and operational aspects have also been decided, but these are not relevant to this analysis.

The implication of the equity loan being by way of second mortgage is that the Crown will rank ahead of the purchaser for its share of the sale proceeds at the time of eventual sale. This means that there is (some) potential for home buyers to lose all their equity if the house is sold at a loss.

9.3 Cost Drivers

For an individual loan, the major cost driver for the Government is the real rate at which house prices increase. In this analysis, future benefits are discounted at the rate of 7.5 per cent (real) per year. Typically, house prices increase at less than this rate. Therefore, the value of the Government's investment is expected to shrink in present value terms.

The greater the difference between real house price appreciation and the discount rate, the greater the cost to the Government.

The absolute level of equity contribution affects the final cost to Government. Therefore, the cost that arises from a 30 per cent contribution on a $300,000 house will be the same as 25 per cent contribution on a $360,000 house. In both cases, the Government contributes $90,000 and the value of that sum diminishes in net present value terms as noted above.

As with the Mortgage Insurance Scheme, there are risks to the Government in the early years of the investment where a sale of the house may exhaust the equity contributed by the purchaser. In this situation, the Government's equity will be eroded.

The risk of this happening:

- decreases as house prices increase
- decreases as the purchasers initial equity contribution increases
- decreases as the purchaser repays their mortgage.

The opposite also happens – risk increases as house prices fall, with a low initial equity contribution from the purchaser, and in the early months and years of the loan, particularly if the purchaser goes into default (loss of employment, sickness or injury etc).

The cost of any equity losses needs to be factored into the final analysis of the programme.

Economic growth drives many of the factors identified above, increasing house prices and providing wages and profits to finance the equity contributions.

9.4 Analysis of Shared Equity

A base scenario for a Shared Equity loan used the following assumptions:

Table 40 Shared Equity – Base Assumptions

House value	$300,000
Government share (%)	30
Purchaser deposit	$5,000
House sold in year	7
Capital gains (real % p.a.)	2.5
Inflation (% p.a.)	2.25
Administration ($/yr)	120
Overheads ($/yr)	465

Source: NZIER

9.5 Summary of Results

The results of this analysis had a net present value over the 7 year period of $-5,500 per year on an annual equivalent basis.

This base result was tested by changing the parameters. Results of this analysis are shown in the table below:

Table 41 Shared Equity – Scenario Analysis
Net Present Value (Dollars per year)

Scenario	Annual NPV
Base	-5,500
Government contribution 20%	-3,800
Capital gains nil (nominal)	-8,900
Capital gains 7.5% p.a. (nominal)	-3,100
House sold in year 2	-5,300
House sold in year 4	-5,300
House sold in year 15	-5,800
Purchaser deposit $10,000	-5,500
Capital gains nil (nominal). and sold in year 2	-10,800
As above but $10,000 deposit	-9,400

Source: NZIER

There are several issues worth noting from this table.

The assistance is open-ended. Annual costs are typically $5,500 to $6,000 per year. The longer this continues, the greater the overall cost to Government.

The cost reduces with lower Government contributions as expected from the earlier discussion. Likewise, the capital gains influence was as expected.

Under normal circumstances, the level of the deposit made by the purchaser has little or no effect. However, if house prices are declining, then the presence of purchaser equity buffers the impact of house price reductions on the Government. Similarly, the increased equity from mortgage repayments acts to minimise risk for the Government.

9.6 Issues

Once again, the contribution of real growth in asset prices to the financial viability of the Shared Equity scheme is troubling from a policy perspective. Scenarios which minimise the cost of the Shared Equity (on a unit basis) will make housing less affordable than today. In turn, that may actually result in an increase in costs across the whole scheme as house price inflation forces more would-be first home owners into the scheme.

The difference between accounting and economic analyses identified in the State Housing section needs to be re-iterated here:

Under normal circumstances, the Shared Equity scheme is likely to show an accounting profit for the Government – that is, the amount realised on the sale of a Shared Equity property would normally be expected to exceed the book value of that equity loan. Therefore, from an accounting perspective, the Shared Equity scheme will appear worthwhile. For example, in the base scenario analysed, the accounting profit over the 7 year period is estimated at $30,200 nominal or $25,500 real.

However, the economic analysis says that the $90,000 invested has an opportunity cost of $6,750 (real) per year, compounding. This amounts to $59,300 over the 7 year period, hence the accounting profit of $25,500 (real) is inadequate.

10. Discussion of Results

10.1 General

This section aims to extend the analyses of the preceding sections to provide new insights. Two particular analysis extensions are explored:

- Examination of the results from the analyses to assist the management of the programmes
- Comparison of one scheme against another.

In both of these general areas, it must be remembered that the analyses have excluded all of the non-financial benefits that accrue to these schemes. While this limits our assessment to one of cost-effectiveness, some useful strategies can be revealed.

Section 3.4 outlined a number of limitations and qualifications regarding this analysis. These included:

- limited analysis of overhead and administration costs
- overheads and administration applied on a uniform basis
- analysis assumes a mature, on-going programme and excludes product development and startup costs
- non-financial benefits excluded
- most schemes have different target markets, which limits their comparability.

These qualifications need to be borne in mind when considering the results of the analysis.

10.2 Programme Management

10.2.1 State Housing

The scenarios considered below consider the effects of under-utilisation of Housing New Zealand houses. This does not imply that under-utilisation is common – it is only meant to illustrate the effects of under-utilisation on both the Corporation and the Government.

a) House utilisation

From a Corporation perspective, the cost of the State Housing programme was shown to be primarily dependent on house size. That is, the cost of providing the house was largely driven by house size. Likewise, the market rental increased with house size.

Further, the Corporation receives the full market rental for the house regardless of the tenant's actual payments, as the Government makes up the shortfall in the rent paid by the tenant. This has potential to allow sub-optimal utilisation of the housing resource because there is no immediate financial incentive to encourage high utilisation of houses.

For example, the Corporation still receives the full market rental if a couple occupies a 3-bedroom house rather than a 1-bedroom house because of the impact of the Income-Related Rent subsidy. This is obviously a poor choice from the Government's perspective – but it is also a poor choice for the Corporation.

Poor house utilisation means that the Corporation requires higher stocks of houses than it would do if the houses were optimally utilised. If the Corporation owns those houses, then this means that the Government has had to contribute more capital than necessary; if the Corporation rents those houses, then the operating costs are higher than necessary. In both cases, there are higher maintenance costs. Either way, there is a cost to the Corporation and the Government. The following analysis attempts to quantify the effects of under-utilisation.

The following table revisits the Net Present Values. The table also shows the Net Present Value of the costs associated with State Housing – this measure excludes the market rental of the property but continues to include the capital growth and eventual sale of the asset at the end of the 20 year timeframe.

Table 42 Annual Equivalent Costs of State Housing

Net Present Value ($ per household per year) – Government perspective

Bedroom count	NPV Annual	NPV (Costs) Annual
1	-3,000	-10,700
2	-4,600	-14,500
3	-6,600	-18,300
4	-11,200	-25,100
5	-12,700	-27,600
6	-14,000	-29,900

Notes: Excludes non-financial benefits

Source: NZIER

This table tells us that the Net Present Value of building and operating a fully tenanted 1-bedroom State House is $-3,000 per year. However, if the State House had no tenants, then the net costs would be $-10,700 per year.

These two values tell us the net cost of owning and operating that house for a year when tenanted ($3,000) and empty ($10,700).

This annual cost data will now be used to create a matrix of "financial regrets". Regrets are calculated as the difference between the actual state of a project and its optimal state.

The optimal state of a 2-bedroom house is to have 2 bedrooms occupied. This is a position of "no regrets".

However, if a 2-bedroom house has only one bedroom occupied, then the actual state differs from the optimal state. The annual cost of providing a 2-bedroom house is $-4,600. If only 1 bedroom is used, then we could have provided equivalent accommodation for $-3,000. This means we have regrets of $-1,600 (per year). This can be interpreted as the marginal cost incurred in providing accommodation beyond the optimal state.

Consider what happens if the house remains empty. A 2-bedroom house has an annual cost of $-14,500 if it is empty, compared with a cost of $-4,600 if tenanted. Therefore, if it is empty, we have regrets of $-9,900 per year.

Table 43 Regrets: State Housing

Dollars per household per year – Government perspective

	Bedrooms Utilised						
Bedroom count	**0**	**1**	**2**	**3**	**4**	**5**	**6**
1	-7,700	0	-	-	-	-	-
2	-9,900	-1,600	0	-	-	-	-
3	-11,700	-3,600	-2,000	0	-	-	-
4	-13,900	-8,200	-6,600	-4,600	0	-	-
5	-14,900	-9,700	-8,100	-6,100	-1,500	0	-
6	-15,900	-11,000	-9,400	-7,400	-2,800	-1,300	0

Source: NZIER

Examining this table of regrets, the following general points emerge.

- Empty houses have high regrets.
- Regrets from under-utilisation increase with the degree of under-utilisation. However:
  - under-utilisation by 1 bedroom usually carries low regrets. Four bedroom houses are an exception where regrets are moderate
  - under-utilisation by 2 or more bedrooms carries relatively high regrets.

The first point is particularly important. Regrets associated with an empty house are typically 5 to 10 times the regrets from under-utilisation by 1 bedroom.

The magnitude of the empty house costs should not be allowed to obscure the other main point – that there are costs associated with under-utilisation and that those costs increase with the degree of under-utilisation. Those costs may look small when viewed on a per-house per-year basis, but are substantial across the entire housing portfolio.

If 10 per cent of the portfolio is under-utilised by 1 bedroom, and the average under-utilisation cost is $1,800 per year, then this amounts to a "cost" to the Corporation of around $11.5 million per year. A large part of this cost is the opportunity cost of excess capital, but there are also additional operating expenses as larger houses require more maintenance.

The actual level of under-utilisation is unclear. The Annual Report[17] quotes a figure of 4.26 per cent of standard properties being under-utilised in 2004-05. However, the measure of under-utilisation is generous and would allow a couple to occupy a 3-bedroom house without it being considered under-utilised. More generally, any family grouping can have a spare bedroom without this being considered under-utilisation.

It is important to recognise that the above analysis only considers housing costs. The impact of any Income-Related Rent subsidy is additional to these costs. An under-utilised house means a higher Income-Related Rent subsidy which in turn means higher regrets. These effects were seen in Table 26 in Section 5.6.2 of this paper. Table 26 is re-stated below[18] to put it into a framework of annual regrets.

Table 44 Regrets: State Housing and Income-Related Rent

Dollars per household per year – Government perspective

	House Size (bedrooms)				
Family Type	**1**	**2**	**3**	**4**	**5**
Empty	-7,700	-9,900	-11,700	-13,900	-14,900
Single	0	-3,800			
Single + 1		0	-3,800		
Single + 2			0	-6,800	
Couple	0	-3,800			
Couple + 1		0	-3,800		
Couple + 2			0	-6,800	
Multi-Adult		0	-3,800	-10,500	
Multi-Adult + 1			0	-6,800	-9,300
Multi-Adult + 2				0	-2,600

Source: NZIER

This table tells us that if a single person is placed in a 2-bedroom house, the cost to the Government is $3,800 per year more than if they were in a 1-

[17] Housing New Zealand Corporation – Annual Report 2004/05, p32.

[18] Note that Table 26 is expressed on a per person basis, while Table 44 is expressed on a per household basis.

bedroom house. The previous table tells us that the Corporation bears $1,600 of this cost in the form of higher capital and operating expenses, meaning the Government bears $2,200 in the form of additional Income-Related Rent subsidy.

b) Non-financial benefits

This framework of regrets analysis is extended in Appendix C to consider the inclusion of non-financial benefits.

The additional conclusion that emerges from this analysis is that the higher the value attributed to non-financial benefits in State Housing, the more important it is to maintain good house utilisation. This is because the non-financial benefits are expected to be proportional to the number of people in the house. Under-utilisation of the house will mean that the non-financial benefits realised will fall below the potential benefits.

A further extension of this analysis notes that State House tenants who improve their position such that they would no longer be accepted into the State Housing programme gain fewer non-financial benefits from State Housing than would people who remain in A or B priority status.

For this group of people, regrets are always present. If the house is fully utilised, the regrets are equal to the loss of potential non-financial benefits. If the house is not fully utilised, then the regrets equal the loss of non-financial benefits plus the additional capital and operating expenses associated with the larger house.

c) Implications

None of the above is meant to imply that under-utilisation or utilisation by people no longer in need is common within State Housing. These scenarios are presented simply to facilitate thinking about the way the State House portfolio is managed.

The issues raised are relevant, even if the scenarios used to extract those issues are unusual. These issues include:

- management of the portfolio to minimise empty houses while still having houses available to cover emergency housing needs
- matching of house size to family groupings to minimise under-utilisation of the housing resource
- management of tenancies to maintain good house utilisation when family groupings change
- management of tenancies to ensure that State Houses are for the benefit of those people who are “in need”.

10.2.2 Mortgage Insurance Scheme

Analysis of the Mortgage Insurance Scheme in Section 7 of this document suggested that the risks to Housing New Zealand associated with insurance claims were low. Even using rates of default that were considered high, the insurance fund was adequate in all but the most extreme scenario.

This robust performance in the simulation raises questions about the degree of provisioning and the rate at which the insurance premium is converted to income in the Housing New Zealand accounts.

Housing New Zealand provided the following information on premiums collected and provisioning:

Table 45 Mortgage Insurance Premiums and Provisions
Thousand Dollars

	Borrower	Government	Total
2003-04	412	832	1,244
2004-05	715	1,445	2,160
2005-06	1,100	2,212	3,312
Totals	2,227	4,488	6,716
Provision in balance sheet			4,841

Source: Housing New Zealand

From the earlier analysis, we know that loans pose the greatest risk early in their life cycle. We also know that the risk reduces as house prices increase. Given the rapid increase in house prices since 2003-04 when the scheme began, the early loans should now carry minimal risk.

Half of the premiums collected to date have been in the 2005-06 financial year. It is reasonable to say this premium income is fully at risk. Therefore, all of that $3.3 million should be in the provisioning.

A typical house bought under the Mortgage Insurance Scheme scheme in 2003-04 had a value of $150,000 at purchase time, and was bought without deposit. House prices increased 34 per cent between the December quarter 2003 and June quarter 2006, suggesting that the typical house would now be worth around $201,000. After allowing for a 10 per cent price decline, and real estate fees of 4 per cent plus GST, the net house price would be around $173,000. Given this net value is well in excess of the original loan value, this suggests that the fund faces almost no risk from houses purchased in the 2003-04 year.

Following the same process to assess the risk from houses in the 2004-05 year, house prices increased by 20 per cent between the December quarter

2004 and the June quarter 2006. On this basis, the $150,000 house would have increased to $180,000. After allowing for a 10 per cent decline in price, the net house price after real estate fees would be around $155,000. This is close to the original loan value, suggesting that some small risk is still present, particularly for houses bought late in the year (June quarter) as these would have appreciated less than those bought early in the year (September quarter).

Given the assessment of risk above, one estimate of provisioning is given in the table below:

Table 46 Mortgage Insurance Scheme Provisioning

Year	Premium ($000)	Risk	Provision (%)	Provision ($000)
2003-04	1,243	Very low	5%	62
2004-05	2,160	Low	33%	713
2005-06	3,312	Full	100%	3,312
Total				4,087

Source: NZIER

This suggests that an insurance fund of $4.1 million should be adequate to cover the loans already in place. This compares with the actual provision in the accounts of $4.8 million. On this basis, current provisioning may well be conservative, which in turn will lead to a delay in recognition of profits from the insurance scheme.

It is acknowledged that the assessment method used is crude in that it assesses all loans with each year together. However, it is reasonably conservative in that it allows for reasonable reductions in market value, and it provides moderate provisioning even when the assessed risk is low. Arguably, it is still excessively conservative.

A proper assessment of provisioning would assess each individual loan for its apparent equity. The level of provisioning required would then be based on this apparent equity. Once apparent equity was above a certain level, then the risk for that loan could be assessed as zero.

10.2.3 Shared Equity

The key issues regarding Shared Equity have been fully covered elsewhere. These were:

- The scheme is not expected to cover its cost of capital
- However, the scheme will show accounting profits

- The assistance provided in this manner is open-ended
- The Government will carry some risk arising from the possibility of house price declines

10.3 Comparison of Schemes Against Each Other

There are some areas of overlap in the schemes analysed.

While the two affordability schemes have a distinct definitional split, there is a degree of overlap where family groups on the margin of State Housing with Income-Related Rent assistance could be housed in the private market with Accommodation Supplement assistance. This will be considered in greater detail in Section 10.3.1.

Likewise, the effect of replacing the current two affordability schemes with just the Accommodation Supplement will be considered in Section 10.3.2.

Local Government and Community Based Organisation housing can be viewed as alternatives to State Housing. Section 10.3.3 will consider this.

10.3.1 The State Housing / Private Market Boundary

The Accommodation Supplement has the straightforward aim of addressing the issue of housing affordability. This is offered to a range of people including boarders, tenants, and home owners.

State Housing has the aim of addressing housing needs that are not met by the market. These needs may include affordability, but affordability is not the defining factor. However, most State House tenants do need affordability assistance as part of their overall assistance, and this is provided through an Income-Related Rent.

Over time, the well-being of a proportion of State House tenants will improve. Such improvement, whether or not it includes an improved financial position, will bring some State House tenants to a position that is indistinguishable from similar families in the private market. At this point, there is a valid comparison between the combined State Housing / Income-Related Rent programme and the Accommodation Supplement programme.

Earlier in this document, Table 26 provided the results from the State Housing / Income-Related Rent analysis, while Table 29 provided the results from the Accommodation Supplement analysis. Table 47 converts the results from those two earlier tables into annual regrets – that is, how much more does it cost to house someone in a State House and provide them with an Income-Related Rent than to provide them with an Accommodation Supplement in the same size house?

This table tells us that for a couple, the cost of a State House and Income-Related Rent exceeds the cost of that same couple receiving an Accommodation Supplement by $3,700 per year if they are in a 1-bedroom house. This cost difference increases to $6,300 if they are in a 2-bedroom house, and would be even more if they were in a 2-bedroom State House relative to a 1-bedroom house under the Accommodation Supplement.

Table 47 Regrets: Excess State Housing

Additional cost of State Housing and Income Related Rent over Accommodation Supplement
Dollars per household per year - Government perspective

	House Size (bedrooms)			
Family Type	**1**	**2**	**3**	**4**
Single	-3,700	-7,000		
Single + 1		-6,700	-9,800	
Single + 2			-8,500	-14,100
Couple	-3,700	-6,300		
Couple + 1		-6,400	-8,800	
Couple + 2			-8,100	-13,600

Notes: (1) Non-financial benefits have been excluded from these results.
Source: NZIER

The key point in this table is that it is substantially more costly to house someone in a State House and provide them with an Income-Related Rent, than it is to provide them with an Accommodation Supplement alone. This difference in cost may well be justified if the tenants are deemed to be "in need" as measured by the Social Allocation System. But if they are no longer "in need" then this simply represents an excess cost borne by Government.

This is not the only excess cost that occurs in this situation. If some State House tenants no longer meet the entry criteria, then some people in greater need could still be waiting, and/or Housing New Zealand has acquired more houses than it really needs to house all people deemed to be "in need". The first of these alternatives has a social cost; the second has a financial cost.

The above analysis makes no assessment of the number of State Houses where the tenants are no longer in need. However, given the magnitude of the regrets if this is the case, management of State House tenancies should be an important activity.

10.3.2 Affordability Programmes

The analysis of the Accommodation Supplement (Accommodation Supplement) in Section 6.2 indicated that the Income-Related Rent (Income-Related Rent) programme is more generous to the tenant than the Accommodation Supplement programme. This raises the question of why there are two affordability programmes, and what is the additional cost involved in running the Income-Related Rent programme?

While the answer to the first question is that it is Government policy to have the Income-Related Rent programme for State Housing, it is still worthwhile understanding the cost differences between the two programmes.

From the analysis of the Income-Related Rent in Section 5.5.2 and the analysis of the Accommodation Supplement in Section 6.5, the above regrets table can be constructed to show the additional cost of the Income-Related Rent programme over the Accommodation Supplement programme:

Table 48 Regrets: Affordability Assistance

Additional cost of Income Related Rent over Accommodation Supplement
Dollars per household per year – Government perspective

	House Size (bedrooms)			
Family Type	**1**	**2**	**3**	**4**
Single	-700	-2,400		
Single + 1		-2,100	-3,200	
Single + 2			-1,800	-3,000
Couple	-700	-1,700		
Couple + 1		-1,800	-2,200	
Couple + 2			-1,500	-2,500

Notes: (1) No non-financial benefits have been included in these results.
Source: NZIER

This table tells us that it costs the Government between $700 and $3,200 per household per year more to use the Income-Related Rent programme rather than the Accommodation Supplement programme. In essence, this is the extra annual rental that State House tenants would need to pay if the Income-Related Rent programme was replaced by the Accommodation Supplement.

10.3.3 Social Housing

The provision of social housing by the community can be seen as an alternative to State Housing. Social housing is subsidised through the Housing Innovation Fund, and tenants of such housing are likely to receive an Accommodation Supplement. In the State Housing alternative, Housing New Zealand would provide the house, and the Department of Building and Housing would provide an Income-Related Rent subsidy. The following table provides an estimate of the overall cost to Government of both these approaches.

The State Housing data used relates to 1-bedroom houses, while the social housing data relates (mostly) to 1-bedroom units. The comparability of the projects is unclear, therefore conclusions drawn from Table 49 should be treated with caution.

If housing prices are expected to continue increasing faster than inflation, then Housing New Zealand can usually provide more cost effective

accommodation than Local Government or Community Based Organisations, even after the higher cost of the Income-Related Rent (relative to the Accommodation Supplement) is taken into account. However, lightly subsidised Community Based Organisation projects will be able to match the Housing New Zealand cost.

Table 49 Comparison of Social and State Housing

Single bedroom unit – dollars per year – Government perspective

Accommodation Provider	Housing Cost	Affordability Assistance Single / Couple	Total Single / Couple
Local Government	4,800	4,600 / 4,000	9,400 / 8,800
Community Based Organisation – Original	3,600	4,600 / 4,000	8,200 / 7,600
Community Based Organisation – Typical	5,800	4,600 / 4,000	10,400 / 9,800
State Housing	3,000	5,300 / 4,600	8,300 / 7,600
State Housing (6)	5,200	5,300 / 4,600	10,500 / 9,800

Notes:
(1) See Table 39 for Housing Innovation Fund Housing costs
(2) See Table 20 for State Housing costs
(3) See Table 29 for Accommodation Supplement costs
(4) See Table 24 for Income-Related Rent costs
(5) Beware: Tables 24 and 29 are expressed per person
(6) No capital growth

Source: NZIER

If house prices stay static in real terms, then the Housing New Zealand costs go up. In that case, Local Government and some Community Based Organisation accommodation will work out as being more cost-effective.

Note that this is a Government perspective, and the Local Government and Community Based Organisation analyses do not consider the transactions occurring within the partner organisation. It is expected that the Government subsidies will allow these organisations to provide the accommodation at a small positive Net Present Value, meaning that overall provision of the accommodation and affordability subsidies will be broadly similar whether carried out solely by Housing New Zealand, or jointly with the Department of Building and Housing and a Local Government/Community Based Organisation. (However, the greater the number of organisations involved, the greater the administration costs).

There are differences between these approaches besides the direct cost analysis:

- Under the Housing Innovation Fund/Accommodation Supplement schemes, Government's only significant involvement is as a provider of subsidies

- For State Housing, Government creates an asset, potentially collects a capital gain from the asset, provides services, and receives payment for those services, as well as providing a subsidy
- The Housing Innovation Fund/Accommodation Supplement approach involves local communities, whereas State Housing is a more centralised solution
- The Housing Innovation Fund/Accommodation Supplement approach may involve types of housing that is not provided by Housing New Zealand.

Overall, these results are inconclusive. Greater examination of all schemes is required before definitive conclusions can be reached. In particular, this requires that the projects being compared are for broadly the same class of housing.

10.4 Other Issues

10.4.1 Discount Rate

The analysis in this document carried out used a discount rate of 7.5 per cent real. This was the rate recommended by Housing New Zealand, and matches the rate recommended by Treasury for departmental financial analyses. However, other rates could have been used. This section briefly looks at the impact that the use of other rates would have had.

At a 7.5 per cent discount rate, most analyses produced negative net present values.

If a higher discount rate were used (say 10.0 per cent), then we would normally expect the following effects:

- The analyses of State Housing, Shared Equity, and Housing Innovation Fund lending to Community Based Organisations would show larger negative Net Present Value's because the ultimate sale of the house (State Housing and Shared Equity) or loan repayments (Housing Innovation Fund/Community Based Organisation) would be discounted further
- The Net Present Value of annual subsidies such as Income-Related Rent and Accommodation Supplement would become less negative because future payments are discounted to lower present values
- The Mortgage Insurance Scheme would increase its positive Net Present Value's because future losses would be discounted more. This effect is not expected to be large as most losses are expected in the early years of the project
- There would be little impact on Housing Innovation Fund lending to Local Governments.

These effects would be reversed if a lower discount rate were used.

Generalising these effects, we could say that:

- a higher discount rate would favour annual subsidy operations
- a lower discount rate would favour asset ownership schemes
- schemes where the major cash flows occur in the first few years show only modest sensitivity to the choice of discount rate.

Appendix A Cost Derivation for Analysis

A.1.1 Capital Costs

Housing New Zealand provided a breakdown of the capital value of new State Houses on 21 August, 2006. This breakdown was in the form of a pivot-table. By restricting the data display to show only "Buy In" and "New Build", the pivot table is reduced to the data shown below:

Table A-1 Cost of Land and Improvements in State Housing

Asset Additions 05/06

Division	(All)
Regional Cluster	(All)
Programme	(All)

		Bedrooms (#)						
Category	Data	0	1	2	3	4 5+		Grand Total
Buy In	Sum of Property Count	0	26	166	202	62	26	482
	Average of Improvement Value	$237	$79,523	$120,605	$135,070	$214,468	$431,129	$144,463
	Average of Land Value	$133,780	$68,477	$88,346	$129,650	$138,910	$153,103	$115,579
	Average of Total Value	$134,017	$148,001	$208,951	$264,720	$353,378	$584,232	$260,042
New Build	Sum of Property Count		3	85	33	29	12	162
	Average of Improvement Value		$0	$121,855	$123,979	$203,439	$482,513	$161,351
	Average of Land Value		$117,000	$62,917	$66,862	$137,379	$111,375	$81,641
	Average of Total Value		$0	$183,396	$190,841	$340,818	$593,888	$240,104
Total Sum of Property Count		0	29	251	235	91	38	644
Total Average of Improvement Value		$237	$71,571	$121,028	$133,512	$210,953	$447,356	$148,522
Total Average of Land Value		$133,780	$73,330	$79,735	$120,833	$138,422	$139,926	$107,422
Total Average of Total Value		$134,017	$133,201	$200,297	$254,345	$349,375	$587,281	$255,249

Source: Housing New Zealand
NZIER

This table shows significant variability in land value between Buy In and New Build. For some house sizes, the New Build land value is lower than the Buy In land value, while for other house sizes, the relativity is reversed. Location is probably a key factor influencing this variability in land price. In contrast, the value of improvements is shown to be reasonably consistent between the two categories.

Given the variability of land prices between the categories, the land value used for State Houses in this analysis is assumed to be the average of Buy In and New Build values. This gives a consistent progression in land values as house size increases.

Construction cost is taken as the value of improvements on the above report.

A.1.2 Operating Expenses

Housing New Zealand also provided a Statement of Financial Performance on 21 August, 2006. The direct expenditure component of that Statement is reproduced on the next page (see Table A-2), along with an allocated grouping for this exercise.

Table A-3 summarises the allocation categories shown in Table A-2, and converts most of the figures to percentages of improvement value or capital value (based on an average 3 bedroom house).

Table A-2 Expenditure on State Housing

Data type

Direct Expenditure	2005-06	Units	$ per Unit	Allocated to
Planned Maintenance	98,995,473	66,711	1,484	Maintenance
Responsive Maintenance	32,896,005	66,711	493	Maintenance
HLP Maintenance	1,042,501	2,379	438	Excluded
Special Maintenance Contracts	650,568	66,711	10	Maintenance
National Office Maintenance	5,996,255	66,711	90	Administration
Cost of Ownership	10,973,560	66,711	164	Administration
Damages	13,456,113	66,711	202	Maintenance
Rates	85,048,467	66,711	1,275	Rates
Fire Damage	13,134,883	66,711	197	Maintenance
Insurance	5,448,352	66,711	82	Administration
Bad Debts	2,563,332	66,711	38	Administration
Depreciation	142,553,496	66,711	2,137	Excluded
Third Party Lessors	34,388,097	2,379	14,455	Excluded
Other Property Expenses	3,044,545	66,711	46	Administration
Direct Mortgage Expenses	271,474			Excluded
Total Direct Expenditure	**450,463,121**			

Source: Housing New Zealand
NZIER

Table A-3 Cost Groupings for State Housing

Category	$ per Unit	As % of	Value	Percentage
Maintenance	2,385			
Administration	420			
Rates	1,275	Capital value	255,000	0.50%

Source: NZIER

Rates can be left at the 0.5 per cent of capital value figure calculated in Table A-3. However, Maintenance and Administration need to be broken down further.

Typically, houses require little maintenance when they are new, but require more maintenance as they get older. To evaluate the way maintenance expenditure changes with the age of the house, Housing New Zealand provided a table of recent maintenance expenditure by the decade of the house age. A summary of this data for the 2005-06 financial year is shown in Table A-4.

In terms of this analysis, the decade of the 2000s can be considered to relate to houses 1 to 5 years of age; the 1990s relates to houses 6 to 15 years of age, and the 1980s relates to houses 16 years and older. The percentage figure is calculated by dividing by the construction cost of a typical house ($135,000) so that the results can be generalised across a range of house sizes.

Table A-4 Periodic Maintenance for State Housing

Average $ per Unit		Decades		
F/Year	Type	1980	1990	2000
2005/2006	Mtce Planned	1,648	1,250	210
	Mtce Responsive	491	426	318
	Total	2,139	1,677	527
	As % cost	1.58%	1.24%	0.39%

Source: Housing New Zealand
NZIER

It is unreasonable to charge small houses the same amount of administration as large houses. On the other hand, there is also a fixed cost element of providing administrative services to a house.

The average administration cost was calculated to be $420 per household. As a crude approximation, this was transformed to a fixed cost of $210 per household, and a variable cost of $70 per bedroom. Therefore, for a three bedroom house, this equates to the $420 average for all houses. A two bedroom house would be $350, and a four bedroom house $490.

A.1.3 Overhead Expenses

The State Housing scheme does not operate on direct costs alone. There are significant overhead costs both at a regional level and national level which form part of the overall cost structure. These overheads apply to all interventions. However, some allowance needs to be made for the other functions (policy advice) carried out by Housing New Zealand. On this basis, not all regional and national costs are assessed as overheads to be applied against the housing interventions.

The following crude measure of overheads was adopted:

	Three-quarters of Regional Expenses
plus	half of Total National Office costs
equals	Total overheads
divided by	Total interventions
equals	Overheads per intervention

Total interventions were assessed as:

State Housing	67,000
Income-Related Rent	59,000
Others	9,000
Total	135,000

Overheads were assessed as:

¾ Regional costs ($000)	28,242
½ National costs ($000)	34,496
Total overheads ($000)	62,738

Therefore, overheads were $465 per intervention. Transforming this to (arbitrary) fixed and variable components gives a value of $225 per house plus $80 per bedroom.

Appendix B Accommodation Supplement

The following estimation uses the same basic family types as those analysed in the Income-Related Rent analyses in Sections 5.5.2 and 5.6.2. The Income-Related Rent data is further used as a basis for calculating average household income. This is based on an underlying assumption that the financial position of Accommodation Supplement recipients is similar to Income-Related Rent recipients which has some support in their benefit status – see Table 15 in Section 4.2.3.

By taking the Income-Related Rent and market rent data shown in Table 22, we can work backwards to assess the income for each family type. This can then be put into a framework to calculate the Accommodation Supplement payment for that family grouping for each appropriate size of house.

Other assumptions include: all boarders are single and earn as much as other singles; accommodation costs for boarders are half those of a single bedroom house; the maximum Accommodation Supplement rates payable are the average of Area 2 and Area 3 maxima; and that everyone is renting.

Combining all these assumptions, we get the following estimates of Accommodation Supplement payments by family type:

Table B-1 Accommodation Supplement by Family Type

Dollars per week

Family type	Boardr	Single	Sngl +1	Sngl+2	Couple	Cpl+1	Cpl+2
Per cent of total	22	27	18	18	6	3	6
Income-Related Rent income		260	292	384	316	332	407
Pre-tax income	328	328	369	485	399	419	514
Entry threshold	43	43	80	80	72	90	90
Maximums (A2/A3)	100/65	100/65	125/75	165/120	125/75	165/120	165/120
Income threshold	329	329	436	436	495	495	495
Income abatement	0	0	0	12	0	0	5
Net AS (1 br $155)	25	72			59		
Net AS (2 br $200)		83	80		83	77	
Net AS (3 br $235)			92	97		102	97
Net AS (4 br $280)				118			122

Source: NZIER

The first line of this table identifies the family type, while the second identifies that family type's proportion of the Accommodation Supplement recipient population.

'Income-Related Rent income' refers to the after tax income of that family grouping in the Income-Related Rent analysis. This has been assessed from the average Income-Related Rent paid by each family grouping as shown in Table 22. As the calculations for the Accommodation Supplement work in pre-tax terms, the 'Income-Related Rent income' is converted to a 'Pre-tax income' equivalent.

The next two lines of the table – 'Entry threshold', and 'Maximums (A2/A3)' – are definition points within the Accommodation Supplement scheme. Accommodation Supplement eligibility is calculated as 70 per cent of the accommodation costs in excess of the entry threshold, subject to a maximum eligibility for the area. This analysis sets the maximum eligibility to the average of the Area 2 and Area 3 maxima as a crude proxy of the national average.

The 'Income threshold' sets the income level at which abatement of the Accommodation Supplement payment begins. The next line – 'Income abatement' – is the level of abatement calculated from the 'Pre-tax income' and 'Income threshold' lines shown earlier in the table.

The net Accommodation Supplement payment is then calculated for each family type for various house sizes. The market rentals used in this analysis are the same as those used for the Income-Related Rent analysis – see Table 22.

For example, a single person living in a 1 bedroom house has accommodation costs of $155 per week. The entry threshold is $43 therefore basic eligibility is 70 per cent of ($155 - $43) or $78.40. This gets rounded up to $79. This is within the maximum allowable Accommodation Supplement payment for Area 2 ($100), but is more than is allowable for Area 3 ($65). Therefore, in Area 3, the Accommodation Supplement payment would be $65, and the average of Area 2 and Area 3 payments would be ($79 + $65) / 2 = $72 (shown in the table). No income abatement occurs because the person's pre-tax income ($328) is less than the abatement threshold ($329).

Appendix C Non-Financial Regrets in State Housing

Although estimation of non-financial benefits is beyond the scope of this paper, some conclusions can be reached about the impact that inclusion of non-financial benefits will have. This is done by extending the "regrets" framework developed in Section 10.

This exercise begins with the simple assertion that State Housing is a worthwhile activity. This means that, once non-financial benefits are included, the Net Present Value of State Housing will be positive.

We can reasonably assume that the non-financial benefits that accrue to State Housing is proportional to the number of people housed. We can further generalise this to the number of bedrooms utilised.

We know from earlier analyses that the highest housing costs on a per-bedroom basis occur for single bedroom houses. If State Housing is a worthwhile activity, then non-financial benefits must be at least as great as the cost of owning and operating a single bedroom house.

On this basis, the value of non-financial benefits must be at least $31,000 per bedroom (over a 20 year time-frame). This makes all State Housing programmes have positive Net Present Values. This is equivalent to $3,041 per bedroom per year (rounded to $3,000).

The regrets analysis shown in Table 43 can now be extended to show the impact of non-financial benefits. This is shown in the table below:

Table C-1 State Housing Total Regrets

Dollars per year – Including nominal non-financial benefits

	Bedrooms utilised						
Bedroom count	Empty	1	2	3	4	5	6
1	-10,700	0					
2	-16,000	-4,600	0				
3	-20,800	-9,700	-5,000	0			
4	-26,100	-17,300	-12,700	-7,600	0		
5	-30,100	-21,900	-17,200	-12,200	-4,500	0	
6	-34,100	-26,200	-21,600	-16,500	-8,900	-4,300	0

Source: NZIER

The figures shown in the table above are the financial regrets shown in Table 43 plus non-financial regrets arising from under-utilised bedrooms.

Therefore, a 2 bedroom house with only 1 bedroom utilised has financial regrets of $1,600 per year plus non-financial regrets of $3,000 from the unused bedroom giving total regrets of $4,600 per year.

Analysing these regrets gives the same general findings as for the financial regrets alone – namely that empty houses have high regrets, and regrets increase as houses are under-utilised. However, there is another interesting observation to make here:

The higher the value of non-financial benefits per bedroom, the greater the regrets as houses are under-utilised.

Put another way, given a finite quantity of housing, the maximum social benefit will be achieved when those houses are fully utilised. Under-utilisation of some or all houses will mean that some people will not be able to access the non-financial benefits available from State Housing. The higher the value placed on the non-financial benefits, the greater the "loss" suffered by those people not housed due to under-utilisation.

The effect of non-financial benefits extends to the type of tenants in State Houses. If some tenants have improved their well-being such that they would no longer be accepted into the State Housing programme, then the non-financial benefits they gain from State Housing are no greater than they would obtain in the private market. This means the net non-financial benefits accruing to those tenants is zero, and that non-financial regrets are incurred regardless of the utilisation state of the house. This is shown in the table below:

Table C-2 State Housing Total Regrets – Special Case

Dollars per year – Tenants not "in need"

	Bedrooms utilised						
Bedroom count	Empty	1	2	3	4	5	6
1	-10,700	-3,000					
2	-16,000	-7,700	-6,100				
3	-20,800	-12,700	-11,100	-9,100			
4	-26,100	-20,400	-18,800	-16,800	-12,200		
5	-30,100	-24,900	-23,300	-21,300	-16,700	-15,200	
6	-34,100	-29,200	-27,600	-25,600	-21,000	-19,500	-18,200

Source: NZIER

If the house if fully utilised, the regrets are equal to the loss of potential non-financial benefits. If the house is not fully utilised, then the regrets

equal the loss of non-financial benefits plus the additional capital and operating expenses associated with the larger house.