



Towards an evaluation of the Healthy Housing programme using RENTEL data

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Executive Summary

This executive summary presents the key findings that resulted from analysing Healthy Housing data held in RENTEL. The Healthy Housing programme is a joint initiative between Housing New Zealand Corporation (HNZC), Counties Manukau, Auckland and Northland District Health Boards (DHBs). The programme was launched in January 2001 and aims to reduce the risks and rates of housing related diseases, conditions and injuries, and improve wellbeing for HNZC tenants, particularly children in localities with a high level of overcrowding. This analysis will be a source document for the synthesis and discussion report prepared at the end of years two and three of the outcomes evaluation.

The key findings cover:

- A discussion of the data from RENTEL of the Healthy Housing programme that could be used for a meaningful analysis;
- Healthy Housing interventions on which RENTEL does and does not report;
- A discussion of household composition;
- The relationship between different interventions and the outcomes they are designed to achieve;
- How overcrowding in the selected samples for Wiri and Otara¹ compares to the more representative samples extracted for March 2004 and March 2005²;
- The time taken to complete interventions in all samples; and
- A discussion of Income Related Rent (IRR) as it effects participating households.

One of the aims of this evaluation was to determine if the RENTEL data is complete enough for a meaningful analysis to be undertaken. RENTEL readily provides data for analysing interventions but for the purposes of the evaluation household level data was needed. Many households assisted receive multiple interventions which created the potential of double counting and consequently the misrepresentation of activities of the Healthy Housing programme. As part of the analysis of RENTEL, categories of intervention and a hierarchy of interventions were agreed with the Healthy Housing team so that interventions could be analysed by household.

The analysis in this report draws on some aggregated data from RENTEL but is primarily based on four samples of administrative data that were manually extracted from RENTEL:

- Households that received a joint assessment in March 2004;
- Households that received a joint assessment in March 2005;
- Fifteen households in Wiri; and
- Fifteen households in Otara.

A file review was undertaken for the households in Wiri and Otara. A selection of case studies describing housing interventions is presented to indicate the complexity of the activities of the Healthy Housing programme. Two plans that show how extensions and modifications are approached are presented to indicate that these interventions reconfigure rooms in the house rather than just add on more rooms.

¹ Wiri and Otara were chosen for this report as they were the sites used for the outcomes evaluation. They were chosen for the outcomes evaluation as hospitalisation data was available for these areas and all the Healthy Housing interventions had been completed.

² The decision to use March data was therefore based on consultation with the Healthy Housing programme team about what month is likely to be a "typical" month.

RENTEL provides data on two of the four complementary processes that constitute the Healthy Housing intervention:

- A joint assessment aimed at verifying the extent of overcrowding and collecting information on tenants' health status and access to health and social services; and
- A housing intervention aimed at reducing overcrowding, and the risk and rate of housing related health problems.

Records of the other two interventions are kept by the DHBs:

- A health intervention aimed at providing a linkage and facilitation service to appropriate health and social service agencies, and knowledge/behaviour that will contribute to better health outcomes; and
- A joint intervention aimed at increasing the families' participation in community activities³.

The DHBs also keep records of the joint assessment.

The Healthy Housing intervention is calculated on the basis of housing and health stress and this has resulted in a high proportion of Pacific peoples and Maori households participating in the programme. Pacific households represent a half and Maori households a quarter of all Healthy Housing interventions (see table 16). Analysis compared the number of household members recorded in RENTEL prior to the joint assessment with the actual numbers recorded at joint assessment. This comparison showed large variations in household members recorded, particularly children (0 – 10 years) and adults (18+ years). For example the March 2005 sample showed an average of 1.8 children plus 1.8 adults per household in RENTEL, but when this was calculated at joint assessment, average numbers of children rose to 2.3 plus adults to 2.5. The overcrowding ratio (OCR), defined as number of people per bedroom, also changed at joint assessment. For example the average March 2005 OCR was 1.0 in RENTEL and 1.5 at joint assessment.

The analysis of overcrowding in this report showed that 29 percent of the March 2004 sample was overcrowded and 40.8 percent of the March 2005 sample was overcrowded. In March 2005 a higher proportion of households required more than one extra bedroom (44 percent in March 2005 compared to 30 percent in March 2004). The Wiri and Otara sample were 100 percent and 80 percent overcrowded respectively which was to be expected since overcrowding was one of the criteria for selecting households. A high proportion required at least three additional bedrooms to relieve issues of overcrowding in HNZA houses. The pilot phase of the Healthy Housing programme identified 534 homes as being overcrowded or 54 percent. However, the pilot targeted households with higher numbers of occupants, and a higher than normal level of overcrowding was therefore to be expected. Following the pilot all houses in a selected site are visited, and overcrowding levels in those sites are therefore more indicative.

Overcrowding was addressed in 27 of the 30 Wiri and Otara households and the average OCR was reduced from 2.1 to 1.6 in Wiri and 2.4 to 1.5 in Otara. In addition the range was reduced from 2.3 to 0.6 in Wiri and from 2.25 to 1.3 in Otara. The same assessment for the March 2004 and March 2005 samples cannot be made however as this data is not obtainable. To make this assessment would require OCR data at the completion of Healthy Housing interventions being recorded in RENTEL screens for Healthy Housing.

The majority of housing interventions address housing related conditions and involve insulation and ventilation – 1307 interventions between January 2001 and June 2005. Expenditure on this category of interventions is small compared to the expenditure on the

³ This intervention is often consequential to the other three interventions and not a 'core aim' of the programme.

housing interventions to reduce overcrowding. Overcrowding was addressed by transferring households to existing HNZC properties, purchasing and extending properties, and building new houses – 617 interventions between January 2001 and June 2005.

The RENTEL analysis has shown that the time taken to complete Healthy Housing interventions has varied during the life of the programme. The average time elapsed to complete interventions in the March 2004, Wiri and Otara samples was nearly a year. This reduced quite considerably in the March 2005 sample where the average time elapsed between joint assessment and intervention completion took five months. These changes are thought to reflect the change in approach taken within the programme although there are still seven design improvements out for tender and three households waiting for transfers. Once this work is completed the average time elapsed from joint assessment to completion of work will extend beyond five months.

Through analysing the IRR data in RENTEL it was evident that most households who participated in the Healthy Housing programme did not experience an increase in their IRR. However, at joint assessment some households were identified as not receiving their full benefit entitlement and as a result of this their benefit increased along with their IRR.

1. Introduction

This report presents an analysis of the administrative data held in RENTEL for the Healthy Housing programme.

RENTEL is HNZC's Property and Tenancy Management System into which operational staff enter information on the properties and tenancies they manage. The information is then used primarily in regular reports on HNZC's business and as an information source for policy development, and secondarily for research and evaluation purposes.

While administrative data never make for an ideal data base for research it can provide useful insights when complemented by the results from a cost benefit analysis, an outcomes evaluation and the analysis of hospitalisation data – the other components of the evaluation of the Healthy Housing programme. An analysis of the 2005/2006 data will be completed in December 2006. The extract will be based on the March 2006 data to provide a comparison and follow up to this report. The analysis will take place in December 2006 to allow interventions based on the joint assessments undertaken in March 2006 to be completed. This analysis will be a source document for the synthesis and discussion report prepared at the end of years two and three of the outcomes evaluation.

Healthy Housing has attracted \$66.4 million appropriated capital from HNZC over five years. Funding for the health component of the joint initiative comes through Vote: Health. Reporting on the health component is not included in RENTEL.

Funding from HNZC has reduced in 2005-2006 and no appropriated funding is currently available beyond 30 June 2006. The lack of secure long term funding is a risk for the initiative⁴. The capital expenditure by HNZC on Healthy Housing is set out in table 1.

Table 1: Capital expenditure by HNZC in the Healthy Housing programme (January 2001 – June 2006)

	Capital expenditure GST inclusive (\$000)		
Financial year	Government appropriated	HNZC internally funded	Total
2001/02	11,700	6,200	17,900
2002/03	12,400	100	12,500
2003/04	16,900	27	16,927
2004/05	16,900	57	16,957
2005/06 (Forecast)	8,500	4,500	13,000
Total	66,400	10,884	77,284*

Source: Healthy Housing programme

* This figure is exclusive of operating costs.

Further analysis of capital expenditure is part of a cost benefit analysis (see appendix 1).

⁴ See Auckland UniServices Ltd, (August 2005). The Healthy Housing programme: Report of the Outcomes Evaluation (Year One).

1.1 Aim of the programme

The Healthy Housing programme is a joint HNZC and District Health Board (DHB) initiative launched in January 2001 that aims to reduce the risks and rates of housing related diseases, conditions and injuries, and improve wellbeing for HNZC tenants, particularly children, in localities with a high level of overcrowding.

One of the characteristics that distinguish the Healthy Housing programme from other housing improvement activities is that it is a joint initiative between HNZC, Counties Manukau, Auckland and Northland DHBs⁵. It involves a housing and a health intervention undertaken concurrently. The housing intervention is designed to reduce overcrowding and housing-related diseases, by increasing the quality of houses and the availability of larger houses. The health intervention is a linkage and facilitation service linking families to social and health services that can assist in increasing families' health and wellbeing. The Healthy Housing programme also involves a joint intervention to assist families to participate more in community life. It involves HNZC and the DHBs in collaborations with a range of different agencies that provide health and social services.

HNZC has identified four high level outcomes to guide its long-term efforts, and demonstrate contributions to key Government goals and the New Zealand Housing Strategy (2005). They are:

- State housing assistance meets diverse housing need;
- HNZC's development practices deliver sustainable housing solutions;
- Housing provision across the sector is responsive to need; and
- HNZC enhances communities' social and physical health⁶.

The Healthy Housing programme contributes to the fulfilment of all four high level outcomes, and can be viewed as one of the success stories of 'joined-up' Government having recently won the supreme award for the New Zealand Health Innovation Awards (2005). Houses designed for the Healthy Housing programme have also won one gold and five silver medals in the Auckland Region Master Builders awards.

1.2 Historical context

The historical backdrop to the establishment of the Healthy Housing programme is found in the New Zealand epidemic of meningococcal disease which has been ongoing over the past 15 years. A landmark case-control study⁷ established a strong link between the risk of infection, particularly for children, and overcrowding in a sample of Auckland households. The distribution of meningococcal disease incidence overlapped significantly with areas of high deprivation where there were also high numbers of HNZC houses.

The Baker et al (2000) study highlighted the greater risk of meningococcal disease that younger children experienced living in areas with high numbers of overcrowded houses. HNZC had high numbers of rental properties in some of these areas. This paper informed HNZC's growing concern that HNZC tenants bore a disproportionately high burden of

⁵ Asset and Development Services (14 November 2003) *Draft Healthy Housing: A Health and Housing Partnership - Strategic Framework*, Version One, page 5.

⁶ Housing New Zealand Corporation 2004/07 Statement of Intent, page 5.

⁷ Baker M, McNicholas A, Garrett N, et al (2000) 'Household crowding a major risk factor for epidemic meningococcal disease in Auckland children'. *Pediatric Infectious Disease Journal* 19:983-990.

meningococcal disease. Meningococcal disease represents less than three percent of all potentially avoidable hospitalisations for infectious disease in children 14 years and under. However, it is a marker for infectious diseases, with crowding being one of the most important risk factors. HNZC initiated the Healthy Housing programme to address the burden of disease carried by tenants. While the Healthy Housing programme is the only housing initiative designed to reduce potentially avoidable hospitalisations there are other health initiatives such as the vaccination programme for meningococcal disease.

By the time the Healthy Housing programme started it targeted a wider range of housing related diseases than meningococcal disease. It also aimed for improvements in wellbeing recognising that this would include some HNZC tenants prone to mental illness, and some with disabilities.

1.3 Policy objectives

HNZC's response to this growing body of evidence was to establish the Healthy Housing programme with four objectives⁸:

- Improved health outcomes for HNZC tenants;
- Improved welfare outcomes for HNZC tenants;
- Reduced risk of housing-related health problems; and
- Improved availability and quality of state housing for larger families.

An Intervention Logic was prepared for the Healthy Housing programme at the end of 2003.⁹ It sets out the intermediate outcomes that need to be achieved for the programme to meet its objectives (see page 10).

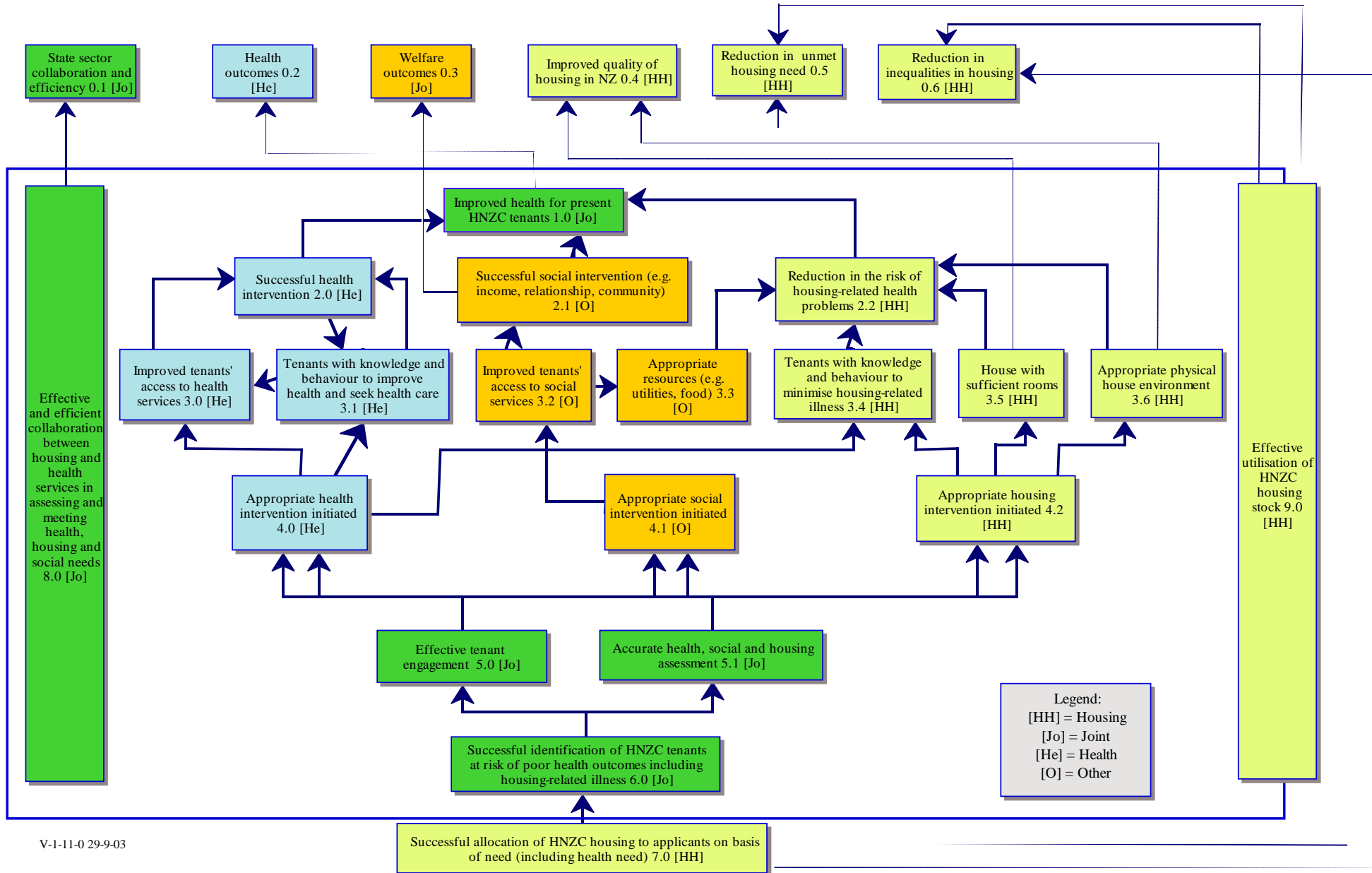
The Intervention Logic is designed to be read from the top down, working downwards from the final outcome and asking in each instance, What outcome(s) need to be achieved in order to achieve this higher level outcome? The Intervention Logic identifies the issue regarding how far the programme extends and assists with:

- Ensuring that all stakeholders have a similar (and agreed) idea of the intermediate and final outcomes to be achieved;
- Undertaking a logical analysis of whether, if the intermediate outcomes are achieved, it is likely that they will be sufficient to ensure the achievement of the final outcomes;
- Developing evaluation plans; and
- Comparing what actually happens on the ground with what was planned.

If the Intervention Logic is read from the bottom up it indicates the links between activities undertaken by frontline staff with HNZC tenants and properties, and their contribution that flows into the fulfilment of intermediate outcomes, high level HNZC outcomes and eventually key Government goals.

⁸ Asset and Development Services (14 November 2003) page 8.

⁹ The section on the Intervention Logic is drawn from Asset and Development Services Strategy (14 November 2003) page 8.



1.4 Intersectoral collaboration

The Healthy Housing programme is structured both at a strategic and operational level to produce effective intersectoral collaboration - a 'whole-of-government-approach' to policy and implementation. This is reflected in the make-up and Terms of Reference (see appendix two) of the Healthy Housing Steering Group whose membership consists of senior managers from HNZC and the DHBs.

Collaboration can be seen in both the project planning and activities of the frontline staff. At the project planning level, the four criteria used for selecting areas for the Healthy Housing intervention reflect both social and health priorities (see below section 3.1 'Selection of areas for interventions').

Frontline staff follow an agreed "strengths based solution focused" approach¹⁰ when they implement the Healthy Housing interventions and the intervention itself is a joint process (see below section 3.2 'Processes of intervening'). The strengths based solution focused approach starts with providers listening to the issues that are uppermost for families. Together, providers and families work out what are the most important things needed to be done to houses, living arrangements, and about health and social issues. Families and providers then work together to implement action plans that are agreed.

1.5 The pilot programme

The Healthy Housing programme was piloted in select areas of South Auckland - Onehunga, Mangere and Otara - between May 2001 and June 2002. The locations of houses were determined using Census data showing heightened levels of overcrowding. Overcrowding was defined as more than two people per bedroom.¹¹ The way overcrowding is defined has changed since the pilot and is now defined using an adapted version of the Canadian National Occupancy Standard (see below section 5.1 'Measures of overcrowding').

Nine hundred and eighty-eight HNZC households were selected for intervention, and 534 homes were identified as being overcrowded, or 54 percent of the houses in the selected areas for study.¹² This figure was notable for far exceeding the initially estimated proportion of eight percent.¹³ The initial estimate was based on RENTEL data while the 54 percent was based on visiting households. The pilot programme targeted households with known high numbers of tenants, and a higher than average overcrowding ratio in these houses could be expected. However, the programme now visits all houses in a site and is finding that overcrowding rates are still very high at between 30 to 40 percent.

The housing response in the pilot programme produced the following outcomes. The average Overcrowding Ratio (OCR), defined as number of people per bedroom, was reduced from 2.76 to 1.62, a 41 percent reduction in houses followed up for review.¹⁴ The health response saw a marked rise in primary health-care utilisation. Over 12 months there was a nine percent increase in General Practitioners (GPs) visits, and a 55 percent increase in immunisations.

¹⁰ This approach is derived from social work – see for instance De Shazer (1985) *Keys to Solution in Brief Therapy*, NY and London: W.W. Norton and Co., and Saleeby, D. (1997) *The Strengths Perspective in Social Work Practice* (2nd Ed), NY: Longman.

¹¹ Auckland UniServices Ltd (2003) *Evaluation of the Healthy Housing Pilot: January 2001-2002*, page 6.

¹² Auckland UniServices Ltd, (2003) page 6.

¹³ Auckland UniServices Ltd, (2003) page 6.

¹⁴ Auckland UniServices Ltd, (2003) page 8.

Compared to a geographically matched control group, there was a 33 percent reduction in the hospital admissions.¹⁵

The pilot evaluation did not report on the impact the Healthy Housing programme had on 'tuning' HNZC stock. 'Tuning' refers to the match between the housing needs of families and the houses available to address these needs. (For a discussion of the Healthy Housing programme and 'tuning' HNZC stock see below section 3.4 'The contribution of interventions to tuning HNZC stock'.)

Following the success of the pilot, the Healthy Housing programme was extended to other areas identified as high risk – Glen Innes, Panmure, Manurewa and Whangarei.

¹⁵ Auckland UniServices Ltd, (2003) page 34.

2. Methodology for the Analysis of RENTEL Data

This section introduces the aims of this analysis of the RENTEL data, and the processes of data extraction, analysis and comparison.

2.1 Aims

The aims of the analysis of the RENTEL data are to:

- Determine if the data is complete enough for a meaningful analysis to be undertaken;
- Identify any evidence that the Healthy Housing programme has made a difference in the risk and rate of housing related diseases, conditions and injuries, and improved well being;
- Identify any evidence that the Healthy Housing programme has reduced overcrowding; and
- Identify progress towards the achievement of programme outcomes.

2.2 Extracting the data

This analysis is based on administrative data that was extracted from the RENTEL data base used by HNZA to store information on its tenants and properties. Information Systems (IS) extracted and tabulated the data for the 2003/2004 financial year, and presented it to the Research and Evaluation Team for analysis. IS provided a quality check at the point of data extraction. The Healthy Housing programme's Project Coordinator, Liz McDonald, provided additional quality checks as the analysis progressed.

Initially the intention was to analyse aggregated RENTEL data for the 2003/2004, 2004/2005 and 2005/2006 financial years. However, as the analysis of the 2003/2004 financial year progressed it became clear that aggregating the data would misrepresent the activities and achievements of the Healthy Housing programme. For example, one of the aims of the Healthy Housing programme is to reduce overcrowding. The evaluation of the Healthy Housing pilot programme showed that overcrowding was under-recorded in RENTEL data. The joint assessment process found additional people living in HNZA houses. The initial impact of the Healthy Housing programme is therefore to *increase* the apparent recorded rates of overcrowding. When overcrowding was addressed, the actual numbers of people in a house then reduced. However, measuring this reduction against the *original* RENTEL figures leads to under reporting the actual achievements of the programme in reducing overcrowding. The joint assessments undertaken to initiate Healthy Housing interventions are in fact a tool for discovering the under recording of overcrowding in RENTEL. For these reasons the analysis of RENTEL data for full financial years was dropped in favour of analysis of a single month in each financial year – March. March was chosen because it seems to be least affected by HNZA's budgeting and business planning processes, and holiday periods.

Another issue raised by the analysis of aggregated data for the 2003/2004 financial year of the Healthy Housing programme concerned matching interventions with the number of households assisted. The number of households assisted, identified using a set of agreed categories of interventions for extracting data from RENTEL, was greater than the number that the Healthy Housing staff had identified (see table 2, below). The Healthy Housing programme identified 733 households that had been assisted in the 2003/2004 financial year.

Table 2: Main combinations of interventions by number of households for the Healthy Housing programme (July 2003 - June 2004)

	Combinations of interventions	No of households
A	Insulation, ventilation, heating (IVH) + HI	719 (80.07%)
B	Design improvements + IVH + HI	19 (2.12%)
C	Enlargements + IVH + HI	32 (3.56%)
D	Transfers + HI	35 (3.90%)
E	Transfers + IVH + HI	69 (7.68%)
F	Transfers + IVH + enlargements + HI	24 (2.67%)
H	Only health interventions (HI)	0 (0%)
I	Only IVH	0 (0%)
	Total	898 (100%)

Many, if not most, households receive a suite of housing interventions which resulted in some households being counted against more than one intervention. Consequently the categories of housing intervention are used differently in the analysis presented here to avoid double counting. When matching households to housing interventions the categories of intervention are treated as a hierarchy. This means that if households only receive interventions contributing to healthy environments (insulation, ventilation and heating) then they are counted under this category. If they received healthy environments and modifications (referred to as ‘design improvements’ in table 2) then they are counted as modifications. If they receive healthy environments and extensions (referred to as ‘enlargements’ in table 2) they are counted as extensions, and if they received extensions or modifications and transfers they are counted as transfers. This approach deals with the double counting and is used to generate tables reporting interventions data in this report.

The use of aggregated data from RENTEL did not represent the activities and achievements of the Healthy Housing programme in sufficient depth or richness for a fair evaluation¹⁶. It was only possible to depict the Healthy Housing programme appropriately if a sample was extracted from RENTEL manually. The analysis that follows is of data manually extracted for samples of different households in different areas where the joint assessments were undertaken in March 2004 and March 2005.

The data was extracted by household using the Healthy Housing programme reference in RENTEL and included:

- Street address at time of joint assessment
- Street number
- Date joint assessment letter sent out
- Date joint assessment undertaken
- Ethnicity of person or people named on the tenancy agreement
- Number of bedrooms in the house at joint assessment
- Pre joint assessment household composition divided into children (0-10 years), youth (11-17 years), adults (18+ years), total occupants and overcrowding ratio (OCR)
- After joint assessment household composition divided into the same categories
- Number of bedrooms required using the Social Allocation System (SAS)
- Difference in bedrooms needed
- Number of households where information is incorrect

¹⁶ When the Healthy Housing Project Coordinator was extracting the data for March 2004 and March 2005 she found there was a computing error that resulted in a number of houses being included as part of the Healthy Housing programme when they were not. This overstated the numbers of Healthy Housing programme properties in RENTEL and again impacted on analysis of aggregated data. This error has now been corrected.

- Number of households overcrowded divided into low, medium and high risk
- Post joint assessment meningococcal disease risk ratio (MDRR, see section 5.1 ‘Measures of overcrowding’ for an explanation of MDRR)
- MDRR and OCR at the completion of the intervention
- Date of completion of intervention divided into healthy environment, design improvement, extension and transfer.

An analysis of the 2005/2006 data will be completed in December 2006. This analysis will include the administrative data up to and including December 2006. The extract will again be based on the March data to provide a comparison and follow up to this report. The analysis will take place in December 2006 to allow interventions based on the joint assessment undertaken in March 2006 to be completed. The analysis will be undertaken in December 2006 to allow time for interventions to be implemented.

2.3 RENTEL data for case studies

Also included in this report is analysis of RENTEL data for 30 households that provided the case studies for the outcomes evaluation. A file review for each of these 30 households was undertaken by members of the Research and Evaluation Team. The same categories of data were collected from RENTEL as for the March 2004 and March 2005 samples so that comparisons could be made. The 30 households were selected using a combination of health and housing criteria as follows¹⁷:

Table 3: Healthy Housing evaluation – case study selection criteria

Housing intervention	Presence of health/social issues	Household address
1. Insulation, ventilation	Minimal	Wiri and Otara
2. Insulation, ventilation	Respiratory disease	Wiri and Otara
3. Insulation, ventilation	Significant health/social issues	Wiri and Otara
4. Generic modernisation	Significant health/social issues	Wiri and Otara
5. Specific modification	Disability	Wiri and Otara
6. Extension	Overcrowding only	Wiri and Otara
7. Extension	Overcrowding plus minor health/social issues	Wiri and Otara
8. Extension	Overcrowding plus significant health/social issues	Wiri and Otara
9. Extension	High and complex needs	Wiri and Otara
10. Part household transfer	Overcrowding only	Wiri and Otara
11. Part household transfer	Overcrowding plus significant health/social issues	Wiri and Otara
12. Household transfer	Overcrowding only	Wiri and Otara
13. Significant* household in the experience of Area Coordinators and Public Health Nurses	Positive experience for household	Wiri and Otara
14. Significant household in the experience of Area Coordinators and Public Health Nurses	Negative experience for household	Wiri and Otara

¹⁷ For a detailed description of these selection criteria see Auckland UniServices Ltd, (2005).

15. Significant household in the experience of Area Coordinators and Public Health Nurse	Complex experience	Wiri and Otara
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*A significant household is one which has had ongoing and persistent issues with their health and housing.

This report presents the analysis of the 30 households, 15 each from Wiri and Otara, in comparison to March 2004 and March 2005 samples. Wiri and Otara were selected for the case studies because they are in the Counties Manukau District Health Board (CMDHB). This DHB holds hospitalisation data on the households participating in the Healthy Housing programme that is being analysed. The results from analysing the data for the case studies can therefore be compared to the results of the analysis of hospitalisation data as well.

2.4 Discussion

The aims of the analysis of the RENTEL data are fulfilled in the following ways:

- The data is complete enough and meaningful if a sample is selected and extracted manually at a household level rather than aggregated intervention data being extracted. When data is extracted manually it represents activities and achievements of the programme accurately and fairly because interventions can be linked to households.
- The RENTEL data can provide information about the housing interventions believed to contribute to reducing the risk and rate of housing related diseases, conditions and injuries, and improved wellbeing. However, analyses of hospitalisation data and case studies are also required to indicate progress towards achieving these outcomes.
- Analysis of RENTEL data clearly indicates the reductions in overcrowding that the Healthy Housing programme achieves only if the data from the joint assessment is taken into account.
- The analysis of RENTEL data complements analyses undertaken in the cost benefit analysis, hospitalisation data analysis and outcomes evaluation in identifying progress towards the achievement of programme outcomes.

3. Healthy Housing Interventions

This section describes:

- how areas are selected for Healthy Housing interventions;
- the processes used to intervene;
- the categories of housing intervention;
- illustrations of before and after housing interventions; and
- how the interventions contribute to ‘tuning’ HNZC stock.

3.1 Selection of areas for interventions

Since the pilot, the Healthy Housing programme has refined the way areas are selected for interventions. The four criteria used in selecting Census areas for Healthy Housing interventions reflect both social and health priorities in government social policy. These are:

- Census statistics that show levels of overcrowding;
- deprivation statistics;
- high concentrations of HNZC houses; and
- rates of potentially avoidable hospital admissions for selected diseases.

In the past the four-fold criteria used to assess need for the Healthy Housing interventions identified houses in: Northland - Whangarei, East Auckland - Glenn Innes and Panmure, and South Auckland - Mangere, Manurewa, Onehunga and Otara. Other high risk areas include more sites in Northland, Central and South Auckland and sites in Lower Hutt, Porirua, Hawkes Bay and Gisborne.

Initially houses in the identified areas were chosen for intervention because of their higher occupancy ratios. However, it was found that health issues were not restricted to overcrowded houses. Over 80 percent of households had one or more (average nearly 3) health or welfare referrals and for this reason all households in a selected area are currently included for a joint assessment. The joint assessment identifies the range of problems evident in each property.

3.2 Processes of intervening

The Healthy Housing intervention is made up of four complementary processes:

- a joint assessment aimed at verifying the extent of overcrowding, property condition and collecting information on tenants’ health status and access to health and social services;
- a health intervention aimed at providing a linkage and facilitation service to appropriate health and social service agencies, and knowledge/behaviour that will contribute to better health outcomes;
- a housing intervention aimed at reducing overcrowding, reducing the risk and rate of housing related health problems; and
- a joint intervention aimed at increasing families’ participation in community activities.

Joint assessments

Area Coordinators (ACs) make appointments with households for a joint assessment and introduce the Public Health Nurses (PHNs) to households which they may otherwise be unable to access.

A joint assessment tool was designed specifically for the pilot of the Healthy Housing programme. As part of the assessment process, HNZN's ACs identified the household composition and matched it to the number of bedrooms to ascertain the level of overcrowding. HNZN also identified any tenancy and house maintenance issues. PHNs conducted a health assessment. In the pilot the joint assessments took longer than anticipated because of the high needs identified and the level of support and follow up needed.

Joint assessments provide the basis for action plans which are developed jointly by ACs and PHNs and agreed to by families. The action plans are reviewed by a public health physician. The public health physician may advise on urgent work involving houses such as the repair of a sewage system, or the eradication of cockroaches in an area.

Health interventions

Families are referred to the health and social service agencies that can address the issues identified in the joint assessment and agreed in the action plan. Sometimes families are in need of crisis intervention such as emergency food provision and hospital admission. A Community Health Worker visits families to share knowledge and skills about housekeeping.

Households are provided with educational material on preventative health behaviours, particularly describing the signs and symptoms of meningococcal disease and seeking early medical assistance from GPs or emergency departments. The evaluation of the Healthy Housing pilot indicated a 33 percent reduction in hospital admissions (when compared to a geographically matched control) along with increases in the use of GPs and emergency departments. The recent analysis of hospitalisation data for Healthy Housing (2005) indicated reductions in the use of emergency departments as well as a 30 percent reduction in hospitalisations (Gary Jackson CMDHB, Personal communication).

Some of the families are coping with members that have disabilities. The PHN organises referrals to the Occupational Therapist (OT) whose assessment is the basis for accessing funding and equipment to support people with disabilities. HNZN follows the recommendations of the OT when designing modifications to house disabled people appropriately. Funding for the modifications comes from both health sources and the Healthy Housing programme.

Housing interventions

Housing interventions can be divided into those that address overcrowding (extensions and transfers) and those that are aimed at reducing the risk of housing related diseases, conditions and injuries (insulation, ventilation, heating, design improvements or modernisation). Housing interventions are informed, where appropriate, by HNZN design guidelines.

When a house is overcrowded the ACs identify how many additional bedrooms are required and this is confirmed by the public health physician. Programme resources limit the ability of Healthy Housing to address overcrowding for families requiring two or more bedrooms unless an additional bedroom will be used by two people. ACs identify whether the house in which the family is residing will be extended or whether the family, or part of a household if more than one family unit, will be transferred to an existing house of the appropriate size, new house or to a different house that will be extended for the family. Extensions include the reconfiguration of living areas, improving indoor/outdoor flow, modernisation and adding bathrooms as well as bedrooms. The possibility of a section being made available for redevelopment is a particular consideration when extending a house. Redevelopment would see two houses on the property with potential for increased income.

Efforts are made to find a house in the same community if a family is being transferred, unless the family request a move or no housing solution can be found in the place where they are living. The ACs work closely with the family in making the decision to transfer. Transfer and/or an extension also involve the ACs and families working closely with HNZC’s neighbourhood units to match families with houses and to arrange transfers for families. Tenancy Managers undertake needs assessments when families are transferred and this may result in identifying changes in family income, and adults that need to be added to, or subtracted from, the tenancy. These changes can impact on the rents that families pay (this is discussed further in Section 6 below ‘Changes to Income Related Rent’).

Whether or not a family is going to remain in the house where the joint assessment is undertaken, that house is assessed to identify insulation, ventilation and heating issues and these are addressed to make the house into a healthy environment for the next tenants.

Joint interventions

As part of implementing the joint action plan ACs and PHNs have regular meetings to keep each other up-to-date on progress and to resolve some of the issues facing families. Both ACs and PHNs may refer families to social support services such as budgeting. They also provide advice on how to use the house so that it is maintained to a high standard. Many families have too few beds and insufficient linen and towels and both ACs and PHNs use their networks to find ways of addressing these needs. The resolution of issues involves working with families to find their own solutions and this encourages families to participate more in their communities¹⁸.

3.3 Categories of intervention

The activities of the Healthy Housing programme are recorded in RENTEL as a set of housing interventions. Some of the interventions were few in number and therefore for research and evaluation purposes the data on interventions needed to be aggregated. For this purpose a classification system¹⁹ was developed where the housing interventions were grouped into ‘Healthy environments’, ‘Design improvements’, ‘Extensions’ , ‘Transfers - existing’ and ‘Transfers – new’ (see table 4).

Table 4: Categories of Healthy Housing interventions

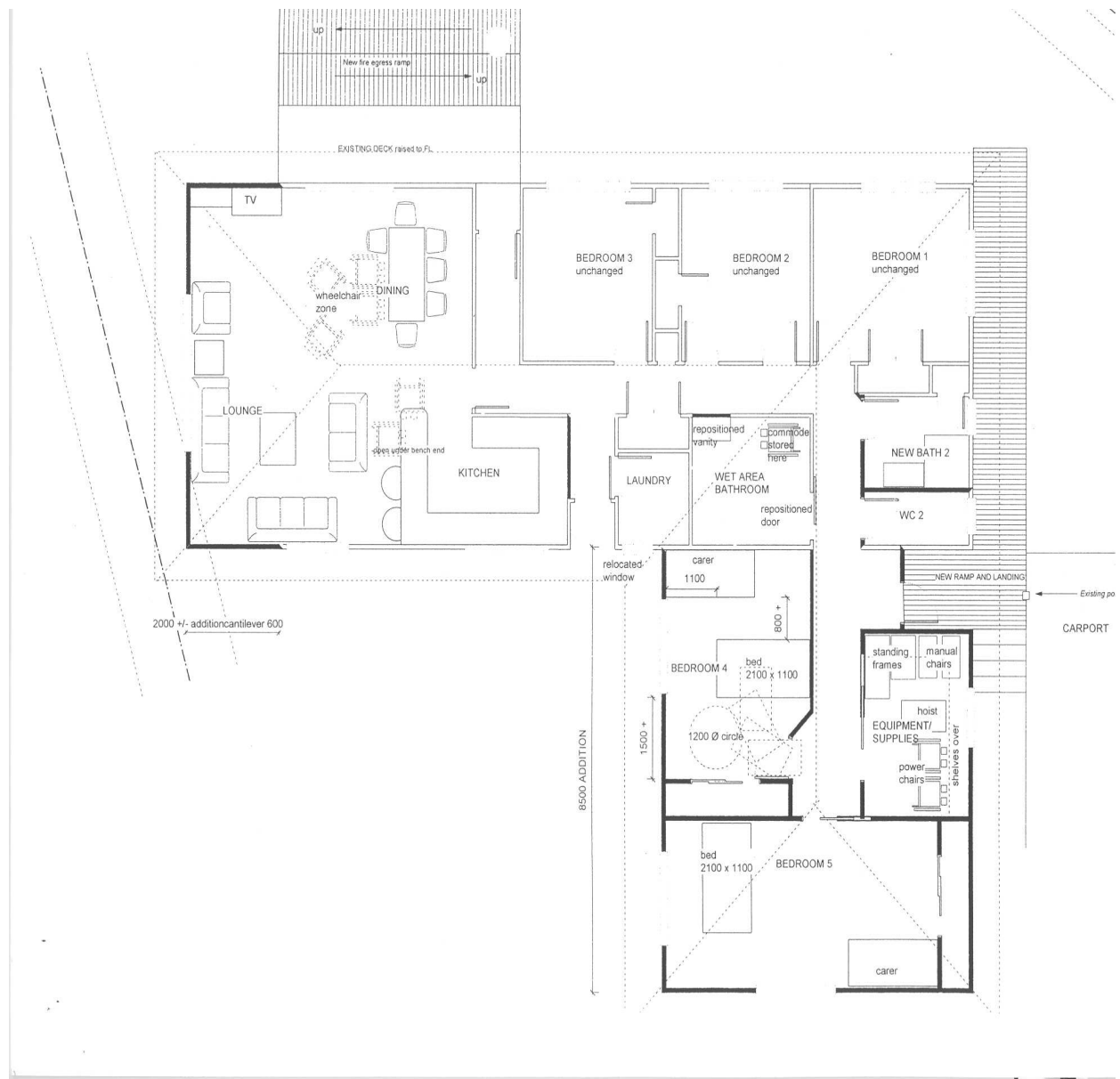
Category	Definition	RENTEL field
Healthy environments	Installation of ventilation and insulation and upgrading of heating sources.	Ventilation, insulation, heating.
Design improvements	Improve quality of and the addition of property facilities, especially kitchens and bathrooms.	Modernisation, design improvements.
Extensions	Increase the availability of living space to a household.	Wing attachment, relocatable units, building extensions.
Transfers – existing	Reduce crowding by changing the number of inhabitants in a house.	Transfers, new applications, notice of remedy, moved private sector.
Transfers - new	Reduce crowding by changing the number of inhabitants in a house.	Redevelopments, new build, purchase of new property.

¹⁸ Auckland UniServices Ltd; (2005).

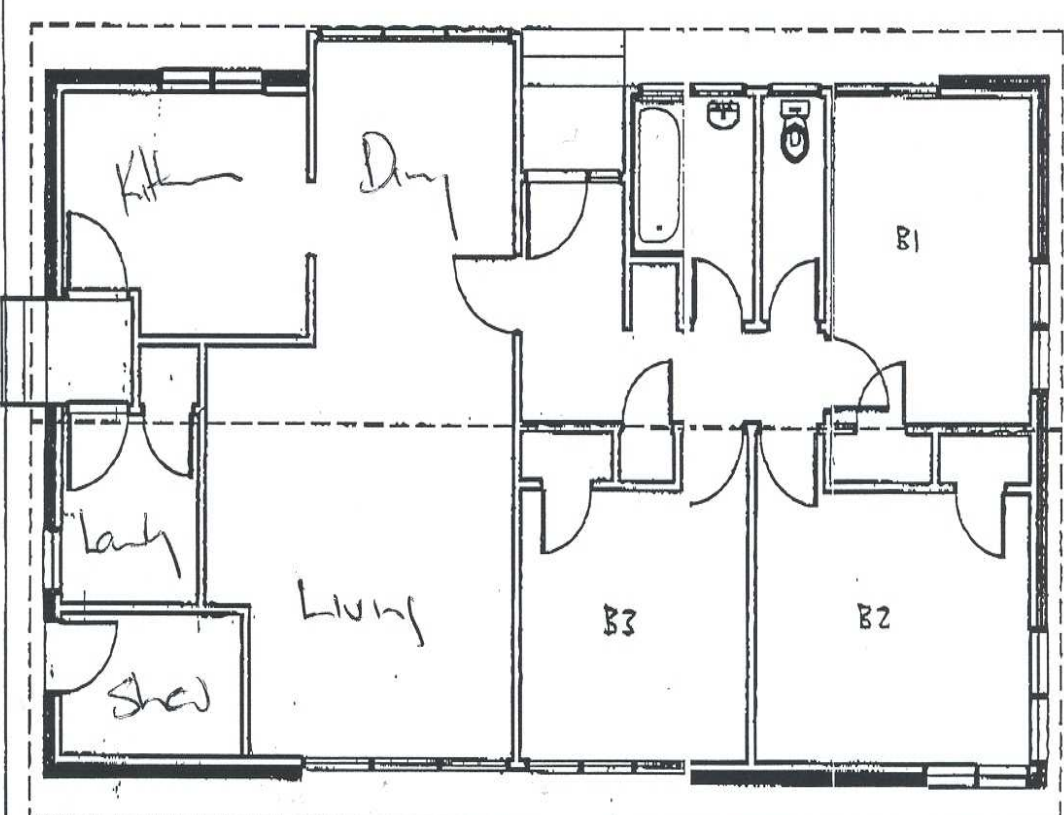
¹⁹ This classification system was used as a hierarchy (as mentioned on page 14).

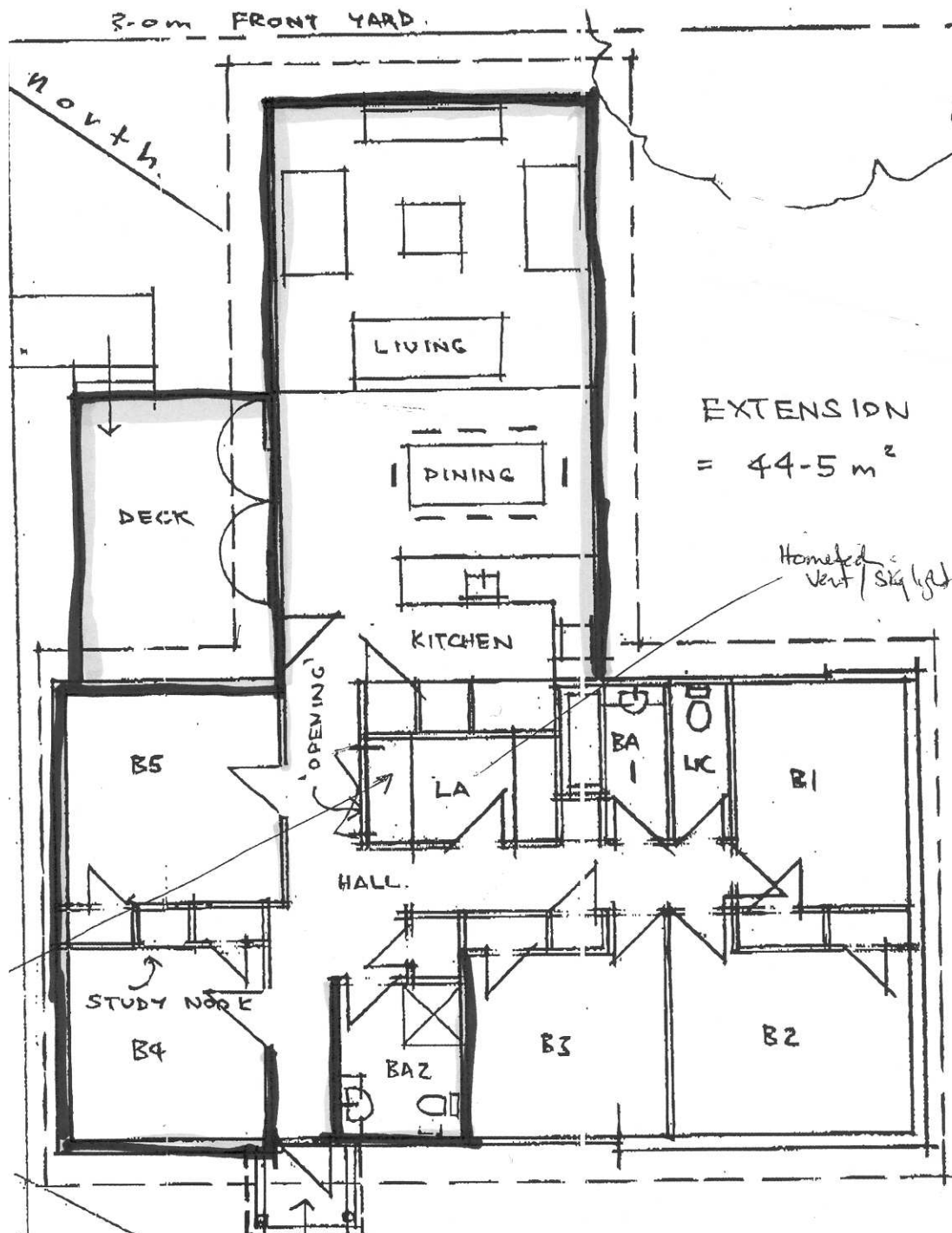
A description of each of the categories – healthy environments, design improvements, extensions and transfers – is provided in appendix three.

Below is a plan of an extension that also involved significant modifications for disability. This house was designed to accommodate a household of eight, with two disabled children. The modifications include adding bedrooms four and five to cater for the carers to sleep in the same room as the children and to ensure enough room for hoists that are necessary to lift the children. An extra bathroom was also added to this wing to ensure easy access to all bathroom requirements including a level entry shower. The dining room was extended to cater for a large dining table that everyone (including the children) can sit around to eat at. The equipment room and the modifications to bedroom five were made to enable easy re-conversion (to bedrooms) for future tenants.



Extension Plan (Before and after)





Above is an example of the before and after plans for a housing extension. The eight household members who moved into this house had previously been living in a three bedroom home that was very overcrowded. The original property was not appropriate for extension, therefore they were transferred into this three bedroom house that could be extended. The house was extended so that the area used for the original house was converted into bedrooms and the living area was added on. A second bathroom was added (BA2), two extra bedrooms (B4 and B5), the kitchen, dining and living areas were moved to accommodate the two extra bedrooms and a deck was added to the outside of the property. In addition, to lighten the house a skylight was installed (LA) and to increase storage a large cupboard was put in, in the hall area.

Table 5 shows how Healthy Housing interventions are spread across the three DHBs. The concentration in CMDHB reflects the number of HNZN houses in this DHB and the commitment of the DHB to the Healthy Housing programme as a way of addressing high levels of disadvantage and deprivation. The Healthy Housing programme was introduced into CMDHB and Auckland DHB (ADHB) in 2001 and Northland DHB (NDHB) in 2003.

Table 5: Housing interventions by DHB (January 2001 to June 2005)

Type	CMDHB	ADHB	NDHB	Total
Healthy Environments	2146	1032	540	3718
Design improvements	44	17	0	61
Extensions	246	42	3	291
Transfers – existing	373	46	9	428
Transfers – new	38	15	1	54
Total responses	2847	1,152	553	4,552
Total joint assessments	2,258	704	337	3,299
Total households assisted	2,047	594	197	2,838

Source: HNZN's internal document: 2005 New Zealand Health Innovation Awards Entry Form

Table 6 presents information relating to the achievements of the Health Housing programme from January 2001 to June 2005. It shows the relationship between the number of joint assessments and the households in which HNZN intervenes. It also makes a distinction between work undertaken to address overcrowding and that undertaken to address housing related conditions.

Table 6: Healthy Housing achievements (January 2001 to June 2005)

Total joint assessments	3299
Families assisted by HNZN	2838
Overcrowding addressed by:	
Houses built/bought	54
Houses extended	291
Assisted to the private sector	78
Transferred	272*
	695 (21% of total joint assessments)
Housing-related conditions and disabilities addressed by:	
House modification	61
Insulation/ventilation	1307
	1368

*Excludes 78 transfers to new houses or extensions of vacant properties.

Table 7: Expenditure on interventions for the 2004/2005 financial year

Category of intervention	Expenditure (\$000)	Proportion of total expenditure
Healthy environments	\$2,090	12.3%
Design improvements	\$1,490	8.8%
Addressing overcrowding (extensions, newly purchased, new build)	\$13,380	78.9%
Total	\$16,960	100%

Source: Alan Bernacchi, Personal Communication.

Table 7 shows the total expenditure on the categories of Healthy Housing interventions. The data in table 7 highlights that the expenditure on the healthy environments is small for the high number of these interventions. In comparison the expenditure on interventions to reduce overcrowding (extensions, new build and purchased houses) is high for the smaller number of these complex interventions.

Tables 8 and 9 present analyses of interventions by household in March 2004, March 2005, Wiri and Otara. The hierarchy of interventions was used in these analyses (see above page 14).

Table 8: Interventions undertaken by household (March 2004 and March 2005 samples)

Intervention	March 2004	March 2005	Total
Healthy environments	56 (81%)	44 (62%)	100 (71%)
Design improvements	0 (0%)	2 (3%)	2 (1%)
Design improvements out for tender	0 (0%)	7 (10%)	7 (5%)
Extensions*	2 (3%)	0 (0%)	2 (1%)
Transfers to extension**	3 (4%)	0 (0%)	3 (2%)
Transfers to existing HNZN house***	7 (10%)	5 (7%)	12 (9%)
Transfer to new house****	1 (1%)	2 (3%)	3 (2%)
Part transfer to existing HNZN house	0 (0%)	1 (1%)	1 (1%)
Waiting for transfer	0 (0%)	3 (4%)	3 (2%)
Opt out	0 (0%)	7 (10%)	7 (5%)
Total	69 (100%)	71 (100%)	140 (100)

*Extensions include extensions to existing houses where no transfer was involved for the household and transfer back to the original house that has been extended.

**transfer to extension includes those households who transfer to an existing HNZN house (therefore a new address for the household) that is extended.

***transfers to existing HNZN house includes transferring to an existing HNZN house (new address for household)

****transfer to new house includes transferring to a newly purchased or built house by HNZN.

Table 8 illustrates the number of interventions that were undertaken during the March 2004 and March 2005 samples. The data shows that 100 of the 140 households had a healthy environments intervention. This intervention consists of either ventilation, insulation or heating, or any combination of the three. Two HNZN houses were modified in design over this time to accommodate for the special needs of tenants. A further seven are out for tender and are therefore still to be completed. Seven households opted out of the programme in 2005 for various reasons. To accommodate large numbers of household members, tenants are offered a range of transfer options (if they are available). As table 8 indicates HNZN was able to transfer most households in this sample who were in an overcrowded environment to an existing HNZN house that was bigger. In addition three families were transferred to extended HNZN houses in 2004 and three households were transferred to a newly purchased or built HNZN house.

Table 9: Interventions undertaken by household (Wiri and Otara households)

Intervention	Wiri number (%)	Otara number (%)	Total number (%)
Healthy environments	3 (21%)	2 (13%)	5 (17%)
Design improvements	1 (7%)	1 (7%)	2 (7%)
Extensions*	2 (14%)	6 (40%)	8 (28%)
Transfers to extension**	4 (29%)	2 (13%)	6 (21%)
Transfers to existing HNZN house***	2# (14%)	2 (13%)	4 (14%)
Transfer to new house****	1 (7%)	0 (0%)	1 (3%)
Part transfer	1 (7%)	2 (13%)	3 (10%)
Total	14 (100%)	15 (100%)	29 (100%)

*Extensions include extensions to existing houses where no transfer was involved for the household and transfer back to the original house that has been extended.

**transfer to extension include those households who transfer to an existing HNZN house (therefore a new address for the household) that is extended.

***transfers to existing HNZN house includes transferring to an existing HNZN house (new address for household)

****transfer to new house includes transferring to a newly purchased or built house by HNZN.

One household in Wiri was to be transferred as part of the Healthy Housing programme; however, they were recorded as no shows.

The data for the Wiri and Otara households presented in table 9 shows that more housing extensions were done than in the March 2004 and March 2005 samples presented in table 8. The data for the March 2004 and March 2005 samples also show proportionately fewer healthy environments interventions being undertaken than in Wiri and Otara households presented in table 8. However, the difference in proportions of healthy environments interventions is affected by the use of the hierarchy of intervention. If a house undergoes any type of intervention in addition to healthy environments then the healthy environment interventions are not counted. As is evident from table 9, 24 of the 29 houses in Wiri and Otara received other interventions, but may have also had a healthy environments intervention.

The achievement of Healthy Housing outcomes is about providing solutions in a timely manner. Tables 10 and 11 indicate the average time elapsed (in days) between the joint assessment and the completion of the interventions. Joint assessment is defined as the date when it took place. Completion of intervention was indicated when the file was closed. Some work based on joint assessments in March 2005 was still in progress and therefore completion of intervention was counted as that date entered into the file when action taken on the last task.

Table 10: Average time elapsed (in days) between joint assessments and completion of interventions (March 2004 and March 2005 samples)

Intervention*	March 2004	March 2005
Healthy environments	149.4	141.3
Design improvements	NA**	245
Extensions	NA	NA
Transfers to extension	331.5	NA
Transfers to existing HNZN house	258.3	27.3
Transfer to new house	182	89
Part transfer	NA	183
Transfer to existing modification	260	NA
Waiting to transfer	NA	42.6
Out to tender design improvement	NA	143.3

*As mentioned previously interventions are based on a hierarchy. The hierarchy of intervention is applied when households undergo more than one type of intervention and ensures no double counting. Therefore, households who were transferred into new homes that were then extended will only be counted as transfers as the transfer is a higher category than extensions.

**these interventions were not undertaken during this time, therefore it is not applicable (NA) to show a count in these columns.

Table 11: Average time elapsed (in days) between joint assessments and completion of interventions (Wiri and Otara households)

Intervention	Wiri	Otara
Healthy environments	110	166.5
Design improvements	NA	267
Extensions	306.5	267.2
Transfers to extension	251.3	703.5
Transfers to existing HNZN house	197.7	110.5
Transfer to new house	188	NA
Part transfer	351	388

Tables 10 and 11 present the average number of time elapsed (in days) between the joint assessment and the completion of the recommended intervention. There were considerable delays as the programme proceeded due to increases in the time taken to get building consents because of the Auckland building boom. Therefore even smaller jobs like those required to implement healthy environments took an average of nearly five months to complete. Table 10, however, shows that these times have reduced for the March 2004 to the March 2005 samples. This is due, in part, to changes in the approach taken to get needs assessments completed, and therefore proceed to the next steps in completing the intervention. In addition the 2004 data includes areas where there is a lot of pressure on the housing stock, therefore those households who required a transfer often had to wait long periods of time as there were no houses available to transfer to.

While changes in average days elapsed from joint assessment to job completion are thought to reflect the change in approach taken within the programme there are still seven design improvements out for tender and three households waiting for transfers for the March 2005

sample. Once this work is completed the average time elapsed from joint assessment to completion of work will extend beyond five months for this sample.

3.4 The contribution of interventions to tuning HNZN stock

One of the ways to describe tuning HNZN stock is to count extensions, because then the Healthy Housing programme does not have to buy new houses. There were 103 extensions completed between 1 July 2003 to 9 August 2005 (in RENTEL database which commenced July 2003).

Another way to describe tuning HNZN stock is to count added bedrooms. The original number of bedrooms before Healthy Housing interventions were completed was 312, this was extended to 501, which is 189 additional bedrooms due to the Healthy Housing intervention. This is, on average, an extra 1.83 bedrooms per house, or the equivalent to building 63 three-bedroom homes.

Table 12: Number of bedrooms added to housing stock by Healthy Housing intervention

Number of properties to which bedrooms were added	Number of original bedrooms	Number of bedrooms after intervention	Total number of bedrooms added *
6	2	4	12
2	2	5	6
26	3	4	26
48	3	5	96
10	3	6	30
3	4	5	3
8	4	6	16

* The total is calculated as the difference between the number of original bedrooms (column 2) and the number of bedrooms after the intervention (column 3) times the number of properties (column 1).

Counting extensions and added bedrooms does not take into account the improvement in the living environment resulting from the reconfiguration of space (see before and after plans above on page 20-22). The improvements and reconfiguration extend the life of the house and thought still needs to be given to how to measure this in terms of tuning HNZN stock.

4. Households Assisted

This section explores the characteristics of the households that the Healthy Housing programme assists. It considers the number of households that receive different combinations of interventions. The ethnicity of the households that participate in the Healthy Housing programme are compared with the HNZC population of tenants in the neighbourhood units in which the Healthy Housing programme is operating, and with 2001 Census data. The ratio of children to adults is important in the transmission of infectious diseases, particularly meningococcal and respiratory disease and therefore this ratio is examined in the households that the Healthy Housing programme assists.

4.1 Number of households assisted

Table 13: Households assisted by HNZC as a proportion of joint assessments

	Joint assessments	Number of households HNZC assisted	Percentage of households HNZC assisted
January 2001 – June 2005	3299	2838	86%
March 2004	69	69	100%
March 2005	71	64	90%
Wiri	15	14	93%
Otara	15	15	100%

The assistance HNZC provided to households includes all the categories of interventions – healthy environments, design improvements, extensions and transfers. Over the life of the programme and up until June 2005 HNZC assisted 86 percent of households that received a joint assessment. The March 2004 sample showed that HNZC assisted all the households that received a joint assessment that month. In March 2005 seven households opted out of the programme and therefore HNZC assisted 90 percent of households that received joint assessments. The households in Wiri and Otara were a sample selected from ones that had received HNZC assistance; even so, one household in Wiri that was to be transferred was recorded as a ‘no show’.

While the households HNZC assisted as a proportion of joint assessments is high, the majority of assistance addresses housing related conditions and disabilities – 79, 81 and 85 percent for January 2001 – June 2005, March 2004 and March 2005 respectively. Table 14 indicates that in the samples of the Healthy Housing programme (January 2001 – June 2005, March 2004 and March 2005) 15 to 21 percent of the households assisted received interventions to address overcrowding.

Table 14: Households assisted by HNZN to address overcrowding

	Joint assessments	Number of households HNZN assisted	Percentage of households HNZN assisted
January 2001 – June 2005	3299	695	21%
March 2004	69	13*	19%
March 2005	71	11	15%
Wiri	15	10	67%
Otara	15	12	80%

* The households to address overcrowding are based on table 8 and 9 which show interventions undertaken by household. For example, the 13 households for which overcrowding was addressed include households that received extensions, transfers to extensions, transfers to existing HNZN house, transfer to new house, part transfer to existing HNZN house and waiting for transfer. In other words any intervention above an extension is designed to address overcrowding and is included.

The Wiri and Otara households selected are not representative of the whole as they were specifically selected for this evaluation. The categories selected for evaluation give a higher percentage of overcrowded families as this was a focus of the evaluation.

The differences identified in the March 2004 and March 2005 samples are due to the sample size and the particular conditions in the areas at that time.

4.2 Household ethnicity

The population of HNZN households is different from the New Zealand population and therefore a number of data sources are compared to indicate the ethnicity of households participating in the Healthy Housing programme. Table 15 compares the ethnicity of New Zealand's population by household as recorded in the 2001 Census, the ethnicity of the HNZN tenants in the neighbourhood unit areas where the Healthy Housing programme is operating, and the ethnicity of the HNZN tenants participating in the Healthy Housing programme. Healthy Housing intervenes in specific Census Area Units within the boundaries of different HNZN neighbourhood units.

The ethnicity of HNZN households was identified using the self-reported ethnicity of the family members on the tenancy agreement. For the March 2004 and March 2005, Wiri and Otara samples, if there was more than one person on the tenancy agreement the person whose ethnicity represented the majority of households members was used.

The results are significantly influenced by how the Healthy Housing programme is being implemented. For instance, during the 2003/2004 financial year the Healthy Housing programme targeted houses that were known to have high occupancy rates and the ethnicity profile is considerably different from the neighbourhood unit within which the Healthy Housing programme was operating. Since then, and as a result of the discovery that many, if not most, households have health and social issues that need addressing, the Healthy Housing programme team has done joint assessments of all households in any area the team is working. This has resulted in the ethnicity profiles of households participating in the Healthy Housing programme being more like that for the neighbourhood units in which the Healthy Housing programme is operating.

Table 15: Household ethnicity and the Healthy Housing programme

Data Source	European	Maori	Pacific	Asian	Other	Unstated	Total
National Census 2001	70.0%	7.9%	4.5%	5.7%	12%	N/A	100%
Neighbourhood unit plus Healthy Housing programme 2003/2004	6.5%	23.8%	48.3%	N/A	13.4%	8.0%	100%
Neighbourhood unit plus Healthy Housing programme 2004/2005	13.7%	29.4%	44.2%	N/A	10.1%	2.6%	100%
Healthy Housing programme March 2004	10%	24.6%	58%	2.9%	N/A	4.3%	100%
Healthy Housing programme March 2005	8.5%	25.4%	60%	2.8%	N/A	2.8%	100%
Wiri and Otara	0%	3%	97%	N/A	N/A	N/A	100%

Note: This data is based on the ethnicity of the tenants.

The vast majority of Healthy Housing interventions were made in Pacific households. And the percentage of Pacific households that receive the Healthy Housing intervention is greater than might be expected given the proportion of Pacific households in the neighbourhood units within which the Healthy Housing programme is operating. This result is indicative of identified need as the Healthy Housing programme is not targeted to Pacific households.

Table 16: Healthy Housing interventions by ethnicity

Data Source	European	Maori	Pacific	Asian	Other	Unstated	Total
Healthy Housing programme total interventions 2003/2004	2.3%	15%	68.6%	0.5%	3.5%	9.7%	100%
Healthy Housing programme total interventions 2004/2005	6.2%	24.8%	48.6%	N/A	6.3%	14.1%	100%

Note: this data is based on total interventions undertaken

The data in table 16 is based on ethnicity by the total number of interventions undertaken. Since interventions are being counted some households will be counted more than once having received multiple interventions. Double counting inevitably occurs when

interventions to address overcrowding are implemented as these households also receive other interventions. If the percent of Pacific Peoples participating in the Healthy Housing programme 2003/2004 (table 16) is compared with the percentage of Pacific Peoples in the Neighbourhood Unit where the Healthy Housing programme is operating (table 15) there is a difference of 20 percent. The difference between the total Healthy Housing population and the March 2004 samples is 10 percent. These data suggest that the level of double counting is between ten and 20 percent. The difference in the data for Maori and European households is insignificant and suggests that interventions for overcrowding were limited in number for these groups. Double counting is also at a minimum because of its link to interventions to reduce overcrowding.

4.3 The ratio of children to adults in households

The households selected to participate in the Healthy Housing programme are usually large families with a lot of children – on average two adults with four children. Table 17 shows the average number, and the range in the number of children (10 years and under), youth (11-17 years) and adults (18+ years) in participating households. Table 17 also shows the difference between the number of people recorded as household members according to RENTEL and the actual number recorded at the joint assessment. The March 2005 sample reflects larger changes in the numbers present in these households as recorded in RENTEL and at joint assessment. While this is only a small sample of the HNZN households it highlights the problem of how reporting fails to keep up with changes in household composition. The problem presents itself as under-reporting.

Table 17: Household composition in RENTEL and at joint assessment (March 2004 and March 2005 samples)

Age	RENTEL data		Joint assessment	
	average (n)	range	average (n)	range
March 2004				
0-10 yrs	1.9 (82)	0 - 5	2.1 (93)	0 - 6
11-17 yrs	1.7 (45)	0 - 5	1.6 (49)	0 - 5
18+ yrs	1.9 (128)	1 - 6	2.0 (137)	1 - 6
Total household occupants	3.7 (255)	1 - 11	4.0 (279)	1-14
March 2005				
0-10 yrs	1.8 (46)	0 - 3	2.3 (101)	0 - 7
11-17 yrs	1.6 (33)	0 - 6	1.5 (40)	0 - 6
18+ yrs	1.8 (125)	1 - 4	2.5 (175)	1 - 8
Total household occupants	2.9 (204)	1 - 10	4.5 (316)	1 - 14

The number of adults in a household who can assist with caregiving is small, as is the income from employment or benefits. The increases in the number of children (0 – 10 yrs) and adults (18+ yrs) is possibly a reflection of older children coming back to the family home after they have had children of their own as a way of coping with the increase in their cost of living²⁰.

The tenants often do not report that additional people are living in their home and therefore the households become overcrowded without HNZN's knowledge. These data are not available for the Wiri and Otara sample as the files were incomplete.

²⁰ Auckland UniServices Ltd, (2005).

5. Household Overcrowding

This section presents a summary of how overcrowding is measured in RENTEL. Overcrowding in selected Healthy Housing samples is presented and discussed. The way the Healthy Housing programme addresses overcrowding is complex and therefore a selection of examples are presented to illustrate this complexity.

5.1 Measures of overcrowding

The Healthy Housing programme records an OCR and a Meningococcal Disease Risk Ratio (MDRR) in the RENTEL screen recording the joint assessment. The OCR is a measure of the number of people in a house divided by the number of bedrooms. As such it is simply a broad indicator of possible overcrowding. The MDRR is directly related to the OCR and therefore we have focussed our analysis on the OCR.

Actual overcrowding is based on occupancy standards in the HNZC Social Allocation System (SAS). This was developed from the Canadian National Overcrowding System. SAS uses the following criteria to calculate overcrowding:

- No more than two people per room;
 - Adults (18 years plus) have their own room unless they are sharing with their partner;
 - Children of same gender up to 17 years of age can reasonably be expected to share; and
 - Children of different gender up to the age of 10 years can reasonably be expected to share.
- Thus SAS measures crowding using a ratio between the number of people in the household, the relationships between household members which may influence the sharing of bedrooms, their age, and the availability of rooms in a house.

Housing Services use standard categories – Low, Medium and High Risk – to assess and report overcrowding. ‘Low Risk’ is defined as a property where one extra bedroom is required by the household to address overcrowding as defined by the adapted Canadian National Overcrowding System. ‘Medium Risk’ is defined as a property where two bedrooms are required to address overcrowding, and ‘High Risk’ is defined as properties where three or more extra bedrooms are required to address overcrowding.

When the households participating in the Healthy Housing programme are analysed using this approach, all the households in the High and Medium Risk categories and some of those in the Low Risk category receive extensions and/or transfers to reduce overcrowding. The Healthy Housing programme’s definition of risk differs from Housing Services in that health issues discovered in the joint assessment are brought into account.

The number of households that were overcrowded in the March 2004 and March 2005 samples were 20 households (29 percent) and 29 households (41 percent) respectively. The average number of extra bedrooms required per household in March 2004 was 3.0 (range 1 to 8 beds) and 3.2 (range 1 to 8 beds) in March 2005.

5.2 Overcrowding in selected Healthy Housing samples

The points at which overcrowding is measured in RENTEL – at joint assessment, post joint assessment and at completion of intervention – has a great effect on the way that the impact of the Healthy Housing programme is characterised. The tables that follow begin to demonstrate the differences arising from the comparisons of the different measures because data for each point are not consistently available.

Table 18: Overcrowding in selected sample at joint assessment (March 2004 and March 2005 samples)*

Households	March 2004 number (%)	March 2005 number (%)	Total number (%)
Low risk (1 bedroom needed)	14 (70%)	16 (55%)	30 (61%)
Medium risk (2 bedrooms needed)	4 (20%)	9 (31%)	13 (27%)
High risk (3 bedrooms needed)	2 (10%)	4 (14%)	6 (12%)
Total overcrowded	20 (100%)	29 (100%)	49 (100%)
Total overcrowded	20 (29%)	29 (41%)	49 (35%)
Total not overcrowded	49 (71%)	42 (59%)	91 (65%)
Total assessed	69 (100%)	71 (100%)	140 (100%)

*This data is based on a manual calculation of SAS recorded in the joint assessment.

Table 18 shows the rates of overcrowding post joint assessment for March 2004 and March 2005. The table illustrates that of those households that were overcrowded, the majority required one extra bedroom. When comparing rates for March 2004 and March 2005 it is evident that there were more households identified as overcrowded in March 2005 (29 percent compared with 40.8 percent). In March 2005 a higher proportion of households required more than one extra bedroom. The rates of total households not overcrowded have decreased over this period from 71 percent to 59 percent indicating that the Healthy Housing programme was working in an area with less overcrowding in March 2005 than in March 2004.

Table 19: Overcrowding at joint assessment (Wiri and Otara households)

Households	Wiri number (%)	Otara number (%)	Total number (%)
Low risk (1 bedroom needed)	3 (20%)	0 (0%)	3 (11%)
Medium risk (2 bedrooms needed)	2 (13%)	1 (8%)	3 (11%)
High risk (3 bedrooms needed)	10 (67%)	11 (92%)	21 (78%)
Total overcrowded	15 (100%)	12 (100%)	27 (100%)
Total overcrowded	15 (100%)	12(80%)	27 (90%)
Total not overcrowded	0 (0%)	3 (20%)	3 (10%)
Total assessed	15 (100%)	15 (100%)	30 (100%)

The data in table 19 show that, as would be expected given the way the sample was selected, households in Wiri and Otara required more bedrooms when compared to the households included in the March 2004 and March 2005 samples. All households sampled in Wiri and 80 percent of households in Otara were overcrowded. Of this 80 percent in Otara the proportion of households that required three bedrooms or more was higher than in Wiri. These levels of overcrowding explain the large number of extensions and transfers that took place for these households (as reflected in table 9, 'Interventions undertaken by household, Wiri and Otara').

Table 20: OCR averages in selected sample in RENTEL and at joint assessment (March 2004 and March 2005 samples)

	RENTEL data	Joint assessment
	Average OCR (range)	Average OCR (range)
March 2004	1.4 (0.3-3.0)	1.5 (0.5-3.5)
March 2005	1.0 (0.3-2.5)	1.5 (0.3-3.7)

Table 20 shows that for the March 2004 and March 2005 samples the average OCR was calculated as being higher after the joint assessment was completed. The range of the OCR for both years shows quite a large difference between what was recorded in RENTEL and at joint assessment.

Table 21: OCR averages at joint assessment and at completion of intervention (Wiri and Otara households)

	Joint assessment	At intervention completion
	Average OCR (range)	Average OCR (range)
Wiri	2.1 (1.0-3.3)	1.6 (1.4-2.0)
Otara	2.4 (1.25-3.5)	1.5 (0.5-1.8)

The OCR data in the “At intervention completion” column in table 21, are based on 15 (eight in Otara and seven in Wiri) of the 30 households, as not all the household files had been updated to reflect the change in OCR since the completion of interventions. It was not possible to obtain the RENTEL data presented in table 20 as this data was not in these household files.

From the data in table 19 it can be concluded that overcrowding was addressed in 27 of the 30 Wiri and Otara households. However it is unclear to what extent overcrowding has been addressed because the OCR is not routinely recorded at the completion of an intervention. What is known is that the average OCR reduced from 2.1 to 1.6 in Wiri and 2.4 to 1.5 in Otara. In addition the range was reduced from 2.3 to 0.6 in Wiri and from 2.25 to 1.3 in Otara. The same assessment for the March 2004 and March 2005 samples cannot be made however as this data is not obtainable. To make this assessment would require OCR data at the completion of Healthy Housing interventions being recorded in RENTEL screens for Healthy Housing.

5.3 Wiri and Otara case studies

This report has compiled the story of the Healthy Housing programme so as to provide a context within which to place the results of the outcomes evaluation.

The households in Wiri and Otara for which we undertook a file review were the ones selected as case studies for the outcomes evaluation. Selected examples of how Healthy Housing interventions have been implemented for participants of Wiri and Otara are presented below to show the complexity of interaction between households and the interventions. These case studies were selected to indicate the issues faced by most of households in this sample. The selection took into consideration the classification system used to select households as case studies (see table 3 above). Only a selection has been presented to prevent these households from being matched with those described in the reports on the outcomes evaluation.

Household A

The Healthy Housing intervention has helped this nine person household living in a three bedroom house in Otara. The household consists of six adults and three children. Their tenancy started in 2000. To reduce numbers of people per bedroom, one of the household members slept in the lounge and another was sleeping in a sunroom, which was not really suitable for sleeping. The Healthy Housing programme was interested in reducing the rate of crowding in this household. The option of transferring the household into a larger house was explored; however, the household did not want to move as they were close to shops, doctors and schools where they were. One of the household members opted to move out, which alleviated some of the crowding issues. Plans were drawn up to extend the house to reduce overcrowding further. The extension to this house involved the addition of two bedrooms, one double and one single, an additional bathroom and a WC. The kitchen and the living area were upgraded/relocated. A deck was added to the property as well. The alterations included retrofitting under-floor insulation and improved ventilation.

Household B

These Healthy Housing participants received a number of interventions to improve their wellbeing and relieve their overcrowded living conditions. Their tenancy started in 2000. The household consisted of five adults and two children in a three bedroom house in Otara. Because there were not enough bedrooms in the house one member of the household was sleeping in the garage. The initial intervention for this family was to ventilate and insulate the house as there was a lot of mould on the walls. This did not alleviate the crowding issue. The tenant was offered an extension to their existing home; however, because the children went to school in a different suburb they preferred a transfer to a larger house. The tenant was advised that this may take some time as there was a lot of call for larger houses in the suburb to which they wanted to move. Eventually the family was able to transfer into a house in the area they wanted to live although it still needed extending. This was completed within a few months of the family moving in.

Household C

Household C is a large household in Wiri that was trying to manage living with their two disabled children. The household consisted of three adults and four children in a four bedroom house. Their tenancy started in 2001. The household had two wheel chair bound children who required 24 hour care. The brother helped with the care of the two disabled children, therefore a room was required for him. A room was needed for each disabled child. Extra space was also needed for wheelchair mobility and for storage of equipment such as hoists. An equipment/supply room was also required for the electric and manual wheelchairs, standing frames and other supplies. The resulting modification to this house was the addition of a large bedroom, an equipment/supply room, bathroom, WC, kitchen upgrade, living area and decking (see plans on page 20).

Household D

This tenant in Wiri, who is a grandmother, is looking after two grandchildren who are intellectually and physically disabled. The tenancy started in 2002. The Healthy Housing team were unclear whether this tenant was receiving all the support through benefits to which she was entitled therefore they went with the tenant to Work and Income to try and sort this out. The house was also ventilated and some general maintenance was completed on the house, including repair to door handles on cupboards and repair of a broken pantry shelf.

Household E

These tenants from Wiri received a part transfer because of the Healthy Housing programme. Their tenancy started in 1998. Since that date a number of additional family members have moved in causing issues of overcrowding. The household consisted of three adults and three children when the joint assessment was completed. The family was living in a housing complex therefore there was no option for redevelopment. The household was offered a number of options including a full household transfer into a larger property. However, due to some family conflict the household members settled on a part household transfer which relieved overcrowding issues.

6. Changes to Income Related Rent

The Healthy Housing programme is intended to improve health, reduce overcrowding and reduce the risk of housing related illnesses. The programme is not intended to result in increases in tenants' Income Related Rent (IRR), however, this does happen in some circumstances. Following up on rent arrears and the ability to pay rent is managed by the tenancy managers using the SAS programme. IRR is calculated by linking tenants' income, outgoings and disposable income. When the Healthy Housing team undertook some joint assessments it was discovered that some tenants were not receiving their full benefit entitlements. HNZA were calculating the IRR based on the income households received from benefits not on benefit entitlement.

Table 22: Changes to IRR after Healthy Housing intervention* (March 2004 and March 2005 samples combined n=32 households)

	No change number (%)	\$1-\$20 number (%)	\$21-\$50 number (%)	\$51-100 number (%)	\$101+ number (%)
Increase	19 (59%)	7 (22%)	2 (6%)	1 (3%)	2 (6%)
Decrease				1 (3%)	

*not all the IRR details were available for these households

Table 23: Changes to IRR after Healthy Housing intervention (Wiri and Otara combined* n=30 households)

	No change number (%)	\$1-\$20 number (%)	\$21-\$50 number (%)	\$51-100 number (%)	\$101+ number (%)
Increase	8 (27%)	10 (33%)	6 (20%)	1 (3%)	4 (13%)
Decrease				1 (3%)	

*This data is based on households the majority of which were identified as needing an intervention due to overcrowding.

Tables 22 and 23 show the amount of change in income related rent at the completion of the Healthy Housing intervention. The data are combined in both tables as the changes were very similar for both samples. The majority of households participating in the Healthy Housing programme experienced no rent change due to the intervention or between \$1 and \$20. The reasons for rent changes of more than \$21 are presented in tables 24 and 25.

Table 24: Reason for IRR increase of more than \$21 (March 2004 and March 2005 samples combined n= 5 households)

	Increase in income number (%)	Additions to tenancy number (%)
Number of households	3 (60%)	2 (40%)

Table 25: Reason for IRR increase of more than \$21 (Wiri and Otara households combined n=11 households)

	Increase in income number (%)	Additions to tenancy number (%)
Number of households	4 (36%)	7 (64%)

Appendix One

This cost benefit analysis was presented to the Board of HNZN on the 25 November 2005.

HEALTHY HOUSING PROJECT THUMBNAIL COST-BENEFIT ANALYSIS

Assumptions

Direct Economic Benefits and Costs

- 1 Discounted cash flow approach used
- 2 Benefits include incremental increases in market rent offset by increases in operating costs
- 3 Terminal value based on capitalised value of closing market rent
- 4 Reduction in Vacancy resulting from Improvements received on all existing properties that have been through the project.
- 5 Investment methodology as per FAM4.
- 6 Tax is excluded as this is a fiscal transfer within Government - consequently financial depreciation can also be ignored

Indirect Benefits and Costs

- 1 Average value of reduced hospital admissions is \$75 per year per household
- 2 Average value of reduced days off school is \$12 per year per household
- 3 Average value of reduced days off work is \$54 per year per household
- 4 Average value of energy savings is \$72 per year per household
- 5 Reduced acquisition cost from Tuning at \$22,000 per bedroom

Indirect Benefits *Not* included as not quantifiable

- 1 Improved land utilisation, extensions
- 2 Reduced maintenance costs of kitchens, wet areas and insulation and ventilation
- 3 Reduced hospital admissions related to reduced overcrowding (only insulation retrofits included above)
- 4 Improved overall health and well-being reported in outcomes evaluation

Results

<u>Direct Benefits & Cost Outcomes</u>		<u>Direct & Indirect Benefits & Cost Outcomes</u>	
Net Present Value	-\$18,000,827	Net Present Value	\$20,014,620
Internal Rate of Return	4.68%	Internal Rate of Return	8.82%
Present Value of Benefits	\$116,842,329	Present Value of Benefits	\$154,857,776
Present Value of Costs	-\$134,843,159	Present Value of Costs	-\$134,843,156
Present Value of Tax	0.00%	Present Value of Tax	0.00%
Benefit to Cost Ratio	0.87	Benefit to Cost Ratio	1.15
Net Present Value per household	-\$2,222	Net Present Value per household	\$2,471

Appendix Two

Terms of Reference

The Terms of Reference for the Healthy Housing Steering Committee are as follows.

Leadership Role

The Steering Committee provides leadership of the programme at a strategic level and oversight at the operational level. The Steering Committee reports to the CEOs of Housing New Zealand Corporation and the participating District Health Boards.

The Steering Committee shall meet on a quarterly basis.

Strategic Role

- Act as the “Champion” for the Healthy Housing programme
- Provide policy and strategic direction on proposals to Government for the continuation and funding of the programme
- Provide advice on the evaluation criteria for the programme
- Provide advice and direction on the extension of the programme into new DHB regions
- Provide advice on resource requirements and allocations between regions
- Provide policy and strategic advice as required.

Operational Role

- Monitor programme performance
- Approve the project plan and review progress against that plan
- Provide advice on the selection of new sites within existing DHB regions
- Advise on and approve programme communication plans
- Monitor engagement with key stakeholders, such as other Government agencies, in areas in which the programme is operating
- Confirm and review administrative requirements for the Steering Committee. Requirements include membership, frequency of meetings, reports to be considered by the committee and administrative support.

Appendix Three

Healthy environments

Where houses are not insulated or adequately ventilated this work is done. The energy efficiency of the heating is improved.

Ventilation - Installations to the house allow increased airflow, thereby reducing condensation, increasing dryness and reducing the propensity for mould. Ventilation improvements are made by installing bathroom ventilation and window ventilation, either together or individually.

Insulation - Installation of ceiling and under-floor (if accessible) insulation. This reduces heat loss, reduces laden-air moisture content, increases energy efficiency and discourages mould-growth.

Heating - A new heater is installed and existing ones improved to increase energy efficiency, and increase levels of warmth.

Design improvements

Improvements are intended to increase the quality of facilities such as kitchens, laundries and bathrooms and add enough facilities for the number of bedrooms in the house. The Healthy Housing programme has developed specific quality standards for design improvements to cater for the numerically large households using the facilities. Improvements are undertaken with the intention of reducing housing-related diseases, conditions and injuries and improve wellbeing.

Specific design improvements are also done to address any disability or mobility problems in the household.

Design improvements involve upgrading the layout of the house and building materials and chattels to conform to modern design standards, including:

- Removal of walls to create open-plan living
- Upgrade of kitchen including range-hood
- Installation of french doors onto open decking
- Upgrade of bathroom

Extensions

Extensions are intended to increase the number of bedrooms and availability of appropriate living and bathroom spaces to a household and thus reduce overcrowding.

Wing attachment - This involves the addition of a structure containing one or several bedrooms and bathroom facilities. The new structure is attached to, and is accessible from, the original main dwelling.

Relocatable unit - This is a separate dwelling that is newly situated on a property, but is unattached to the main dwelling. It typically comprises one or two bedrooms with bathroom and toilet facilities.

Transfers

Transfers are intended to reduce crowding by changing the ratio between the number of inhabitants in a house and the number of bedrooms available.

Transfer - This involves the permanent relocation of an entire household to a more suitable existing HNZC house.

New application - In some households where overcrowding is identified, some household members may be transferred to a new house. This involves a new application.

Transfers – new

New build

Redevelopment - This occurs when an infill is erected on HNZC land. The Healthy Housing programme has paid for some of these infills in response to the identified needs of households that have had a joint assessment.

Purchase of new property -This involves the purchase of a new property or ‘buy-in’ for a family that has been targeted for a Healthy Housing intervention.

Notice of remedy - This is used where tenants are in clear breach of their Tenancy Agreement and do not qualify for a Healthy Housing programme intervention. This is typically where some family units in the house do not qualify for an HNZC tenancy due to income, residency status or other reasons. A notice of remedy involves serving a 10-day notice to a household to remedy an issue.

Moved private sector - This involves the relocation of part of a family, or an entire household, to a house in the private rental sector fitting to their assessed needs.