Taylor Fry

Valuation of the Social Housing System

As at 30 June 2016

This report has been produced for the Ministry of Social Development

Alan Greenfield
Fellow of the Institute of Actuaries of Australia

Hugh Miller
Fellow of the Institute of Actuaries of Australia

Gráinne McGuire
Fellow of the Institute of Actuaries of Australia

*This report has been commissioned by the Ministry of Social Development and written by Taylor Fry.
Findings in this report may not represent the views of the Ministry of Social Development*

The 2016 Valuation at a glance

The purpose of this valuation is to report to the Ministry of Social Development (MSD) on projected lifetime housing pathways and costs. Its broader scope includes other related information, such as long-term projections of the demand for, and supply of, social housing places that assist MSD in making investment decisions about the sector.

This is the second such valuation, allowing the first analysis of change over the year. It also represents the first use of new housing segments, which allows us to better show the differences in outcomes for various subgroups.

Data issues present in last year's valuation have been compounded by another IT system change which took place during the year – as such, housing data, and results should be interpreted with some caution.

Performance of the social housing system in 2015/16, compared to expected

Compared to what was forecasted in the baseline valuation, for the year ending 30 June 2016:

» Tenancy exits were faster than expected – while most of this was due to more exits by non-primary adult tenants, we have slightly increased our household exit rate assumptions for future valuations.

» Entries (or numbers placed) into social housing from the Housing register were stable compared to expected, although this rate is controlled primarily by the rate of housing exits over 2015/16.

» Register exits (other than those into social housing) were higher than expected.

» There was an increase in new register applications (in line with what was expected) – but there was also a shift towards more Priority A applicants.

» Housing supply was flat for the year; we had expected some additional supply in late 2015/16.

» IRRS payments were slightly higher than expected – due to both methodology reasons, and higher IRRS levels than expected (the average IRRS level was 7.3% higher, compared to an expected increase in IRRS of 6.5%).

Durations and transitions – understanding lifetime housing cost

In this valuation we look at three categories of metrics. The first of these helps us understand **duration and transitions**, and is measured through **lifetime housing cost**. Lifetime housing cost is the sum of future Income Related Rent Subsidy (IRRS), Accommodation Supplement (AS), and Temporary Accommodation Supplement (TAS) benefits for those adults who have been in social housing, or on the register in 2015/16.

Segment			2016 Valuation # Households [Individuals]	2016 Valuation Future lifetime housing cost ($b)	2016 Valuation # future years in social housing	2015 Valuation # Households [Individuals]	2015 Valuation Future lifetime housing cost ($b)	2015 Valuation # future years in social housing	% Change # Households [Individuals]	% Change Future lifetime housing cost ($b)	% Change # future years in social housing
On register	Priority A		2,808	0.5	10.7	1,990	0.3	11.5	+41%	+60%	-7%
	Priority B and other		1,494	0.2	7.1	1,957	0.2	7.9	-24%	-10%	-11%
	Sub-total		4,302	0.7	9.4	3,947	0.5	9.7	+9%	+30%	-3%
IRRS recipients, primary aged < 65	Less close / IRRS > $150	Child in the household Work obligated	8,575	2.9	19.9	8,361	2.5	21.3	+3%	+14%	-6%
		Child in the household Not work obligated	8,405	3.0	20.4	8,531	2.7	21.6	-1%	+11%	-5%
		Child in the household NOMB	7,577	2.7	19.5	7,231	2.3	20.5	+5%	+16%	-5%
		No child in the household Work obligated	1,757	0.4	16.6	1,661	0.4	17.3	+6%	+17%	-4%
		No child in the household Not work obligated	9,647	2.7	17.9	9,052	2.2	18.4	+7%	+20%	-3%
		No child in the household NOMB	3,309	0.9	16.6	3,170	0.8	17.5	+4%	+13%	-6%
	Closer / IRRS ≤ $150	Child in the household Work obligated	1,351	0.2	14.6	1,531	0.2	15.9	-12%	-4%	-8%
		Child in the household Not work obligated	1,227	0.2	15.5	1,396	0.2	16.3	-12%	-1%	-5%
		Child in the household NOMB	3,239	0.7	15.0	3,794	0.7	16.5	-15%	-8%	-9%
		No child in the household Work obligated	417	0.0	12.7	454	0.0	13.2	-8%	+5%	-4%
		No child in the household Not work obligated	2,336	0.3	14.8	2,655	0.3	15.4	-12%	-4%	-4%
		No child in the household NOMB	2,216	0.3	12.4	2,685	0.3	13.9	-17%	-13%	-11%
	Sub-total		50,056	14.3	18.0	50,521	12.8	18.9	-1%	+12%	-5%
IRRS recipients, primary aged 65+	Less close / IRRS > $150	Child in the household	1,402	0.4	10.4	1,399	0.3	10.5	+0%	+11%	-1%
		No child in the household	9,119	1.3	9.4	8,513	1.1	9.5	+7%	+19%	-0%
	Closer / IRRS ≤ $150	Child in the household	220	0.0	9.3	235	0.0	8.7	-6%	+13%	+7%
		No child in the household	2,735	0.2	8.3	3,031	0.2	8.2	-10%	-3%	+1%
	Sub-total		13,476	1.9	9.3	13,178	1.6	9.3	+2%	+15%	+0%
Recent exit from housing	Receiving AS		[3,140]	0.3	6.9	[3,219]	0.3	7.8	-2%	+12%	-12%
	Not receiving AS	Aged <60	[14,308]	0.5	2.8	[9,851]	0.3	3.3	+45%	+62%	-15%
		Aged 60+	[1,325]	0.0	0.4	[1,537]	0.0	0.3	-14%	+19%	+12%
	Sub-total		[18,773]	0.9	3.3	[14,607]	0.6	3.9	+29%	+38%	-17%
Recent exit from register	Receiving AS		[3,110]	0.3	5.5	[4,038]	0.3	6.3	-23%	-13%	-12%
	Not receiving AS		[2,566]	0.1	2.9	[3,344]	0.1	3.7	-23%	-21%	-23%
	Sub-total		[5,676]	0.4	4.3	[7,382]	0.5	5.1	-23%	-15%	-16%
Total			67,834	18.1	13.8	67,646	16.0	14.7	+0%	+13%	-6%
CHP Loading							0.1				
Expenses				0.6			0.3				
Grand total				18.7			16.4				

Our estimate of lifetime housing cost as at 30 June 2016 is $18.7 billion. Auckland represents 61% of this figure, despite having only 35% of the national population. The total cost compares to $16.4 billion estimated last year – the difference is dominated by changes to inflation and discounting assumptions. The most important performance-related component of the change was a $0.6b reduction due to '**throughput**'. This measures how quickly existing clients are moving through the social housing system. It considers those who were in the valuation as at 30 June 2015 – and compares what we predicted their lifetime cost to be at 30 June 2016 at the last valuation, to what we now predict their lifetime cost to be. For last year's cohort:

» Those who were **in a social housing place** are exiting faster than expected, particularly for those tenants who are closest to market (i.e. receive lower IRRS). This is in line with policy objectives regarding reviewable tenancies.

» Those **on the register** have had a $86m (16%) increase – this should be interpreted alongside their decrease in 'notional' lifetime housing cost (see below).

» Those who had **recently exited social housing** have had a $171m (114%) increase – significantly more of them re-engaged with the social housing system than expected – it is possible that data issues have driven much of this increase but we will be monitoring these segments carefully.

An increase in lifetime housing cost should not necessarily be associated with declining performance. There are a number of instances where effective policy action may increase the liability (e.g. more social housing places creates a higher IRRS cost, a higher need household with longer expected duration moves into an empty social housing place, more register applications than expected).

Demand – understanding 'notional' lifetime housing cost

To understand demand for social housing (i.e. unmet need in the system), we use the metric 'notional' lifetime housing cost. **Notional lifetime housing cost** is the hypothetical lifetime cost (that is the sum of future IRRS, AS and TAS benefits) of housing all people on the register *today* (in contrast to the main lifetime housing cost, which estimates household lifetime cost when we expect them to enter social housing). We monitor notional liability to avoid a perverse incentive associated with using lifetime housing cost alone as a metric – i.e. lifetime housing cost would reduce if the number of social housing places was reduced because people on the register cost less than people in social housing, by including the 'notional liability' we ensure that the cost of unmet demand is factored in.

In 2015/16, the additional notional liability associated with the register was flat, despite a larger register size and economic factors. This suggests faster management of the register, along with benefits of a larger number of new social housing places in the pipeline. Furthermore, throughput for the register decreased when including notional lifetime cost.

Supply – understanding 'matching' and idealised purchasing runs

Finally, to better understand supply we look at 'matching'. That is, the proportion of households that are well matched (by size of household and location) to social housing places. Matching has improved slightly from last year. The number of empty houses is down slightly and 89.8% of households are housed in a property within +/- 1 bedroom of their desired household size, compared to 89.5% in 2015. The housing supply pipeline looks reasonably well-matched to trends in demand, particularly with a shift towards places with a smaller number of bedrooms.

Underlying trends in social housing

We also note other important underlying trends in the social housing system. The most important of these is a **long-term downward trend in exit rates**, and **long-term increasing cost of the system** (with IRRS levels increasing much faster than the rate of inflation).

The predominantly downward trend observed in exit rates is primarily due to three correlated factors:

» Market rents have been increasing faster than incomes, making it more difficult for tenants to transition to independence.

» The aging profile of social housing tenants has resulted in lower exit rates. In 2001, the average age of the primary signatory was 46.8 years, in 2016 it was 51.5 years.

» Average duration in social housing for the tenant population is rising, again resulting in lower exit rates.

The level of IRRS per social housing place has historically grown at 5.5% p.a. above the inflation rate. This trend has continued; IRRS growth was 11.5% for Auckland in 2015/16.

TABLE OF CONTENTS

Appendices

Valuation of the Social Housing System
30 June 2016

Part A – Executive overview

1   ABOUT THIS REPORT

1.1   The contents and structure of this report

The purpose of this valuation is to report to the Ministry of Social Development (MSD) on projected lifetime housing pathways and costs of those in or close to the Government-funded social housing system (defined further in Section 1.3). Its broader scope includes other related information, such as long-term projections of the demand for, and supply of, social housing places that assist MSD in making investment decisions about the sector.

This valuation of the social housing system (as at 30 June 2016) provides:

» An estimate of the lifetime housing cost of those in or close to the social housing system in 2015/16 (as defined in Section 1.4.1)
» An estimate of various types of unmet need in the social housing system, where known
» An assessment of how well the existing housing supply is matched to current and future demand
» A forecast of demand to help inform MSD's purchasing intentions for housing places, and inform providers' asset investment decisions
» An overview of the key drivers of long term cost and trends observable over time.

Part A – Executive overview is comprised of Chapter 1 – About this report, and Chapter 2 – Social Housing system performance: overview.

Part B – Results is comprised of Chapters 3 to 6. Part B contains a full description of the valuation results and analysis and will be most useful for readers who are seeking a comprehensive understanding of the June 2016 valuation and its implications.

Part C – Approach is comprised of Chapters 7 to 10. These chapters will be useful to technical readers, such as other actuaries and analysts.

Terms and acronyms used in this report are explained in the **Glossary**, Chapter 10.

Appendices are provided to give further information on more technical aspects of the valuation, including assumptions, data, modelling approach and more detailed results. Appendix B provides background about the valuation for readers seeking context about New Zealand's social housing system and the purpose and structure of social housing valuations.

1.2   Background to the social housing valuation

This is the second valuation of New Zealand's social housing system. The first valuation, as at 30 June 2015, set a baseline in assessing lifetime housing cost, social housing demand and how well supply matched current needs. This valuation extends this by also assessing change over the year. This means

we can compare how all of these components have evolved compared to expectations, and discuss the implications for the long-run sustainability of social housing.

As the use of long-term client-focused valuations of the social housing system is still a relatively recent undertaking, we repeat some of the context and rationale for this social housing report. For a more detailed background please see the previous valuation.

1.2.1   New Zealand's social housing system

About New Zealand's social housing system

Figure 1.1 shows the flow of people through New Zealand's social housing system via the application process, on and off the register and into and out of social housing. Note that the schematic is simplified; for example, there are pre-assessment stages such as screening, emergency housing and advice before an application is made.

Figure 1.1 Schematic of social housing register and tenancies
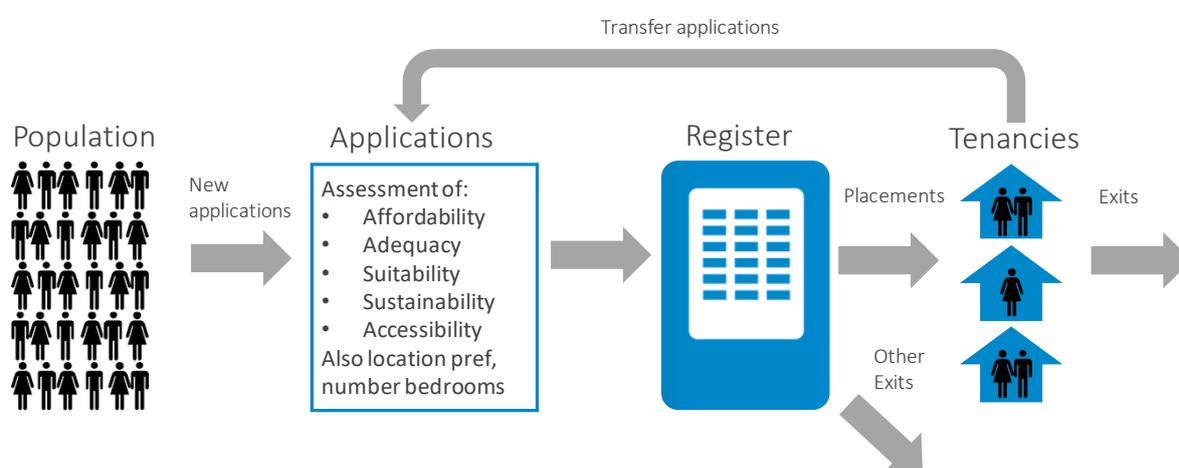
Social housing is provided by Housing New Zealand (HNZ), and more recently also by Community Housing Providers (CHPs). Tenants' rent is determined based on market rents in comparable housing. However, the amount of rent tenants actually pay – called 'Income-Related Rent' (IRR) – is based on their household's income to ensure affordability for low-income families. The difference between market rent and IRR is subsidised by the Government – this subsidy is called the 'Income-Related Rent Subsidy' (IRRS). Most tenants contribute 25% of their income in rent, with the difference between this and the market rent being the IRRS. Some social housing tenants are 'market renters' who have sufficiently high income to pay the market rent and the corresponding IRRS is zero.

Total IRRS in 2015/16 totalled about $770m. It has tended to grow faster than consumer price index (CPI) inflation, reflecting the higher growth of market rents in New Zealand.

A social housing place is not an entitlement[1] and aggregate IRRS payments are not affected by demand in the short term. Rather, the constrained supply of housing means that IRRS support is managed within a financial envelope. There is an application process based on need to determine which households are eligible for social housing. Households who are eligible, but do not yet have a place in social housing, are placed on the 'social housing register'. The register also includes tenants who are already in social housing and are waiting to move to a different housing place.

---

[1] This is an important difference from demand-driven working-age benefits — which are available to all who qualify – in interpreting long-term financial trends in the sector.

For low- and modest-income households that are *not* housed in social housing, there are other housing-related payments to assist with housing affordability:

» **Accommodation Supplement** (AS): A supplementary benefit paid to assist with the cost of housing. It can go towards rent, board or mortgage payments. It is often (but not always) paid in conjunction with a main benefit e.g. Jobseeker Support. The payment varies with income, household type and region.
» **Temporary additional support** (TAS): A type of hardship benefit paid to beneficiaries, primarily to assist with housing-related costs.

It is appropriate to consider these payments in the context of social housing; for instance, if a policy change reduces IRRS payments but increases AS payments, then only considering the impact on IRRS may lead to a false saving.

MSD's role in managing the social housing system

The Government's Social Housing Reform Programme[2] introduced a suite of changes to increase the diversity and supply of social housing in New Zealand and provide better housing services to tenants. The key objectives of the reform programme are:

» People who need housing support can access it and receive social services that meet their needs
» Social housing is of the right size, configuration and in the right areas, for households that need it
» Social housing tenants are helped to independence, as appropriate
» There is more diverse ownership or provision of social housing
» There is more innovation and more responsiveness to social housing tenants and communities
» The supply of affordable housing is increased, especially in Auckland.

Through the reform, some responsibilities for the management of social housing have moved from HNZ to MSD. While HNZ continues to manage the bulk of the social housing portfolio, MSD is now the **purchaser of housing places** – taking over this role from HNZ. By separating the supply management role from the demand management role, this reform seeks to diversify the provision of supply and increase responsiveness to demand. It also allows a greater role for CHPs as a seller of housing places along with HNZ.

Additionally, MSD has a new role in forecasting demand and setting purchasing intentions that signal its long-term requirements in advance to the market.

This new arrangement provides an opportunity to diversify the provision of social housing to include specialised providers who can potentially address specific underlying drivers of social housing need over and above low-income – such as addiction, family violence, prisoner re-integration, mental health, and accessibility. The integration of the social housing system with the benefit system enables new options for working with clients who have both welfare and housing needs by opening up new, more integrated, avenues for addressing low income. For example, in July 2016 Government introduced new funding to support both the placement of vulnerable individuals into housing, plus support those at risk of eviction.[3]

> MSD has three key functions in relation to managing the social housing system:
>
> » **Managing the social housing register** – determining which applicants to social housing are eligible and have the highest need, with the aim to reduce unmet need for social housing (i.e. addressing demand).

---

[2] See http://www.socialhousing.govt.nz/
[3] https://www.beehive.govt.nz/release/supporting-better-housing-outcomes

> » **Purchasing social housing places** – allocating eligible applicants on the register to social housing places in HNZ or CHPs and matching applicants to their properties, with the aim to ensure people who need housing are matched to suitable places (i.e. addressing supply); forecasting demand and setting purchasing intentions to ensure an appropriate supply of suitable places to purchase going forward.
>
> » **Helping tenants –** working with tenants to move toward improved housing stability and eventual transition to independence, including reviewing tenancies as required (i.e. addressing duration).
>
> The social housing valuation is designed to assist MSD to carry out each of these three functions.

1.2.2   The investment approach and the social housing valuation

The **investment approach** was originally the evidence-based policy and delivery framework underpinning New Zealand's Welfare Reform. Since then, this type of thinking has expanded across New Zealand's social sector. The Treasury notes "*[s]ocial Investment is about improving the lives of New Zealanders by applying rigorous and evidence-based investment practices to social services.*"[4]

MSD has stated that taking a social investment approach to social housing means:

» Using data and information to understand the characteristics of people MSD is seeking to support
» Understanding what services they are currently accessing
» Measuring the effectiveness of these services
» Sharing what is learned so that future investment is based on evidence of what works and for whom.[5]

Underpinning an investment approach in the social housing sector is the ability to take a long-term view of social housing pathways and the underlying drivers of risk, so that MSD can invest up front to reduce long term social disadvantage and related service costs. For example:

» Those on the register may have their needs better met by increased short-term spending, reducing longer-term social housing use.

» Those at risk of eviction from social housing may have high future costs associated with service usage in social housing, homeless services and the benefit system. Stabilising their current tenancy may give better long-term results.

» Encouraging those with lower need to exit social housing and enter the private housing market improves the ability to meet unmet need on the register, and reduces the long-term cost of social housing to some households.

Actuarial valuations help enable the investment approach. Originally used to understand the long-term financial obligations of social insurance and private insurance schemes ('future liability') to ensure their financial sustainability, valuations are best practice in modelling long-term risk and costs.

In the social sector context, such valuations introduce a long-term, whole-of-system view that is relevant because of the long-term dynamics of social disadvantage and service usage. They provide visibility of expected future trends, and create a feedback cycle that shows the long-term implications of policy and operational decisions. They also provide insight into concentrations of risk and cost, which management can use to guide its decisions on how to improve social outcomes and financial sustainability.

---

[4] The Treasury, *Social Investment:* http://www.treasury.govt.nz/statesector/socialinvestment
[5] https://www.msd.govt.nz/documents/about-msd-and-our-work/work-programmes/housing/2016/purchasing-strategy-final.pdf

"An actuarial approach can be thought of as a disciplined framework for estimation, monitoring and re-estimation of uncertain long-term costs. The investment approach applies this actuarial discipline to the social sector. It is based on the premise that making long-term financial signals transparent can encourage better investment decisions based on a long-term view of outcomes. The policy and operational implication is that investing upfront to improve outcomes for vulnerable populations can offset long-term social consequences as well as costs."[6]

Social housing is the second function where Government introduced an actuarial valuation. The overarching purpose of the housing valuation is to provide a robust evidence base on long-term housing dynamics and costs to inform investment decisions in managing the housing sector. Such investment decisions include:

» **Which applicants to place in housing** – what determines 'need' for social housing? Where is housing most valuable as a social investment that improves households' quality of life and reduces the risk of poor outcomes such as family vulnerability, crime, victimisation and long-term unemployment? Where are there alternative supports (such as employment supports) that may address the underlying drivers of need for social housing?

» **How to work with tenants in housing places** – what are the best types of housing support in different situations? Are specialised housing supports or interventions required to improve lifetime outcomes for vulnerable families and improve their likelihoods of employment and housing independence?

» **Which housing places to purchase in the near and long term** – how many, where, for which types of household configurations, from which providers, and which types of special considerations come into play (for example, tenants with special needs)?

1.3   Key valuation concepts

Current valuation population

The scope of our valuation 'main estimate' is the **current valuation population** which consists of those households who at some time in 2015/16 were in a social house or were on the social housing register. These households are considered to be close to the social housing system.

» There were 63,500 households in social housing at the valuation date (30 June 2016).
» Another 4,300 households were on the register at the valuation date.
» Additionally, there were another 19,500 adults who have been in a social house or on the register sometime in 2015/16[7], but weren't at the valuation date.
» In all, this is 151,000 adults[8], 81,000 children and 67,800 households in the 2016 valuation.

The valuation projection is done at individual level, but with households linked – this report is primarily at the **household level**. Changing household composition is highly significant in understanding changing housing needs.

There is a large overlap with the benefit system valuation population – 63% of the primary householders (either in social housing or on the register) in this valuation are also included in the benefit system valuation. A further 20% of the primary householders are receiving NZ Super. As such, we estimate full

---

[6] Taylor Fry, *Actuarial advice on feasibility: A long-term investment approach to reducing the harm associated with crime*, Treasury and Ministry of Justice, New Zealand, 15 April 2015: http://www.justice.govt.nz/justice-sector/investment-approach-to-justice/documents/taylor-fry-feasibility-report

[7] These numbers differ from MSD statistics due to differences in how client status is determined for the purpose of our modelling. Please see Section 8.4.6 for further detail.

[8] We generally include signatory youths (aged 16 or 17) as 'adults' in our commentary.

lifetime cost for social housing, as many tenants stay in social housing till advanced age. This differs to the benefit system valuation, where we project working-age benefits up to age 65.

Future valuation population

While the main estimate for the lifetime cost of the housing system includes only current households (as defined above), we also project social housing entry, tenancy and related costs for **future** households. That means households expected to enter the register or establish a social housing tenancy each year for the next 100 years. This is necessary to understand future demand and where future housing places might be needed, but is not included in estimates of the aggregate liability or aggregate notional liability.

Housing places

As shown in Table 2.1 and Table 5.4 at the valuation date there were about 64,300 social housing properties (excluding those not available, such as those for sale), with 780 of them unoccupied and 63,500 of them occupied[9]. Of these social housing properties, 95% are managed by HNZ and 5% are managed by CHPs. It is the Government's intention that an increasing share of social housing be provided by CHPs over time (in addition to approximately 2,800 HNZ properties formally transferred to the Tāmaki Regeneration Company in March 2016[10]). MSD purchasing intentions will help determine the level, location and size of the future housing portfolio.

Social housing register

Households' eligibility for social housing is assessed through the social housing needs assessment – the Social Allocation System (SAS). Need for social housing is assessed across five dimensions: adequacy, suitability, affordability, sustainability and accessibility. Applicants are given a need score out of 20 (with 20 indicating highest need), plus a priority category (A for high priority, B for lower priority). Of the 4,300 households on the register at the valuation date[11], about two-thirds had priority A. This is up significantly compared to a year earlier.

Applicants remain on the register until a suitable available place is found (currently about 1,650 placements a quarter), or they are no longer eligible or in need of a place.

Once in a tenancy, transfer applications are sometimes made if the current place is no longer suitable. These are either business-initiated (HNZ or the CHP initiate the transfer) or at the request of the household.

When a household exits from a tenancy (typically after a number of years) that place becomes available for another household on the register.

Scope of housing-related payments and other costs

There are three key housing-related payment types in scope for this valuation that we estimate at an individual level:

» Income-related rent subsidy (IRRS)

---

[9] These are numbers provided to us by MSD. The equivalent numbers used in our projection are slightly different due to data differences at a unit record level.

[10] https://www.beehive.govt.nz/release/auckland%E2%80%99s-t%C4%81maki-housing-transfer-confirmed

[11] This number differs from MSD's official figure of 3,877 at the same date, because of differences in how client status is determined for the purpose of our modelling and projections compared to MSD's standard definition. Please see Section 8.4.6 for further details.

- » Accommodation Supplement (AS) (but only those AS payments attributable to people in or close to the social housing system)

- » Temporary Additional Support (TAS).

In addition to the above, we include MSD's **housing-related investments and expenses** in relation to administering the social housing system. These include products and services that assist with housing independence, and expenses associated with MSD's management of the housing sector. These are discussed in Chapter 7 of this report.

Where this report refers to 'cost' it is in the context of this definition (unless otherwise specified). However, there are broader 'costs' associated with social housing that we have not included, such as:

- » Any charge, where applicable, for the cost of capital.

- » Housing New Zealand administrative expenses, rates, or costs of repair. This is mainly to avoid double counting; the market rent of a property in the private market typically includes the cost of property management and maintenance by the landlord. However, these costs are potentially important and may warrant future analysis. In particular, understanding how management costs vary across households is useful in developing the role of CHPs in social housing.

- » Future costs for renewal and reconfiguration of the current social housing stock.

- » Any measurement of 'unknown' demand (for example, the potential housing costs of people who would qualify for a social housing placement but currently don't apply).

As such, care should be taken in using the results of this valuation in making decisions where the above items are important considerations. If the further costs, outlined above, were included, the cost to the Crown of providing social housing is likely to be higher than the costs currently measured in the valuation. Future valuations may include some of these costs.

Segments

In the baseline valuation we split the valuation population into 15 segments to better understand the behaviour patterns of sub-groups – as shown in Figure 1.2.

Figure 1.2 Tenancy segments – from baseline valuation

IRRS recipient						Market Renter			On register			Recent exit		
JS	SPS	SLP	YP/YPP	NOMB	NZ Super	BEN	NOMB	NZ Super	BEN	NOMB	NZ Super	BEN	NOMB	NZ Super

This was an initial segmentation, and our baseline report noted that the segmentation would be subject to review before the next housing valuation, to ensure segments are as operationally relevant as possible. The revised segmentation is shown in Figure 1.3 with key features being that:

- » Households are assigned to a segment based on the status of the primary tenant
- » Segments are based on social housing system status, proximity to the market, whether there are children in the household, and work requirements.

Figure 1.3 Tenancy segments – revised

Regions

Housing markets vary significantly between regions, and people tend to prefer housing in areas they are familiar with. MSD has responsibility for purchasing intentions, where housing needs are detailed by location and size. To reflect this, we have carried out the valuation at the territorial authority level. Further, in the Auckland territorial authority we have subdivided to a local board level. In all there are 85 territorial authorities and boards that we produce forecasts for. In this report 'territorial authority' almost always means 'territorial authority and Auckland local board'.

To summarise our analysis in this report, we often break down the valuation population into 11 regions, based on MSD's Service Delivery regions already built into the benefit system valuation.

1.4 Key metrics and management applications

There are three key metrics discussed in this valuation, reflecting the three key functions of MSD in relation to managing the social housing system. These relate to duration of tenancies, demand as expressed in the register, and the supply of houses. Together, they serve the policy vision to provide appropriate housing for the highest need households in New Zealand for the duration of their need. We introduce these metrics in Figure 1.4.

Figure 1.4 Valuation metrics – overview

	Durations and transitions	Demand	Supply
Objective	Pathways to independence	Reduce unmet need	Match people to places
Activity	Housing stability and eventual transition	Register management	Forecasting demand and purchasing intentions
Metric	Change in lifetime housing cost	Notional liability	Matching and idealised purchasing runs

In the next sub-sections, we introduce the metrics, and discuss how MSD can use them.

1.4.1 Duration and transitions

Figure 1.5 Valuation metric – duration

Durations and transitions ⌛	
Objective	Pathways to independence
Activity	Housing stability and eventual transition
Metric	**Change in lifetime housing cost**

Lifetime housing cost

The sum of future IRRS, AS and TAS benefits for those adults who have been in social housing, or on the register in 2015/16 – at the individual household level.
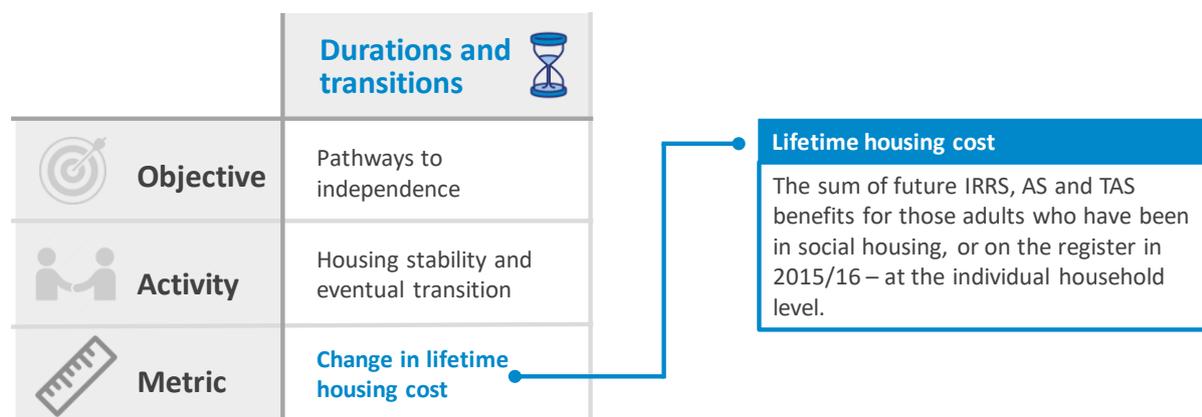
About lifetime housing cost

To understand tenancy duration and its related cost we estimate lifetime housing cost, which – when aggregated – is the sum of future cash flows associated with housing costs for the current valuation population.

The 'duration' component of the social housing framework looks at lifetime housing pathways. The objective is to manage tenancies actively so as to:

» Make the best use of New Zealanders' investment in social housing as an opportunity to stabilise the risk factors that drive each household's need for social housing, and

» *Where appropriate,* build pathways towards independence from social housing, thereby freeing up spaces from those capable of independence to be available for new entrants with high need.

The valuation uses 'lifetime housing cost' as a metric to provide insight into household pathways – such as how they are changing over time, and the associated costs with these changes. Forecasting lifetime pathways and costs through the valuation also generates insights into trends in the social housing portfolio and lifetime housing pathways. Analysis of lifetime housing dynamics and costs is the focus of Chapter 3 of this report.

How can MSD use lifetime cost and liability estimates?

MSD can use lifetime cost and liability estimates to:

» Understand lifetime housing pathways, risk factors and concentrations of risk

» Target services that stabilise need – for example specialist support to address underlying drivers of housing need

» Provide active support to tenants where appropriate, such as case management or tenancy reviews, and to inform measurement of return on investment

» Measure change, understand the relative influence of drivers of change, and track overall performance.

These applications – particularly the last two – align with the policy rationale of housing reform. If MSD is effective in reducing the need of households over time (by moving households towards housing independence, where appropriate), this will be reflected in reductions in lifetime housing costs for those households even though the total cost of the social housing system may increase as higher need households replace those leaving the system.

1.4.2   Demand

Figure 1.6 Valuation metric – demand

	Demand
Objective	Reduce unmet need
Activity	Register management
Metric	**Notional liability**

Notional liability

The hypothetical lifetime cost of:
- Housing all people on the register today
- Right-sizing overcrowded and underutilised properties
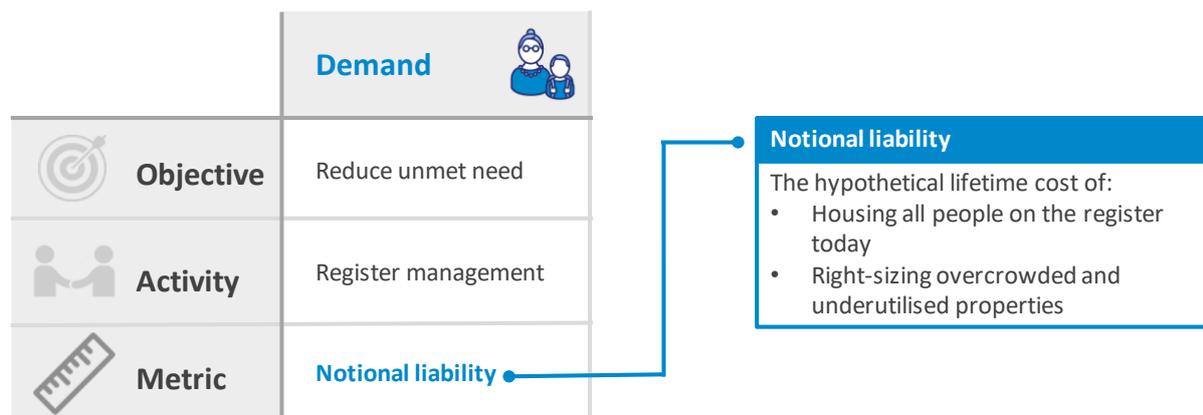
About notional liability

The 'demand' component of the social housing framework looks at drivers of need for social housing and seeks to understand and quantify '**unmet need**' (as represented by the social housing register). The objective is to manage the housing register to ensure that housing places are purchased for the households who need them most, but also that services are available – *where appropriate* – to resolve the issues driving housing need so that social housing may no longer be required (such as offering financial assistance for rent in advance or bond payments).

The 'notional' lifetime housing costs are a way of understanding the unmet need for people who are not yet housed in social housing – that is, for people on the register and incoming applicants to the register. This answers the question: *'If this household currently on the register were placed in housing today, what would be the expected lifetime cost?'*

While we can estimate a household's lifetime housing cost (based on when we expect them to enter social housing), there is a notional cost that could be paid if the housing portfolio was increased to house them today. As with lifetime housing estimates, notional estimates can be expressed at the level of an individual household, or expressed as an aggregate measure.

Monitoring this notional liability also avoids a perverse incentive (that is, an incentive with an unintended and undesirable result) that could potentially arise from using lifetime housing cost alone as a metric. That is, reducing housing placements would reduce lifetime housing cost (as having people on the register is cheaper than having them in housing) – which could create incentives to *reduce* the supply of social housing, counter to the objective of addressing unmet need. However, an increase in the register size would lead to higher *notional* liability, thus countering this risk by offsetting the reduction in lifetime housing cost for tenants.

An aggregate measure of notional housing liability is intended to bring a long-term perspective to managing the register, and insight into how much it would cost over the long-term to address all known unmet need. In particular, such an aggregate measure introduces the possibility of analysing change over time in the nature, cost, and drivers of unmet need to assist management in developing a more responsive social housing portfolio.

In addition to the register, there are other types of notional liability that can be calculated. There are three other cases we estimate in this report:

» **Transfer register applications –** If people are applying for a larger social housing place or have a need to move to a social housing place in a more expensive area, this may indicate an unmet need

amongst existing tenants. There are also notional releases (that is, negative notional costs) associated with people applying for cheaper or smaller housing.

» **Overcrowded social housing places –** Some tenancies are overcrowded, even in the absence of a transfer application. There is a notional long-term cost associated with addressing this unmet need.

» **Underused social housing places –** Some social housing properties are underused, even in the absence of a transfer application. There is a notional release (a negative notional liability) associated with moving a household to a right-sized social housing place.

Notional metrics are hypothetical and interpreting them can be counter-intuitive. Notional 'costs' associated with overcrowding can be understood as the additional costs that would be needed to allocate these households to places that suit their requirements. Notional 'release' associated with underuse can be understood as the opportunity cost of inefficiencies currently within the system. That is, the hypothetical financial savings that would arise if households were allocated to places that met instead of exceeded their requirements. This matters, because more dynamic management of the portfolio over the long-term would enable these savings to be invested elsewhere in the housing portfolio.

Analysis of the register and unmet need is the focus of Chapter 4 of this report.

How can MSD use notional estimates and liability?

MSD can use notional estimates and liability to:

» Understand the evolution of aggregate need and unmet need

» Quantify reductions in unmet need (once there are additional years of data to compare)

» Understand overall system performance and safeguard against lower intakes to social housing from the register.

1.4.3   Supply

Figure 1.7 Valuation metric – supply

	Supply 🏠	
🎯 **Objective**	Match people to places	
👥 **Activity**	Forecasting demand and purchasing intentions	
📏 **Metric**	**Matching and idealised purchasing runs**	

Matching
The proportion of households that are well matched (by size of household and location) to social housing places.

Idealised purchasing run
The net selling and purchasing of social housing properties to best match future need as indicated by the register.

About matching

The supply component of the social housing valuation is addressed through the concept of 'matching'. Matching measures how well social housing supply is aligned to demand by household size and location. The objective of matching is twofold:

» To assess on an ongoing basis how optimally the current configuration of housing places suits the needs of current and future tenants

» To forecast demand relative to supply of appropriate housing places to assist MSD in setting purchasing intentions that indicate to the market which housing places will be required in future.

The first step in understanding matching is to measure present levels of overcrowding and underutilisation at the valuation date. This helps answer the question *'What proportion of households are in social housing places that are appropriate to their requirements?'* This analysis focuses primarily on the size and location of housing stock relative to household composition. Finer-grained analysis would be required to assess more specific household needs, such as wheelchair accessibility.

We define a **mismatch** as occurring if:

» A usable social housing place is empty
» A household is on the transfer register
» A social housing place is overcrowded
» A social housing place is underutilised.

The **net difference** between people's current housing and their appropriate housing gives insight into what optimal purchasing intentions would be for 'today', based on the current configuration of households (as depicted in Figure 1.8).

Figure 1.8 Illustration of the concept of matching – actual vs. optimal configuration today
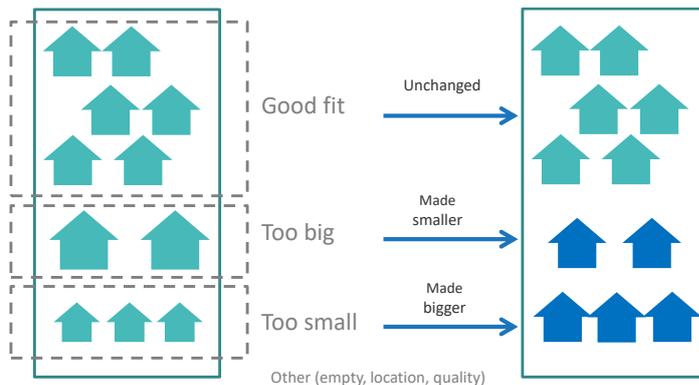
Matching can be monitored over time and projected also. Over time good management performance would reconfigure the supply of social housing so that newly available houses were in the right position and of the right size. This will improve matching rates.

About idealised purchasing runs

'Matching' tells us about how well the current social housing stock compares to current tenants' and applicants' needs. A complementary statistic is the **flow measure**. This answers the question *'How well will the housing places that become available reflect the future needs of the register?'* In order to answer this question, we have added functionality to our projections to allow the hypothetical scenario that removes the constraints associated with the realities of a tangible housing portfolio that is fixed in place and time. We have performed '**idealised purchasing runs**' where we assume perfect flexibility in buying and selling of properties while they are unoccupied. These help MSD understand where there are expected to be gaps and oversupply in their current housing places.

This is a theoretical exercise that assumes perfect flexibility in buying and selling properties between tenancies. Its purpose is to establish what the ideal housing supply requirements would be to perfectly match demand. This assumed flexibility to reconfigure the housing stock is not feasible in reality—but is nevertheless instructive in understanding the gap between current supply and future demand, in order to inform planning and develop purchasing intentions. Specifically, these can help MSD understand where there are expected to be gaps and oversupply in their current housing places. This functionality has been provided to MSD.

This detailed analysis of current supply versus projected demand is an important source of business intelligence to inform MSD's decisions about which types of housing places to purchase, where, and for how long they are likely to be required.

Analysis of matching and idealised purchasing runs is the focus of Chapter 5 of this report. While results for idealised purchasing are not reported, this functionality has been provided to MSD for their own internal scenario testing.

How can MSD use matching statistics and idealised purchasing runs?

MSD can matching statistics and idealised purchasing runs to:

» Understand how well the current supply of housing stock fits the demand for current housing places.

» Anticipate housing supply and demand trends in the future to help optimise use of existing housing stock for more dynamic management of the housing portfolio.

» Understand – on a medium and long-term basis – where there are expected to be gaps and oversupply in the current housing stock based on projected trends in demand. This is an important new source of business intelligence to assist MSD in setting its purchasing intentions.

1.5   Valuation methodology

The methodology used to model the social housing system and project its evolution is nearly identical from that used in the baseline valuation. At its heart, it is an individual-level quarterly projection of housing status, with models for how costs associated with status evolve over time. Some important features of the approach:

» **Individual-level, but reportable at a household-level:** The projected statuses and cashflows are assigned to each individual person in the valuation scope. Summing these together for individuals in the same household gives a household-level view. We build in many household-level effects too; a household in a social housing place is very likely to exit as a household, rather than individually.

» **Non-independence across households:** We project as an entire system which allows us to enforce house supply constraints. For instance, people on the register in an area will not be able to enter a house unless one is released (via a social housing exit) or new supply is added.

» **Integration with the benefit system valuation model:** The heavy overlap between social housing and benefit system populations, plus the inclusion of AS and TAS (paid through the benefit system) as a housing cost mean that studying joint pathways are of great interest. Benefit status also allows us to better predict housing pathways. Even though we have separate reports for the two systems, the underlying model and projection is unified.

» **Responsive to economic variables:** The valuation incorporates assumptions related to Average Weekly Earnings (AWE) growth, regional rental growth (relative to Consumer Price Index (CPI) growth), and regional unemployment rates. This allows us to better explain performance and test the sensitivity of results to these factors.

A description of our methodology is given in Chapter 8.

1.6   Main policy and operational changes affecting 2015/16 results

In this section, we detail the major policy and operational changes affecting 2015/16 results, as well as noting announced future policy and operational changes that may affect future years' results.

1.6.1 Changes in the way MSD interacts with tenants and those on the register

Social housing property offers

In January 2016, a number of changes came into effect for people on the social housing register. These include:

» Clients on the social housing register are only able to decline a suitable property with a good and sufficient reason. If they decline a suitable social housing property without a good and sufficient reason they may be removed from the social housing register. There will be no consequences for clients who have a good reason for turning down social housing.

» If a client is removed from the register and they reapply for social housing within the next 13 weeks, the decline may affect their eligibility for social housing. Any changes in their situation will be considered if they reapply within that time.

» Where it's geographically possible, a person must select at least three letting areas they want to live when applying for social housing.

» To help improve the matching process for clients, MSD can include a nearby letting area that someone may not have selected to live. This potentially opens clients up to a greater number of suitable properties that meets their needs.

» If a client declines a property in an area nominated by MSD, they may be removed from the social housing register.

Broadening of selection criteria for clients who may have a tenancy review

MSD has been undertaking tenancy reviews since July 2014 – to check whether tenants are living in social housing that best fits their needs, and move tenants who can move into private housing into private housing (with the right support). The initial focus was on those tenants paying market, or near market, rent and living in areas with a high supply of private housing.

As of April 2016, all social housing tenants, with a few exceptions may be contacted for a tenancy review. Exempt tenants include those:

» Who live in a property modified for their needs (e.g. with wheelchair access)
» Who have an agreed lifetime tenure with HNZ
» Who are 75 years or older
» Residing in Canterbury – Canterbury tenants won't be selected for tenancy reviews until 2017.

Changes to client obligations and tenancy reviews

From April 2016, all tenants in social housing, including those paying market rent, have to let MSD know straight away if they have a change in their circumstances that may affect the amount of rent they pay, their continued eligibility for social housing, or their particular need for the property they are in.

Before this, MSD only asked tenants who were paying income-related rent to advise MSD of changes that could affect the amount of rent they paid.

1.6.2 Increasing role of CHPs

The SHRP aims to increase the range of housing providers and services for those who need social housing assistance in New Zealand. The intention is that Community Housing Providers (CHPs) will play an increasing role in the provision of social housing to New Zealanders. CHPs are organisations that provide

social housing and since April 2014, have been eligible to receive IRRS on behalf of their eligible tenants. CHPs are monitored and regulated by the Government.[12] At a high level, MSD expects that about half of future additional IRRS places will be provided by CHPs.

Registered CHPs can contract with MSD under two possible mechanisms:

» Short-term spot contracts covering the duration of a specific tenancy**:** These contracts have standard terms, but vary in duration. The majority of current IRRS places are on short-term spot contracts.

» Long-term capacity contracts covering a specific house, unit or apartment for a specified period of time: The terms of these contracts are negotiated between MSD and the provider.

MSD is also able to negotiate flexible contract terms with CHPs to provide additional social housing places in Auckland that are either new builds or existing properties.

To support housing providers (both CHPs and HNZ) to make investment decisions, MSD publishes an annual purchasing intentions strategy. This document gives providers information about the social housing places MSD is seeking to subsidise, how and at what price. The document includes information about current and future demand for housing, and specifies where MSD will be seeking to increase the supply of social housing. The 2016 release[13] gives greater clarity on the supply pipeline, and more detail on the funding and contracting parameters.

Transfer of ownership and management of HNZ properties

As part of the SHRP, the Government is transferring ownership and management of some HNZ houses in selected areas to registered CHPs. The purpose of the transfers is to help grow the community housing sector and encourage innovation to better meet tenants' needs. CHPs may form consortia with other organisations (such as developers, financial backers, construction companies or community organisations) in order to purchase properties.

Any properties transferred to a CHP have to remain in use as social housing and cannot be sold unless the Government agrees otherwise. Such approval will only be given if the house is no longer needed, or it is to be redeveloped to better match social housing needs. When HNZ properties and tenancies are transferred to a CHP, tenants continue to be housed for the duration of their need, and have their eligibility assessed by MSD.

During the valuation period one large transfer occurred. On 1 April 2016, all HNZ properties in the Tāmaki area (about 2,800) were transferred to the Tāmaki Regeneration Company (TRC) – a community-based organisation focused on housing regeneration and social transformation, jointly owned by the Crown and Auckland Council.

Transactions beyond the valuation period include:

» **Tauranga:** The transfer of 1,138 Tauranga properties to CHP Accessible Properties took place on 1 April 2017. This was the first transfer of HNZ properties to a non-government CHP.

» **Christchurch:** The Government is proposing to transfer up to 2,500 HNZ properties and tenancies in Christchurch. The proposal is for a single transfer transaction, likely to be properties in Bryndwr, Shirley and Riccarton.

---

[12] CHPs are regulated and monitored by the Community Housing Regulatory Authority (CHRA). CHRA works with CHPs who wish to provide quality social and/or affordable rental housing for those in need. Its role includes registering CHPs as well as engaging with registered providers to monitor their performance and intervene if required. CHRA also maintains a public, searchable register of all registered CHPs.
[13] https://www.msd.govt.nz/documents/about-msd-and-our-work/work-programmes/housing/2016/purchasing-strategy-final.pdf

Transfer of city council properties to CHPs

Some city councils manage their own social housing stock. Some of this stock is planned to be transferred to CHPs, and fall under the national social housing system. These have been included in our housing pipeline assumptions, consistent with MSD's Purchasing Intentions report.

1.6.3   A focus on supply in Auckland

During the valuation period, the Government made a number of announcements in relation to increasing the supply of IRRS places in Auckland. Note most of these changes will impact future years' valuations:

» In November 2015, MSD released a request for proposals to engage CHP providers to deliver an additional 1,000 social housing places in Auckland by the end of 2018 – under the more flexible terms discussed above.

» In Budget 2016, the Government announced an additional $100m for a programme of using public land for increasing the supply of housing in Auckland (Crown Land Redevelopment Programme) – some of which will go towards social housing places.

» In June 2016, the Government introduced a grant of up to $5,000 for relocation costs to help people who wanted to move from Auckland but otherwise could not afford to.

Following the valuation period, the Government announced:

» In November 2016, as part of the surplus Crown Land Redevelopment Programme, a new social housing complex of 120 apartments is to be built on surplus Crown land and an adjoining HNZ site in Waterview in partnership with local iwi.

» That an additional $1.95m would be put towards the Relocation from Auckland initiative, enabling a further 250 households to relocate.

1.6.4   A focus on emergency housing

In January 2015, the Government provided a $500,000 cash injection for emergency housing providers, alongside a wider review of the sector. During the valuation period, a number of announcements were made with respect to increasing the support for clients' emergency housing needs:

» In September 2015, the Government made $2m available to non-government organisations in Auckland for a short-term emergency housing response to help address the shortage of emergency housing places. The funding was made available for contributions towards the capital cost of refurbishing existing properties, or new builds if required, as well as for ongoing operational costs like accommodation and providing wraparound support services.

» As part of Budget 2016, the Government committed $41.1m over four years towards a new emergency housing funding approach. The model has two main parts:

• Dedicated funding for NGOs to provide about 3,000 emergency housing places each year, for anyone who can demonstrate they have a genuine need for emergency housing.

• The introduction of the Emergency Housing Special Needs Grant (SNG) – available from July 2016. This non-recoverable grant is provided to households in need of emergency housing and goes towards the cost of short-term accommodation, for up to seven days initially with extensions available where required.

Beyond the valuation period, the Government announced:

» An emergency housing package of $303.6m over four years. The Government's aim is to deliver more than 2,000 emergency housing places at any one time by April 2017. The package comprises:

• $120m in capital funding to build, buy or lease properties suitable for emergency housing.

- $71m in rental subsidises to CHPs so they can meet rental payments for properties procured by the Crown.
- $102m for providers to support, stabilise and help tenants into longer-term housing.
- $10.4m for more dedicated frontline MSD staff to work with people who need emergency housing or who are on the register.

» The vacant Crown land in Ōtāhuhu, Auckland has been turned into a 43-home development to provide transitional housing for families before they move into permanent accommodation. The development opened in late February 2017 and was the first development under the $303.6m emergency housing package.

» The launch of Housing First – announced in March 2017. This is a joint initiative between the Government, Auckland Council and five CHPs which is based on the premise that it is easier to address issues such as mental health and substance abuse, once people are housed. It offers on-going wrap-around support to homeless Aucklanders. Housing First will help 472 homeless people over two years.

The additional funding for emergency housing has not been included as an expense item in our valuation, but may be included in the future as data permits.

1.6.5   Other housing initiatives

In July 2015, the Supported Accommodation for Youth programme was launched which sees young people aged 16-19 who are on the social housing register housed in 2 to 5-bedroom properties for as long as they need it. Delivered by community providers, the service also provides young people with a range of support from learning basic living skills to helping them access other support in the community, such as Youth Service.

1.6.6   Transfer of data

As part of the handover in responsibilities from HNZ to MSD for the management of aspects of social housing, the IT system used to capture data was replaced by a new system managed by MSD. The effective date of transfer for the data (as supplied to Taylor Fry) was September 2015. The new system allows HNZ and CHP information to be viewed on a consistent basis, enabling a better view as the market for housing providers diversifies.

However, there are significant data dislocation issues associated with the transfer. We have allowed for this in both our data preparation and modelling, but there are many places where data limitations have a material impact on our commentary and conclusions. These are flagged throughout the report.

1.7   Main economic changes affecting 2015/16 results

1.7.1   Inflation and discounting

Our projections are performed on a '30 June 2016 dollar' basis. Historical dollar values are inflated to June 2016 using the historical Consumer Price Index (CPI) index (consistent with benefit rate increases). For final results we apply future CPI inflation assumptions to express amounts in actual dollars. We then apply discount factors to reflect the time value of money – effectively allowing for interest earned if money was put aside today. We use CPI assumptions and risk-free discount rates consistent with the Treasury's assumptions. Inflation and discount rates affect the liability results, but are outside of the control of MSD. The assumptions at the current and previous valuation are shown in Figure 1.9.

Figure 1.9 Assumed risk-free discount and inflation rates
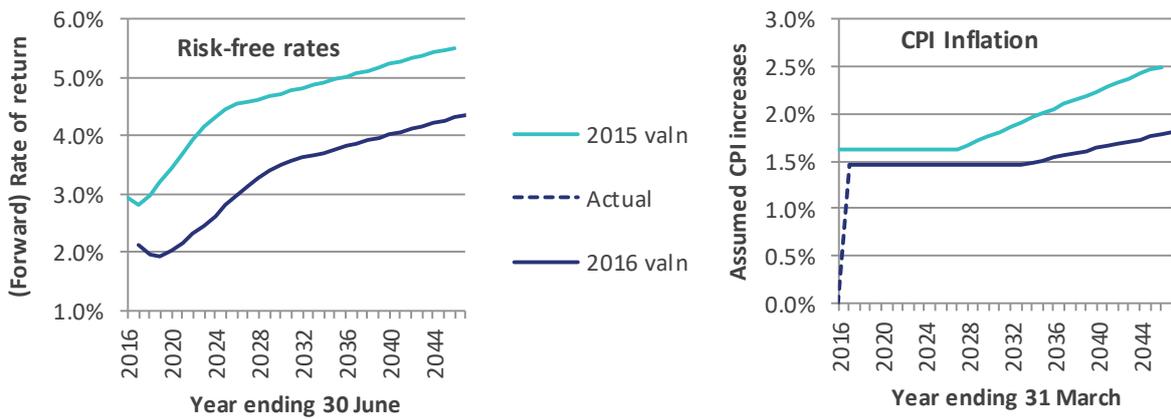
Over the 2015/16 year:

» CPI inflation experience was lower than expected. Benefits were unchanged compared to the increase of 1.6% assumed in the previous valuation and the Treasury has reduced their long-range forecasts by reverting to a lower long-term rate (2.0%) and doing so at a slower rate. This decreases the valuation estimate by $1.0 billion, or 6%.

» Discount rates have fallen significantly since the previous valuation with material falls in short and medium-term rates of more than 1%. The long-term forward rate has reduced from 5.5% to 4.75%. These changes in discount rates increase the liability by $3.2 billion, or 21%.

» Overall the real rates of return (discount rate minus inflation) have fallen. The combined effect is an increase in the liability of about $2.3 billion (or 13%).

The impact of changes in inflation and discounting assumptions is large. The discounted mean term of IRRS payments (the dollar-weighted average length of time till payment, after allowing for the time value of money) is about 17 years. IRRS payments make up the majority of the liability and so this reflects a very long-term payment stream. Longer-term payment streams have a greater dependence on inflation and discount rate assumptions.

1.7.2 AWE inflation

NZ Super payments to those aged over 65 are pegged to changes in average weekly earnings (AWE). The assumed AWE rate at the current and previous valuations are shown in Figure 1.10.

Figure 1.10 Assumed AWE inflation rate

Over the 2015/16 year AWE inflation was 2.1% compared to 1.2% used in the 2015 valuation. We assume AWE inflation is fixed at 1.5% above CPI after 5 years, so the long-term AWE assumption has fallen following the decreased CPI assumption. In the short-term assumptions have decreased following updated Treasury forecasts. The lower AWE assumption largely offsets the higher rents seen in 2015/16 (see Section 1.7.3).

We have assumed that incomes for working-age clients in social housing grow at the rate of CPI, regardless of benefit status. This appears reasonable based on historical data. However, there is no inherent reason why the income of non-beneficiaries should be limited to CPI in the future.

1.7.3 Market rental rates

Assumptions regarding the growth in market rents have a very large influence on the valuation. For example, the sensitivity testing in Section 6.3 shows that the total liability was extremely sensitive to a small change in the growth of rent. Rental growth rates affect future costs in two ways; higher market rents lead to higher IRRS payments and compounding this, higher IRRS levels are associated with reduced exit rates from social housing.

The relationship between CPI, AWE and rental growth has varied in time, the history is shown in the figure below. Over the year to June 2016 rental growth was high and CPI low, this means the gap between rental growth rates and CPI was very large.

Figure 1.11 Historical AWE, CPI and rental growth rates

The figure below compares our assumed rental growth rates at the previous and current valuations for a selection of regions (and the national rate). Our rental growth rates are tied to AWE, after ten years we assume rents increase at the same rate as the AWE index. Rental growth assumptions have been selected based on discussions with MSD and Treasury. These rates are fairly conservative (that is, lower) compared to recent history.

Figure 1.12 Assumed rental growth – national and selected regions
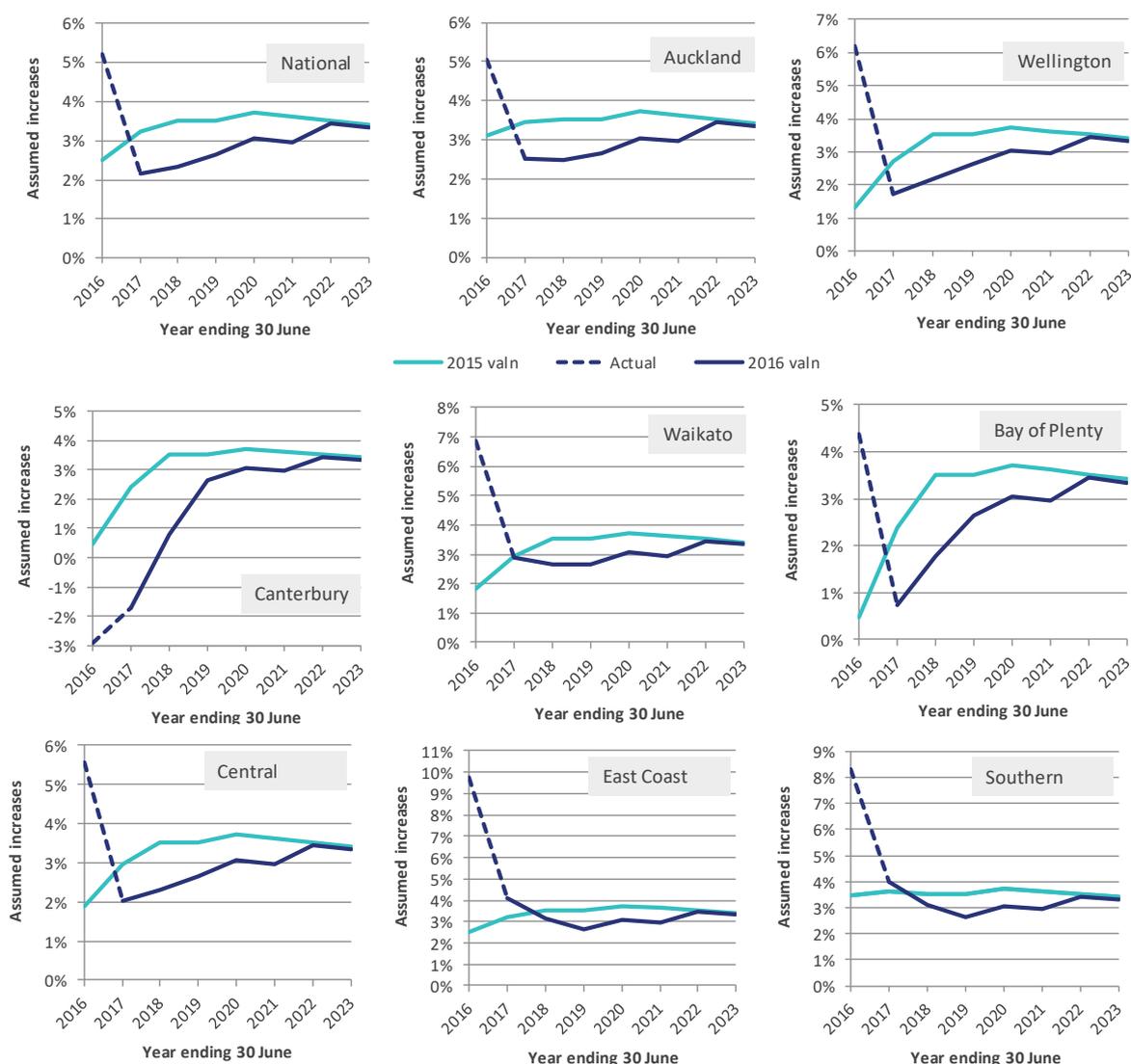
The national rental growth rate was 5.2% during 2015/16, this was twice the rate projected at the previous valuation. Different regions have different rental markets, the rate of growth varies according to demand (this is influenced by a host of factors including regional population, regional population growth, regional and national labour markets). At a regional level rental increases were generally higher than projected, but as can be seen in Figure 1.12 there is a large variation by region. In the year to June 2016 rents:

» Showed very strong growth (above 8%) in the East Coast and Southern regions compared to 2.5% and 3.5% projected respectively

» Decreased nearly 3% in the Canterbury region compared to a projected 0.5% increase

» Grew between 5.5% and 7% in the Northland, Waikato, Central and Wellington regions, compared to projected rates around 2%

» Grew 5.1% in the Auckland region compared to 3.1% projected. Dynamics in Auckland strongly influence the national average

» Grew 4.4% in the Bay of Plenty region and 2.5% in the Nelson region; 0.5% was projected for both

» Grew around 1% in the Taranaki region, similar to projected growth.

1.7.4   Unemployment rate

The unemployment rate has a comparatively small influence on the valuation of future housing cost; it is not directly incorporated into our housing transition and cost models. However, the rate does affect the likelihood of welfare benefit receipt, which in turn affects housing transitions, such as the likelihood of making a Housing Register application or the likelihood of exiting a social housing place. Higher unemployment will also lead to more AS and TAS payments for people who move into the benefit system.

Figure 1.13 Assumed national unemployment rate
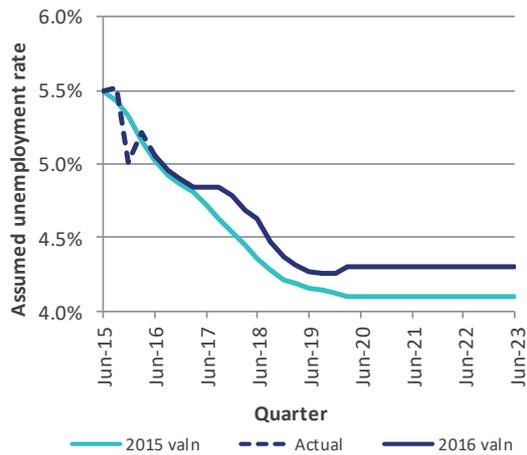
Over the year to June 2016 the national unemployment rate decreased from 5.5% to 5.0% in line with Treasury forecasts. Figure 1.13 compares the forecast unemployment rate at the previous valuation and that used here. We have continued to closely follow Treasury forecasts and the long-term rate is now 4.3% – a 0.2% increase compared to at the previous valuation.

2   SOCIAL HOUSING SYSTEM PERFORMANCE: OVERVIEW

2.1   Introduction and highlights

This chapter discusses the main results of the valuation as at 30 June 2016. It provides an overview of the performance of the social housing system – covering both the recent performance against expectations and the long-term trends in the system. The topics covered are then expanded upon in Chapter 3 – Durations and transitions, Chapter 4 – Demand, and Chapter 5 – Supply.

Highlights

Data issues present in last year's valuation have been compounded by another IT system change which took place during the year – as such the results presented in this chapter should be interpreted with some caution.

Performance of the social housing system in 2015/16 compared to expected

During 2015/16 **exits of tenants from social housing were slightly faster** than expected. We expected 2.1% of households to exit per quarter, and observed 2.3%. We have adjusted our assumptions for exit rates accordingly; resulting in shorter average forecast durations in social housing.

Stable supply (small change to exit rates and negligible new housing stock) and increased demand (particularly from priority A applicants) has led to the (non-transfer) **housing register growing** from 3,947 at June 2015 to 4,302 households at 30 June 2016. Register applications for the three quarters to June 2016 averaged 2,920 per quarter, up 24% on the four quarters to September 2016.

Compared to those exiting social housing in 2015/16, those entering social housing in 2015/16 tend to have a higher weekly IRRS ($40 per week on average), have younger primary householders, and are more likely to be receiving a main welfare benefit – broadly in line with policy intentions.

IRRS payments were 2% higher than expected (about $4m per quarter), during 2015/16 due primarily to higher inflation of IRRS payments than expected, as well as our models underestimating the number of housing placements.

Duration – lifetime housing cost

The total future **lifetime housing cost** of adults in the social housing system in 2015/16 is **$18.7 billion**, including related expenses. The bulk of this cost is future IRRS payments ($15.9 billion) of which $14.7 billion relates to those currently in social housing.

The total cost compares to $16.4 billion estimated last year – the difference is dominated by changes to inflation and discounting assumptions.

The most important performance-related component of the change was a $0.6b reduction due to '**throughput**'. This measures how quickly existing clients are moving through the social housing system. It considers those who were in the valuation as at 30 June 2015 – and compares what we predicted their lifetime cost to be at 30 June 2016 at the last valuation, to what we now predict their lifetime cost to be. For last year's cohort:

» Those who were **in a social housing place** are exiting faster than expected, particularly for those tenants who are closest to market (i.e. receive lower IRRS). This is in line with policy objectives regarding reviewable tenancies.

» Those **on the register** have had an $86m (16%) increase – this should be interpreted alongside their decrease in 'notional' lifetime housing cost (see below).

» Those who had **recently exited social housing** have had a $171m (114%) increase – significantly more of them re-engaged with the social housing system than expected – it is possible that data issues have driven much of this increase but we will be monitoring these segments carefully.

The average household liability is $224k – with an expected 13.8 more years in social housing for the primary tenant. Average duration for primary tenants in social housing varies significantly. Those who are of working age with children and receiving higher subsidies are expected to spend another 20 years in social housing. In comparison, those who are of retirement age receiving lower subsidies are expected to spend another 9 years in social housing; although the bulk of the difference is solely due to householder age.

Demand: notional liability

Notional lifetime housing cost is the hypothetical lifetime cost (the sum of future IRRS, AS and TAS benefits) of housing all people on the register *today* (in contrast to the main lifetime housing cost, which estimates household lifetime cost when we expect them to enter social housing).

In 2015/16, **the additional notional liability associated with the register was flat at $0.24 billion**, despite a larger register size and economic factors. This suggests faster management of the register, along with benefits of a larger number of new social housing places in the pipeline. Furthermore, throughput for the register decreased by $168m when including notional lifetime cost, reflecting shorter future durations in social housing.

Supply: 'matching' and idealised purchasing runs

To better understand supply, we look at 'matching'. That is, the proportion of households that are well matched (by size of household and location) to social housing places. **Matching has improved slightly from last year**. The number of empty houses is down slightly and 89.8% of households are housed in a property within +/- 1 bedroom of their desired household size, compared to 89.5% in 2015. The housing supply pipeline looks reasonably well-matched to trends in demand, particularly with a shift towards places with a smaller number of bedrooms.

Underlying trends in social housing

The key trends in the system are a **long-term downward trend in exit rates**, and the **long-term increasing cost of the system** (with IRRS levels increasing much faster than the rate of inflation).

The downward trend observed in exit rates is primarily due to three correlated factors:

» Market rents have been increasing faster than incomes, making it more difficult for tenants to transition to independence.

» The aging profile of social housing tenants has resulted in lower exit rates. In 2001, the average age of the primary signatory was 46.8 years, in 2016 it was 51.5 years.

» Average duration in social housing for the tenant population is rising, again resulting in lower exit rates.

The level of IRRS per social housing place has historically grown at 5.5% p.a. above the inflation rate. This trend has continued; IRRS growth was 11.5% for Auckland in 2015/16.

2.2 Recent performance and trends

In this section, we compare the performance of the system against our forecasts derived in the 2015 valuation.
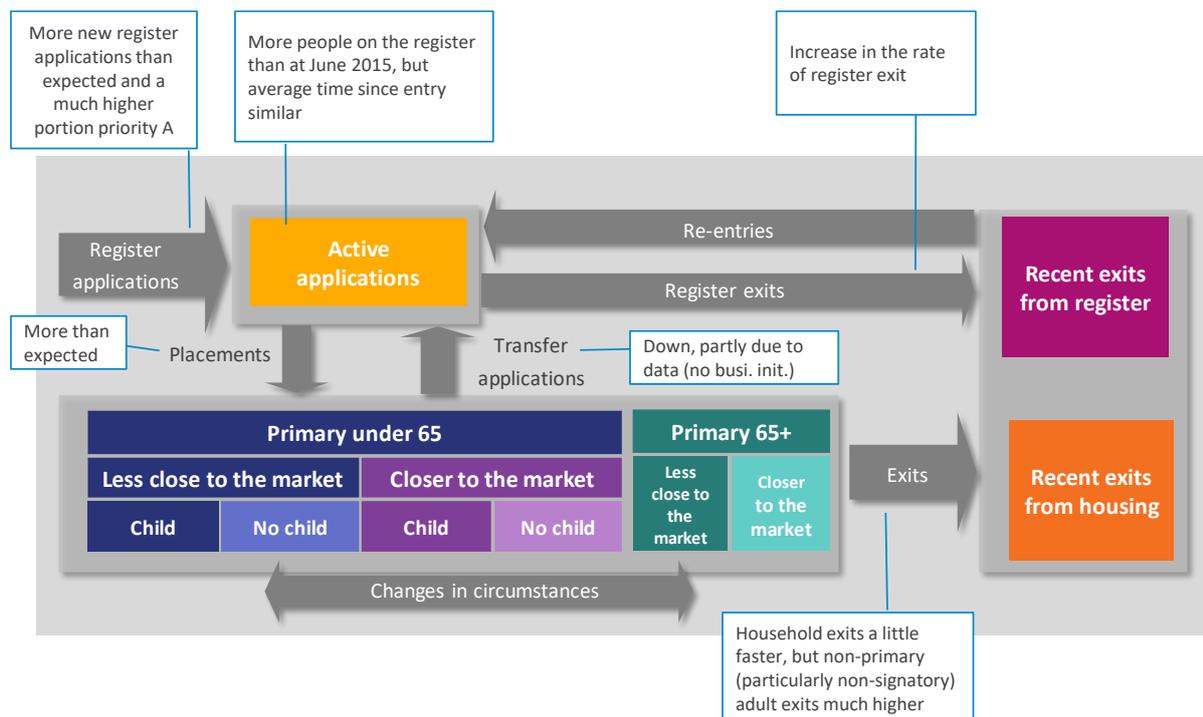
2.2.1 Actual versus expected in 2015/16

Movement through the social housing system

Figure 2.1 gives an overview of the movements of tenants and register applicants in the social housing system in 2015/16. The main features of the experience during the year compared to our expectations from the previous valuation include:

»   Tenant exits were faster than expected. This was true for households generally (We expected 2.1% of households to exit per quarter, and observed 2.3%). However, most of the change related to more exits from non-primary, particularly non-signatory, adult tenants. On average, for each quarter during 2015/16, there were 61,512 households receiving IRRS compared to our forecast of 61,574. We have slightly increased our household exit rate assumptions based on observed experience.

»   The number of entries (or placements) into housing was slightly higher than expected.

»   Register exits, other than those to social housing, were a little higher than expected; on average 1,050 per quarter during 2015/16 compared to 1,000 per quarter during 2014/15.

»   There were more new register applications than expected and the applicants comprised a much higher proportion of priority A than expected. On average, there were 2,300 applications per quarter over 2015/16, nearly 75% of which were priority A. This compares to 2,000 applications per quarter over the prior year and 69% priority A.

»   Overall housing supply remained steady over the year. This is consistent with expectations; we had not allowed for a material increase in entries in 2015/16 due to additional supply.

»   There were additional unexpected entries by both new and re-engaging clients to social housing without a record on the Housing Register. This may be related to the IT system change which occurred during the year.

Figure 2.1 Social Housing dynamics: changes in 2015/16

More new register applications than expected and a much higher portion priority A

More people on the register than at June 2015, but average time since entry similar

Increase in the rate of register exit

Register applications → Active applications ← Re-entries ← Recent exits from register

Register exits → Recent exits from register

More than expected | Placements

Transfer applications | Down, partly due to data (no busi. init.)

Primary under 65
Less close to the market | Closer to the market
Child | No child | Child | No child

Primary 65+
Less close to the market | Closer to the market

Exits → Recent exits from housing

Changes in circumstances

Household exits a little faster, but non-primary (particularly non-signatory) adult exits much higher

IRRS payments

IRRS payments were slightly higher than expected over the year. This is for two reasons:

» We underestimated the number of people placed in a social house. This is a known bias, where the projection model is slightly too restrictive in making placements where there is a mismatch by location or size.

» IRRS levels were higher than expected. The average IRRS increase of about 7% for the year was higher than the 5% we had assumed in the previous valuation.

Overall IRRS payments were 2% higher for the year (or about $4m per quarter), although slightly higher in quarters 3 and 4. These results by quarter are shown in Figure 2.2 (note that the differences appear magnified due to the choice of the vertical scale).

Figure 2.2 Actual and expected IRRS numbers and levels for the 2015/16 year
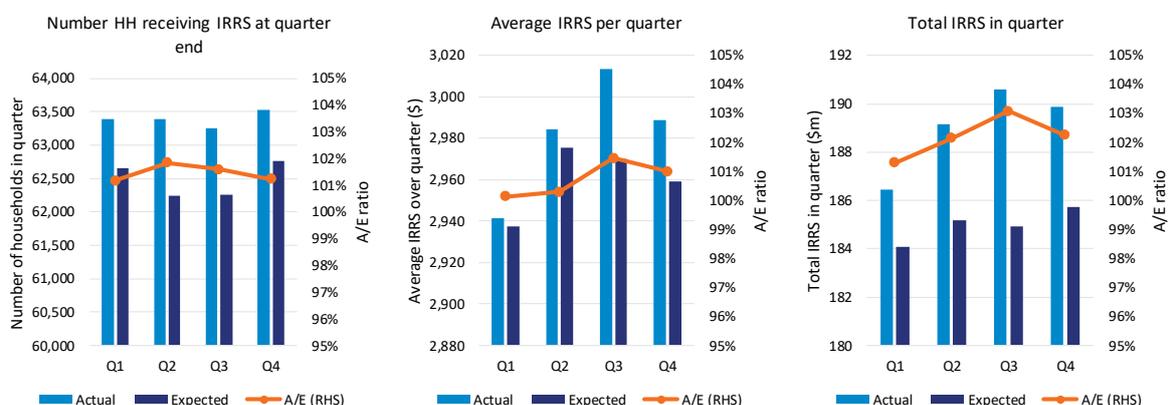
2.2.2 Duration and transitions: recent changes

Transition rates out of social housing are an important input into our estimation of future housing duration. Estimating transition rates over 2015/16 has been complicated by a changeover of IT systems from HNZ to MSD, effective August 2015. This has led to material differences in our observations from the data, including:

» How people are matched as they move across households
» How people interact with the benefit system
» Which people are in each household
» The movements of non-primary householders in and out of social housing.

Other related data issues are discussed in Section 8.2.2.

Figure 2.3 shows the historical and projected transition rates for different householders. The experience over 2015/16 is very choppy, due to the IT changeover. Our main observations are:

» Household exit rates[14] have been slightly higher than expected when averaged over the year. We expected 2.1% of households to exit per quarter, and observed 2.3%. We have recognised some of this difference in our new assumptions, which equates to about 50 additional social household exits per quarter. Using our sensitivity results (see Section 6.3), this decreases the liability by about $0.2 billion.

» The exit rates for non-primary signatories are generally volatile, but this year's rates are materially higher than those seen in 2013/14 and 2014/15. The rate of exit per quarter was 3.5%, compared to our previously projected level of 2.8%. We have increased our exit rate assumption for these clients, which tends to decrease their individual lifetime housing cost, but not necessarily that of the household's. Although we have lifted our assumption slightly, it is still significantly below the levels observed prior to the 2012 IT system change.

» Exit rates have spiked dramatically for non-signatory householders. This is likely due to a change in the approach to data collection under the new IT system. The low rates observed in 2013/14 and 2014/15 now appear to have been misleadingly low. 6.1% of such householders exited per quarter, compared our previously projected level of 2.8%. We have revised our assumptions up materially, although still below the rates observed prior to the 2012 system change. These exit rates tend to have smaller impacts on system-wide lifetime housing cost, as we do not allocate IRRS to non-signatories.

---

[14] We measure household exit rates via a proxy of primary householder exits. The majority of the time the household will exit with the primary householder, so this proxy is reasonable.

Figure 2.3 Quarterly exit rates for adults from social housing for different household roles. We generally regard the exit rate for primaries as an indicator of the overall household exit rate.
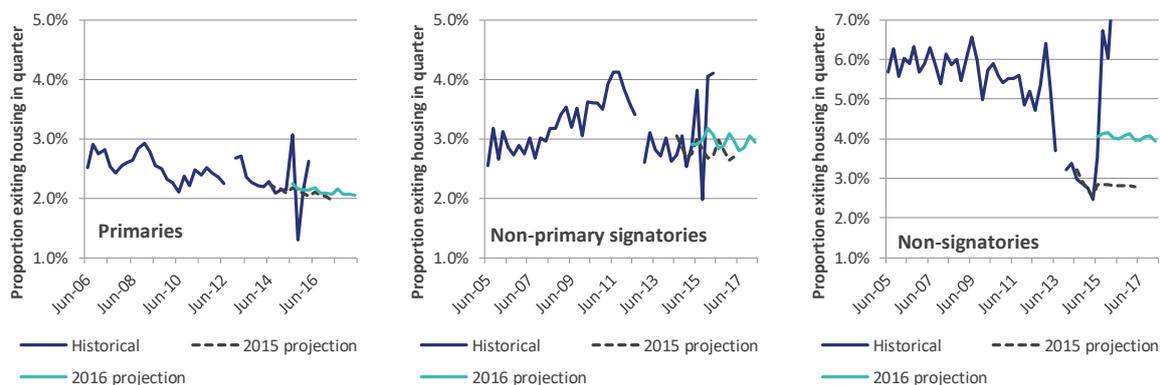
The net result of assumption changes is a slight reduction in household (primary householder) duration in social housing, but significant reductions for other adults in a social housing place.

2.2.3   Housing demand: recent changes

Register applications are the key input into understanding demand for housing.

New register applications

Figure 2.4 shows that the number of new applications per quarter has been volatile over the past few years. There was:

» An increase in applications in 2014 coinciding with the transfer of responsibility of register assessments to MSD offices.

» A low number of applications in 2015.

» An increase in application numbers, with a very strong switch to Priority A applicants (compared to Priority B and transfers), in the last three quarters of 2015/16. Register applications for the three quarters to June 2016 averaged 2,920 per quarter, up 24% on the four quarters to September 2016. This coincides with increased publicity regarding the social housing system, and the Government encouraging people to contact MSD to find appropriate housing options.

Figure 2.4 Register applications by quarter
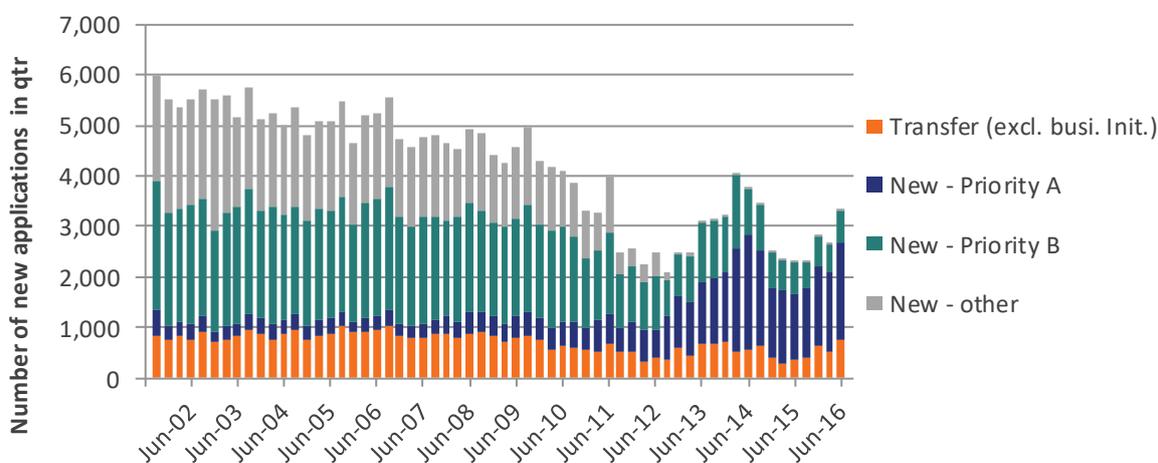
Stable supply (exit rates flat) and increased demand have led to the (non-transfer) Housing Register growing from 3,947 at June 2015 to 4,302 households at 30 June 2016[15]. This adds about $50m to the lifetime cost estimate, or $70m to the combined notional liability.

Applicant prioritisation still seems effective, with significantly higher housing placement rates for Priority A clients and higher rates again for Priority A clients with higher Social Allocation System (SAS) scores. A reasonable portion of new applications in 2015/16 were missing SAS scores on the data, making it harder to tell if these were well-prioritised.

'Other exit' rates from the register (exiting but not into a social housing place) have risen from 16% to 20% of applicants (who weren't placed in a social house) per quarter. Without further information on the nature of these exits it is difficult to determine whether this is 'good', but it is consistent with policy objectives to divert those on the register who can be better assisted by alternative housing pathways, including temporary emergency support.

Comparing housing placements and housing exits

It is interesting to compare the characteristics of those entering social housing from the register with those who are leaving. This is shown in the figure below.

Figure 2.5 Entries and exits, by weekly IRRS band, age of primary householder and benefit receipt
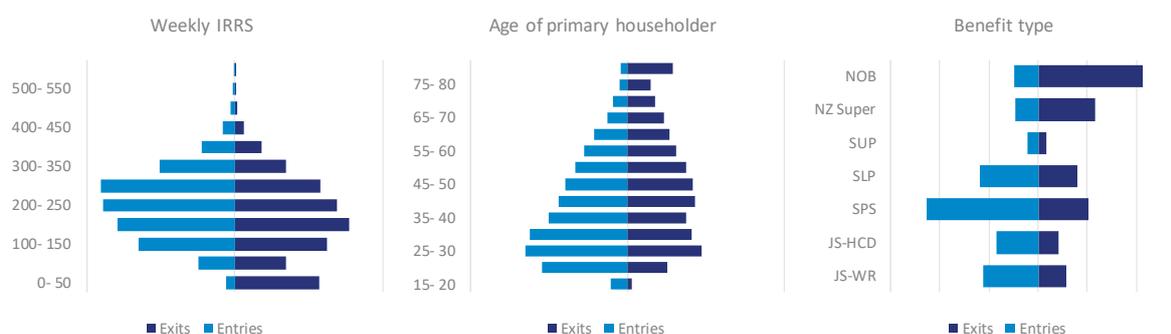
We see that:

» The weekly IRRS is significantly higher ($40 per week on average) for those entering, and a much larger portion of those exiting have a very low or zero IRRS. This is consistent with policy objectives for better targeting the neediest households, and transitioning tenants to the private market where appropriate.

» The primary householder of an entering household is significantly younger than those exiting, as might be expected. About 65% of entrants are aged under 45, compared to 45% of those exiting.

» Over 80% of primary entrants are receiving a working-age main benefit, with about one third receiving SPS. This compares to just 45% of those exiting, with the proportion receiving SPS reduced to 16%. This suggests that need is significantly higher for those entering social housing.

Regional trends in applications

Section 4.3.5 discusses in detail the significant regional differences in the demand for social housing. In summary, Auckland and Wellington have above average number of social houses per capita, but longer

---

[15] The official MSD statistics at http://housing.msd.govt.nz/information-for-housing-providers/register/index.html have a similar trend (an increase from 3,352 to 3,877). Exact numbers differ due to the treatment of lower priority applicants and applications that are pending.

durations in housing in those regions means that the register size is similar to the national average. In contrast, Waikato and Southern regions have relatively low supply of social housing, consistent with lower demand.

Since the last valuation, the register application rate has increased from 0.8 to 0.9 households per 1,000 population. This increase was driven by more applicants in East Coast, Bay of Plenty, Central, Wellington and Nelson. In contrast, there was a fall in the register size in Waikato, while all other regions were either stable or saw a slight increase.

2.2.4   Housing supply: recent changes

The total supply of places has not changed significantly over 2015/16 – in last year's valuation we assumed 660 places would become available in the June 2016 quarter. There has actually been little **net** change. However, this hides active management of the housing stock – as the demand for places, and supply of places through household exits is mismatched, approximately 1,000 properties were sold and approximately 800 places were bought. Additionally, as discussed below in Section 2.3.3 there has been a slight improvement on how well these places are matched to tenants' desired size and location.

The most notable change to housing supply in 2015/16 was the transfer of a significant number of HNZ properties to CHPs (discussed in more detail in Section 1.6). The largest was the transfer of about 2,800 properties as part of the Tāmaki transfer in Auckland. The small increase in the number of places unavailable[16] means that there are slightly less occupied places compared to the previous year.

Table 2.1 Supply of places: 30 June 2015 compared to 30 June 2016

	Jun-15	Jun-16	Change
Available	872	776	-96
Unavailable	1,726	1,988	262
Occupied	63,704	60,411	-3,293
CHP Occupied	0	3,130	3,130
Total Occupied	63,704	63,541	-163
Total places	66,302	66,305	3

We discuss planned future housing supply in Section 1.6.

2.3   Long-term implications of recent performance

2.3.1   Duration and transitions

In this section we summarise the key findings from Chapter 3 – Duration and transitions, Chapter 4 – Demand and Chapter 5 – Supply.

Lifetime housing cost estimates

The total future lifetime housing cost of adults in the social housing system in 2015/16 is $18.7 billion, including related expenses. The bulk of this cost is future IRRS payments ($15.9 billion). Most of the cost is also concentrated amongst those currently in social housing ($14.7 billion), as IRRS costs tend to be higher than AS and social housing durations tend to be longer than AS spells. Table 2.2 compares the results to the previous valuation.

---

[16] Places become unavailable as they undergo repair, development or decontamination then return to housing stock.

Table 2.2 Future lifetime housing cost by segment for those in social housing system in 2015/16, plus a comparison to the previous valuation results.

Segment			2016 Valuation			2015 Valuation			% Change		
			# Households [Individuals]	Future lifetime housing cost ($b)	# future years in social housing	# Households [Individuals]	Future lifetime housing cost ($b)	# future years in social housing	# Households [Individuals]	Future lifetime housing cost ($b)	# future years in social housing
On register	Priority A		2,808	0.5	10.7	1,990	0.3	11.5	+41%	+60%	-7%
	Priority B and other		1,494	0.2	7.1	1,957	0.2	7.9	-24%	-10%	-11%
	Sub-total		4,302	0.7	9.4	3,947	0.5	9.7	+9%	+30%	-3%
IRRS recipients, primary aged < 65	Less close / IRRS > $150	Child in the household — Work obligated	8,575	2.9	19.9	8,361	2.5	21.3	+3%	+14%	-6%
		Child in the household — Not work obligated	8,405	3.0	20.4	8,531	2.7	21.6	-1%	+11%	-5%
		Child in the household — NOMB	7,577	2.7	19.5	7,231	2.3	20.5	+5%	+16%	-5%
		No child in the household — Work obligated	1,757	0.4	16.6	1,661	0.4	17.3	+6%	+17%	-4%
		No child in the household — Not work obligated	9,647	2.7	17.9	9,052	2.2	18.4	+7%	+20%	-3%
		No child in the household — NOMB	3,309	0.9	16.6	3,170	0.8	17.5	+4%	+13%	-6%
	Closer / IRRS ≤ $150	Child in the household — Work obligated	1,351	0.2	14.6	1,531	0.2	15.9	-12%	-4%	-8%
		Child in the household — Not work obligated	1,227	0.2	15.5	1,396	0.2	16.3	-12%	-1%	-5%
		Child in the household — NOMB	3,239	0.7	15.0	3,794	0.7	16.5	-15%	-8%	-9%
		No child in the household — Work obligated	417	0.0	12.7	454	0.0	13.2	-8%	+5%	-4%
		No child in the household — Not work obligated	2,336	0.3	14.8	2,655	0.3	15.4	-12%	-4%	-4%
		No child in the household — NOMB	2,216	0.3	12.4	2,685	0.3	13.9	-17%	-13%	-11%
	Sub-total		50,056	14.3	18.0	50,521	12.8	18.9	-1%	+12%	-5%
IRRS recipients, primary aged 65+	Less close / IRRS > $150	Child in the household	1,402	0.4	10.4	1,399	0.3	10.5	+0%	+11%	-1%
		No child in the household	9,119	1.3	9.4	8,513	1.1	9.5	+7%	+19%	-0%
	Closer / IRRS ≤ $150	Child in the household	220	0.0	9.3	235	0.0	8.7	-6%	+13%	+7%
		No child in the household	2,735	0.2	8.3	3,031	0.2	8.2	-10%	-3%	+1%
	Sub-total		13,476	1.9	9.3	13,178	1.6	9.3	+2%	+15%	+0%
Recent exit from housing	Receiving AS		[3,140]	0.3	6.9	[3,219]	0.3	7.8	-2%	+12%	-12%
	Not receiving AS	Aged <60	[14,308]	0.5	2.8	[9,851]	0.3	3.3	+45%	+62%	-15%
		Aged 60+	[1,325]	0.0	0.4	[1,537]	0.0	0.3	-14%	+19%	+12%
	Sub-total		[18,773]	0.9	3.3	[14,607]	0.6	3.9	+29%	+38%	-17%
Recent exit from register	Receiving AS		[3,110]	0.3	5.5	[4,038]	0.3	6.3	-23%	-13%	-12%
	Not receiving AS		[2,566]	0.1	2.9	[3,344]	0.1	3.7	-23%	-21%	-23%
	Sub-total		[5,676]	0.4	4.3	[7,382]	0.5	5.1	-23%	-15%	-16%
	Total		67,834	18.1	13.8	67,646	16.0	14.7	+0%	+13%	-6%
	CHP Loading						0.1				
	Expenses			0.6			0.3				
	Grand total			18.7			16.4				

We observe:

» The overall total of $18.7 billion is 14% higher than last year. We go into more detail on drivers for the change in Section 3.4.2; the largest change is lower discount rates, which masks more meaningful (but moderate) changes.

» Average duration for tenants in social housing varies significantly. For the highest segments – those primary tenants under age 65 who have children and an IRRS of more than $150 per week – it is about 20 years. For the lowest segments – primary tenants over 65 with no child and IRRS of less than $150 per week – it is less than half that, about 8 years.

» Those households with primary tenant aged under 65 are expected to be in social housing for an extra 9 years compared to those over 65. The difference is almost wholly due to age effects (such as mortality).

» The expected average social housing duration for an under age 65 primary tenant has decreased from 18.9 to 18.0 over the year, a 5% reduction. Similar reductions in average duration are visible in other segments. This is consistent with the higher exit rate assumptions discussed in Section 2.2.1. The long-term nature of our projection means that a small increase in exit rates will generally lead to material changes in expected duration.

» The total future housing cost for those on the Housing Register is 30% larger than the previous valuation. This is a combination of the additional number of people as well as the shift towards Priority A households, which tend to have longer durations. These effects are partially offset by a decrease in expected average duration.

» For tenants under age 65, durations are substantially longer for those who are further from the market (IRRS of more than $150 per week). We project an average of 19 years in social housing for

these tenants, compared to 14.3 for those who are closer to the market; IRRS level is a good indicator of financial barriers to the private housing market.

Drivers of change in future lifetime housing cost over 2015/16

There are many factors built into the projection model that affect lifetime cost estimates from year to year. Figure 2.6 shows the total lifetime housing cost estimate has increased from $16.4b to $18.7b since last year. The main components of this increase – described in more detail in Table 2.3 – were:

» An increase of $2.3b due to changes in inflation and discount assumptions.

» An increase of $0.4b due to additional joins. About 80% of this is explained by extra adults in existing households that were not expected, but may be partly data-related. The remaining 20% largely relates to household numbers (people were placed in housing a little faster than expected).

» An increase of $76m due to higher IRRS levels (the average subsidy level was 7.3% higher, instead of the 6.5% expected given the actual market rents).

» Other changes include higher expenses and a larger register (with a skew towards Priority A). It also includes compositional change (e.g. age of new clients compared to expected)

We note that an increase in both IRRS payments and lifetime cost should not necessarily be interpreted as a decline in performance. This is because:

» More exits amongst tenants paying market rent and more entries amongst low-income households would increase IRRS but be consistent with policy intent. In the 2015 valuation 25% of social housing households were 'close' to the market (IRRS less than $150 p/w), compared to 22% this year.

» IRRS levels are heavily influenced by changes to market rents, which are beyond management control. The 5.7% growth in the market rent of occupied social houses in 2015/16 has led to an average 7.3% increase in IRRS (which adds $1.0 billion to future costs, all else equal). As with register segments, average durations in social housing are generally down despite this.

» Increased demand through additional register applications are largely beyond management control. As noted above, the increased register size at 30 June 2016 compared to the previous year adds about $50m to the lifetime cost estimate, or about $70m to the combined notional liability.

Offsetting these increases was the $579m reduction due to 'throughput' – this is a measure that looks at how quickly cohorts are moving through the housing system. In this context, it looks at the cohort of tenants who were in the valuation as at 30 June 2015, and compares what we predicted their lifetime cost to be at 30 June 2016 at the last valuation, to what we now predict their lifetime cost to be. We discuss throughput in more detail below, but at a high level slightly higher exit rates have reduced the duration of these tenants in housing over their lifetime. This has resulted to a reduction in liability even though IRRS levels have increased.

Of these items, the principal component over which MSD has some management control is the throughput. A decrease potentially reflects a good outcome if the shorter durations relates to appropriate exits to private housing market. Normally, we would credit MSD management with the improvement in expected lifetime cost. However, this year:

» There has been significant redevelopment of models due to new datasets and we are cautious in assigning responsibility.

» The throughput figure still includes some items that should be separated out. In particular, it includes unexpected changes in IRRS level (beyond what we'd expect from changes in market rents in that area), as well as changes induced from supply changes (additional supply may move those from the register into housing faster). We have made some estimates for these in the commentary, but expect to more formally separate these from throughput results in future valuations.

Figure 2.6 Change in total lifetime housing cost over 2015/16
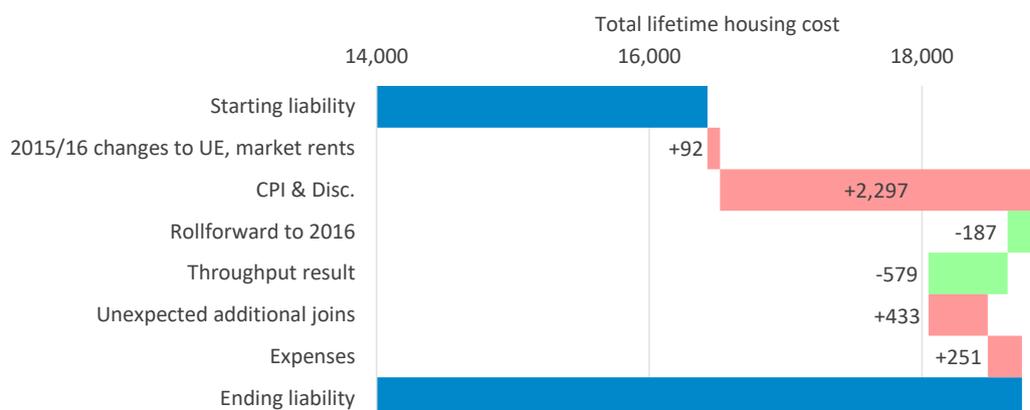
**Table 2.3 Description of components driving change in future lifetime housing cost over 2015/16**

Driver	Commentary
2015/16 changes to unemployment and market rents	Actual market rent and unemployment rate conditions had a small impact on the overall estimate. Rents in particular were higher than expected.
CPI inflation and discount rates	Lower discount rates (based on New Zealand government bond yields) mean that more money must be set aside today for a cash flow occurring in the future. Lower discount rates add $3.5 billion, offset by a $1.2 billion reduction due to lower CPI (which in turn lowers rent and AWE assumptions).
Rollforward to 2016	The lifetime housing cost naturally evolves over time; we projected lower total cost associated with the rollforward over 12 months. The $187 million decrease in the chart is due to the projection model underestimating social house allocations, which is then offset by increased throughput for the register and unexpected additional joins[17]
Throughput results	This is an assessment of the change in lifetime cost (relative to expected change) for those individuals and households included in the previous valuation cohort. A $649 million reduction driven by higher exit rates is slightly offset by a $70 million increase due to higher-than-expected IRRS levels (given local rent changes).
Unexpected additional joins	We expected $1.4 billion of future lifetime housing cost to be attributable to people in the 2016 cohort who were not in the previous valuation. The actual number was $1.8 billion, with about $351 million of the difference related to additions to existing social households. However, some of this may be related to data quality and we will monitor this carefully going forward.
Expenses	Expense allocation has increased since the previous valuation due to higher budget appropriations as part of the government policy initiatives of delivering the Social Housing Reform Programme.

---

[17] The main source of the decrease is a relatively low number of social housing placements predicted in the first quarter of our projection; the model can be too strict matching this initial allocation. We expect to better simulate actual behavior in future valuations.

Throughput over 2015/16

We examine the lifetime cost of the cohort of tenants that were in the social housing valuation cohort at 30 June 2015. Specifically, we compare this cohort's lifetime cost as estimated at 30 June 2016 against our prior expectation of their lifetime cost. By examining the same group on a like-for-like basis we avoid confusing the comparison by including new tenants and distortions due to changes in economic assumptions. The term throughput is used to denote that we are measuring how quickly existing clients are moving 'through' the social housing system on their transition to independence. The level of throughput is one indicator of system performance.

Figure 2.7 Throughput during 2015/16
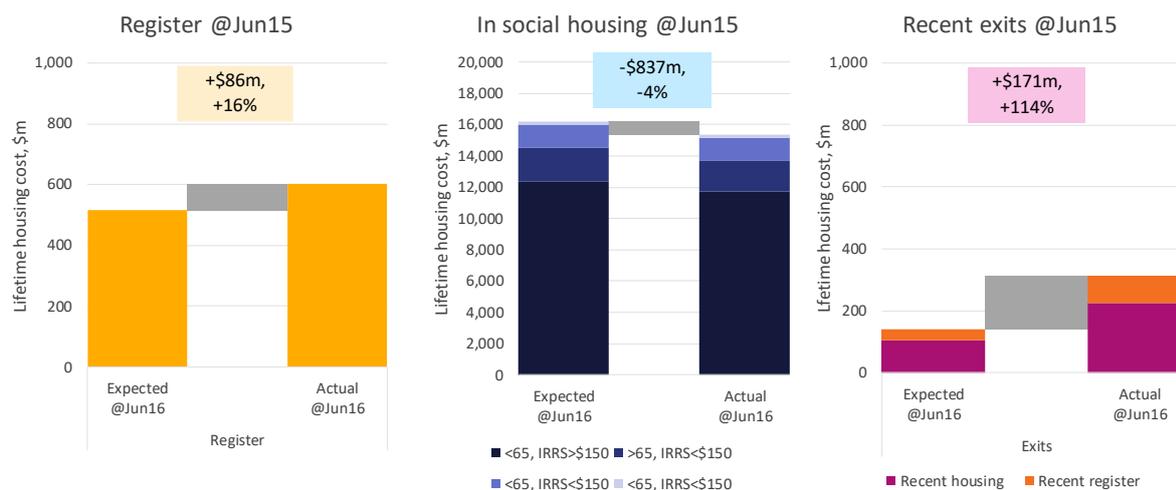
The early signs from our first analysis of throughput are encouraging. The middle panel of Figure 2.7 shows that for the largest part of the social housing system (i.e. those in a social house), the lifetime cost is $837m lower than their expected lifetime cost as estimated in the previous report. This lower cost is principally due to faster expected exit rates which will reduce their average future duration in housing. The largest relative reductions for those in a social house are for those segments closest to market (with the lowest IRRS), consistent with current policy objectives.

In contrast, the throughput for the register (the left panel of Figure 2.7) is an $86m increase, or 16%. This result cannot be properly understood without considering notional liability (see Section 2.3.2); in this case, the increase is predominantly due to people that are being housed faster than previously projected.

The right panel of Figure 2.7 shows those clients in recent exit segments at 30 June 2015 had a (relatively) very large throughput increase. Generally, we would expect most of these clients to not interact with the register or a social housing tenancy in the 2015/16 year and 'drop out' of the social housing cohort. However, significantly more of them re-engaged with the system compared to our estimates. We are not sure how much this result is due to data artefacts (perhaps register applications fall temporarily off the data and reappear), or genuine underestimation in the models; we will monitor this area carefully going forward.

2.3.2   Housing demand: Applicants on the register

Lifetime cost of those on Housing Register

The Housing Register typically sees substantial changes in both size and composition over time. These in turn will tend to affect the expected lifetime pathways of those on the register. The average lifetime cost for households on the register is about $152,000. This is 20% higher than at 30 June 2015, and is due to many of the same factors affecting those in social housing, including inflation and changes in exit rates (see Section 2.3.1). In addition, there has been an increase due to changes in the composition of the

register. Figure 2.8 shows that the biggest increases relate to the increase in the occurrence of Priority A and higher SAS scores, which add $11,300 to the average lifetime cost. This is partly offset by a decrease in the proportion of Auckland region active applications, which reduces the cost by $8,600.

Figure 2.8 Impact on the average lifetime cost of register applicants due to changes in composition
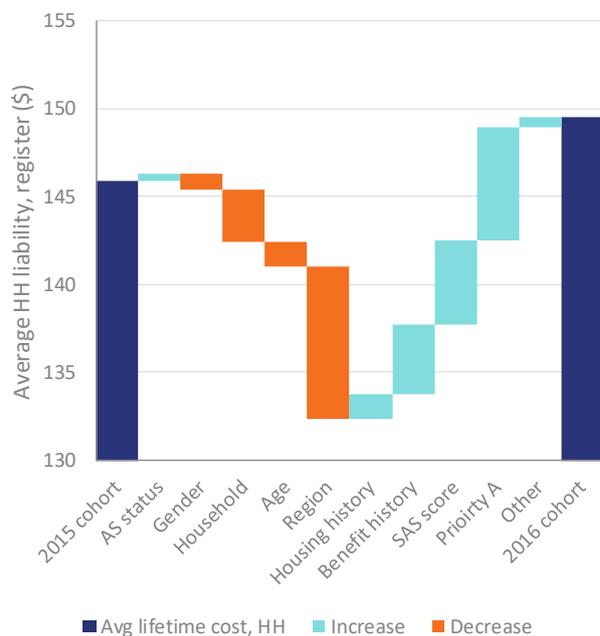
To the extent that such changes are sustained:

» The ability to maintain relatively fast placements for Priority A applicants will be reduced. There are government targets around the speed of Priority A placements. Currently Priority A applicants are placed in housing at twice the speed of Priority B applicants, but this will be difficult to maintain if the balance of applicants shifts significantly towards Priority A.

» While Auckland still has high demand relative to national demand, the trend over the last year or so would imply larger (relative) shortages for Canterbury and Bay of Plenty regions, which have seen substantial growth in numbers on their registers.

Change in notional liability

The concept of notional liability was introduced in Section 1.4.2 as a means of measuring unmet need, particularly for those on the Housing Register. The lifetime housing cost of those on the register is estimated based on when we *expect* them to enter social housing. The notional lifetime housing cost is the hypothetical lifetime cost (the sum of future IRRS, AS and TAS benefits) of housing all people on the register *today*. Measuring notional liability helps avoid a perverse incentive of using lifetime housing cost alone as a metric – lifetime housing cost could be reduced by decreasing the number of social housing places, as it is cheaper to have people on the register than in social housing. In contrast, an increase in register size would lead to a higher notional liability, all else equal.

The additional notional liability for those on the register was $238m at June 2015, and this has remained stable, with the estimate at June 2016 being $236m. This is despite lower discount rates and higher register numbers. Notional liability for other subgroups are presented in Section 4.4.2.

The first column of the left panel of Figure 2.9 shows the evolution of the notional liability for those applicants on the register at 30 June 2015. At June 2015, total lifetime cost for those on the register was $713m. This was made up of $475m related to the expected payment of IRRS and AS over their lifetimes

and another \$238m of notional liability –the hypothetical additional amount that it would cost if places were available at the date of the valuation.

The second column in the left panel of Figure 2.9 shows that during 2015/16, most of those people on the register have their notional liability 'crystallised' – either by exit from the register (the purple bar) or by placement into housing (the dark blue bar). At 30 June 2016 there remains only a small amount of lifetime cost and notional liability for those who were on the register at 30 June 2015 (less than \$200m of the \$713m). The third column in the left panel of Figure 2.9 shows the lifetime cost for all those on the register as at 30 June 2016, including their notional liability, is over \$800m – an increase of 22%. Most of this relates to new applicants during the year rather than those remaining on the register over 2015/16; that is, the increase is due to higher rates of application rather than slower rates of passage from the register into housing.

Figure 2.9 Evolution of the lifetime cost for people on the register over 2015/16 and throughput including notional liability
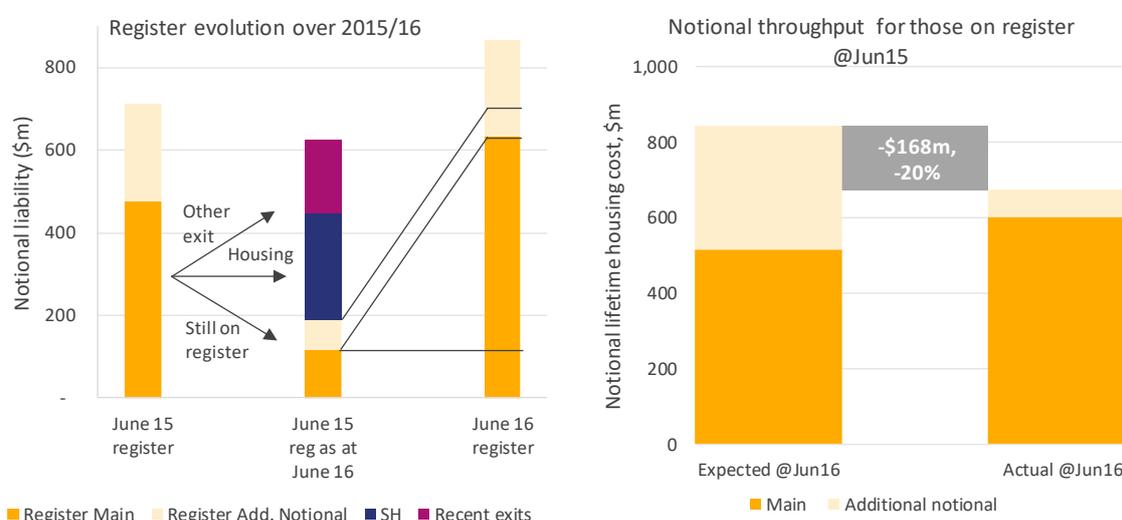
More important is the notional throughput for those on the register at the previous valuation date – that is, the expected main and notional lifetime cost as at 30 June 2016 for the cohort of tenants on the register as at 30 June 2015. This is shown in the right panel of Figure 2.9 – for these clients we expected their notional lifetime cost would be \$843m. The corresponding actual figure is now 20%, or \$168m, lower due:

» Some households no longer requiring social housing (the 'other exits')
» Expected duration for those in social housing now lower than previously expected.

This result suggests that the increase in average lifetime cost for the register seen in Section 2.3.1 relates more to successful transitions into housing, rather than failure to meet needs of those on the register.

2.3.3   Supply: Social Housing places

Matching

Matching is introduced in Section 1.4.3. The matching of housing places to demand has improved slightly since June 2015. The table below shows that a 0.6% improvement in matching due to about 400 new households being well matched to places was partly offset by about 200 existing households which became either overcrowded or underused during the period. More detail on matching, including dollar weighted results and exact matching figures, are provided in Section 5.2.

Table 2.4 Matching statistics (+/- 1 bedroom) at 30 June 2016

|	June 2015	Net entries	Transitions	June 2016
Matched	89.5%	0.6%	-0.3%	89.8%
Transfer register	2.1%	-0.1%	-0.4%	1.6%
Overcrowding	0.8%	-0.1%	0.1%	0.8%
Underuse	6.3%	-0.4%	0.6%	6.5%
Unoccupied houses	1.3%	-0.1%	0.0%	1.2%
Total	100%			100%

Purchasing intentions

As was done for the previous valuation we have provided MSD with the functionality to make idealised purchasing projections for 25 years. It gives a net purchasing position for any quarter, for any territorial authority and, for any social housing property size. This functionality will form part of MSD's analysis for purchasing intentions. Details are provided in Section 5.5.

2.4   Other long-term trends in social housing

The effects discussed in Section 2.2 – how the system is changing relative to our expectations – sit on top of underlying long-term trends observable in the social housing system. We discussed these trends in our previous valuation, but repeat some of the main findings here.

While Section 2.2 suggests that early signs are mildly encouraging, particularly in relation to shorter durations of tenants in social housing, the underlying trends in the system remain the same as observed last year and result in a long term downward trend in exit rates and a long term increasing cost (above inflation) of social housing. Figure 2.10 shows the history of exit rates since 2001.

Figure 2.10 Left panel: Exit rates (smoothed) from social housing, history since 2001
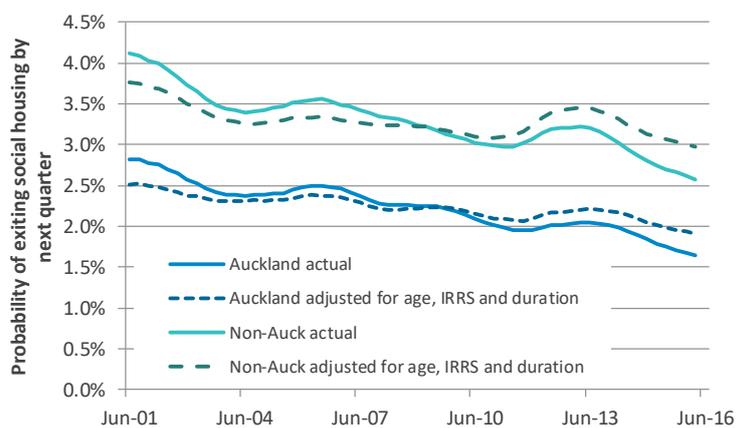
The predominantly downward trend observed in the exit rates is principally due to three correlated factors:

1.   Market rents increasing faster than incomes making it more difficult for tenants to transition to independence.
2.   The aging profile of social housing tenants resulting in lower exit rates.
3.   Average duration in social housing for the tenant population is rising again resulting in lower exit rates.

If we adjust exit rates for these three features (so that we remove their effect from historical rates), then we observe that exit rates have been much more constant over time. We discuss these features in more detail below, as they explain why movements through the social housing system have slowed over time.

Figure 2.11 examines the first of these factors. The left panel shows that (after allowing for CPI inflation), IRR has been flat over time and IRRS has grown rapidly to cover the gap between IRR and market rent. This trend has continued in 2015/16. The average weekly IRR rose by $3 over the year, whereas the average weekly IRRS rose by $16, or 7%. In 2001 IRRS was about 45% of market rent but by 2016 it is two thirds of market rent. In practical terms, this means households are on average paying only one third of their market rent whereas they used to pay more than half. The widening gap means there is a larger financial barrier preventing a household from entering the private housing market.

The right panel shows the distribution of weekly IRRS over time. While effectively the same information as the left panel, it is interesting to note that the proportion of households with IRRS of at least $150 (in 2016 dollars) has grown from 26% to 74%.

Figure 2.11 Left panel shows IRR, IRRS and IRRS as a proportion of market rent over time (after adjustment for CPI). Right panel shows the distribution of weekly IRRS over time for social housing places.
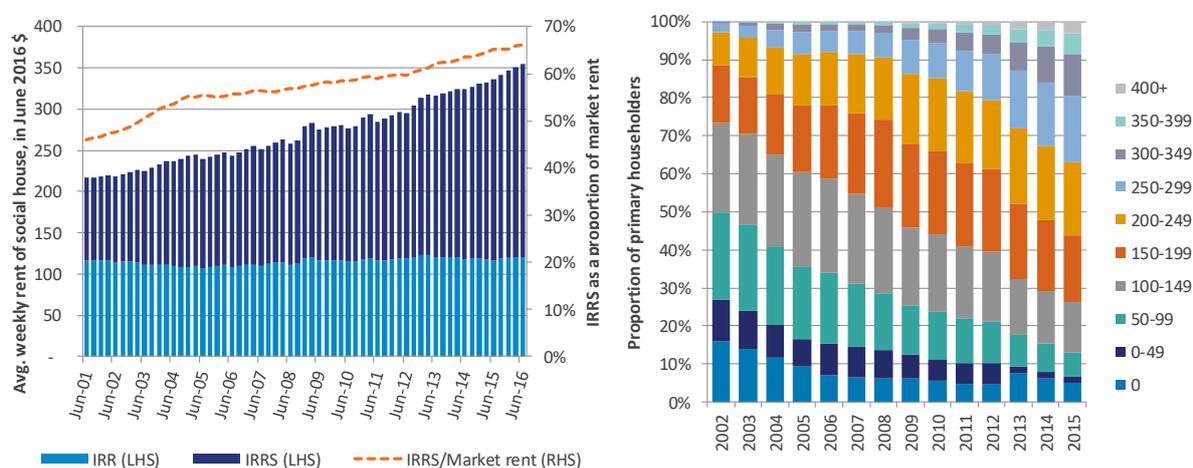
The left panel of Figure 2.12 shows the age profile of primary signatories in social housing. Exit rates fall from about age 20 to 45 and only start increasing again due to mortality from age 75. As the proportion of primary tenants aged between 25 and 75 increases, the rate of transitioning into private market falls, further exacerbating the factors related to market rent and IRRS.

Figure 2.12 Age profile (left panel) and duration profile (right panel) of primary signatories over time
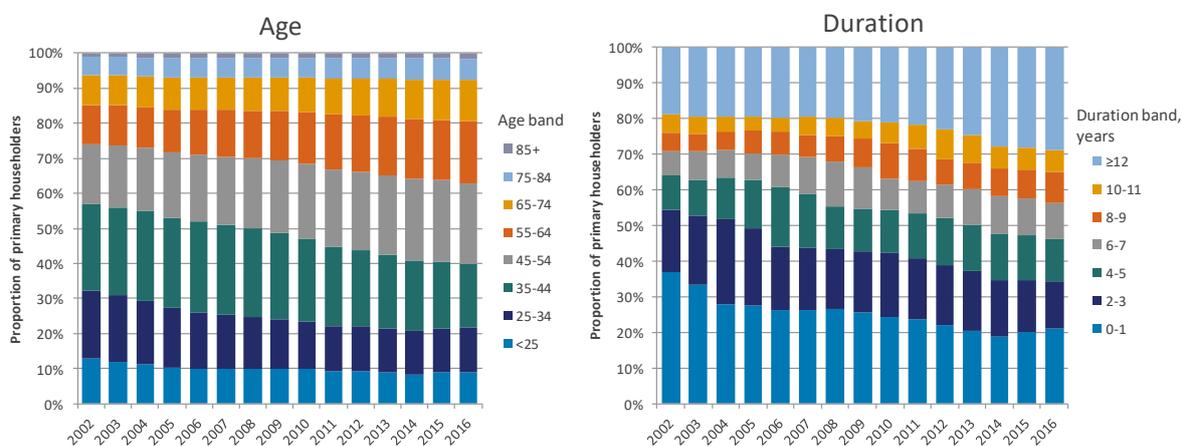
Exit rates tend to be faster for lower-duration households (those households who have spent less time in social housing). This is to be expected – those with short-term needs exit quickly, while others with ongoing needs remain. Also, as noted earlier, some vulnerable populations churn in and out of housing. In a 'steady-state' system you expect average duration to remain constant over time; the increase in duration of those who remain is balanced by new people entering. However, we have actually seen duration increase[18] over the past decade, rather than remain at a steady state, as shown in Figure 2.12 (right panel). This has further depressed average exit rates in the housing system.

This long-term trend of increasing durations is further complicated by significant policy changes over the past few years; for instance, the proportion of households with duration less than two years has increased over the past two years; this is consistent with a focus on increasing exits via reviewable tenancies, allowing new households to enter social housing. These changes are relatively recent, given the long-term nature of social housing support; this means that it would be a significant amount of time before a steady-state situation could be achieved.

For a detailed summary of duration in social housing and lifetime costs, including by segment and region see Chapter 4.

2.5   Sensitivity of results

The simulation variability of our approach is small at an aggregate level, but material when trying to understand individual level results. However, our projections are very sensitive to some of the input assumptions. We show sensitivity to key assumptions in Table 2.5. Most prominently, the valuation is very sensitive to the rate of rental growth. If rental growth was 1% higher per year over the whole projection the resulting total would be 23%, or $4.1 billion, higher.

Table 2.5 Sensitivity of valuation estimate (excluding expenses) to changes in assumptions

Scenario	Liability excl. expenses, $ billion	Change, $ billion	Change %
Base	18.1		
Increasing housing exit rates by 5%	17.8	-0.3	-1.9%
Decreasing exit rates by 5%	18.3	+0.2	+1.0%
Adding 1% to rental growth pa	22.3	+4.1	+22.9%
Subtracting 1% from rental growth pa	14.7	-3.4	-18.8%
Subtracting 1% from CPI and AWE inflation pa	18.6	+0.5	+2.7%
Adding 1% to CPI and AWE inflation pa	17.2	-0.9	-5.2%
Unemployment flat (rather than falling)	18.5	+0.4	+2.0%
Register applications 5% higher	18.0	-0.2	-0.9%
Register applications 5% lower	18.2	+0.1	+0.5%

Note: Increasing the housing exit rates by 5% means if household has a 3% chance of exiting next quarter in the base scenario, they have a 3% x 1.05 = 3.15% chance of exiting in the scenario. Similarly, a 3% x 0.95 = 2.85% chance in the decreased exit rate scenario.

Sensitivity and scenarios are discussed further in Chapter 6.

---

[18] We show our best estimates in the figures – it is difficult to precisely determine duration for households who enter before 2002 due to data limitations.

Part B – Results

3   DURATION AND TRANSITIONS
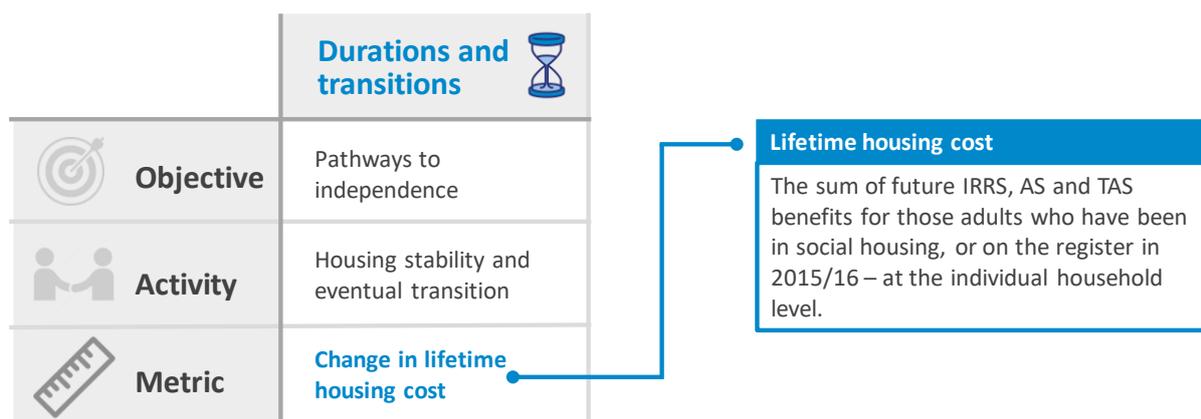
3.1   Introduction and highlights

As explained in Section 1.4, there are three key metrics discussed in this valuation, reflecting the primary functions of MSD in relation to managing the social housing system. This chapter focuses on: **duration and transitions –** providing analysis on lifetime housing dynamics and costs.

The 'duration and transitions' component of the social housing framework – as depicted in Figure 3.1 – looks at lifetime housing pathways (consisting of a series of transitions) and their costs. The objective is to manage tenancies actively so as to:

»   Make the best use of New Zealanders' investment in social housing as an opportunity to stabilise the risk factors that drive each household's need for social housing, and

»   *Where appropriate*, build pathways towards independence from social housing, thereby freeing up spaces from those capable of independence to be available for new entrants with high need.

The metric used to measure this objective is 'future lifetime housing cost'. This provides insight into pathways, and how they are changing over time.

Figure 3.1 Valuation metric – Duration and transitions

Durations and transitions		Lifetime housing cost
Objective	Pathways to independence	The sum of future IRRS, AS and TAS benefits for those adults who have been in social housing, or on the register in 2015/16 – at the individual household level.
Activity	Housing stability and eventual transition	
Metric	**Change in lifetime housing cost**	

Projected lifetime housing costs are a proxy for the duration of housing-related payments.

Further, MSD can use lifetime cost estimates to:

»   Understand lifetime housing pathways, risk factors and concentrations of risk

» Target services that stabilise need – for example specialist support to address underlying drivers of housing need

» Provide active support to tenants where appropriate, such as case management or tenancy reviews, and to inform measurement of return on investment

» Measure change, understand the relative influence of drivers of change, and track overall performance.

These applications – particularly the last two – align with the policy rationale of housing reform. If MSD is effective in reducing the need of households over time (that is, ensuring 'right duration' via moving households towards housing independence, where appropriate), this will be reflected in reductions in lifetime housing costs for those households.

It is possible to view future lifetime housing cost as a liability figure of future government expenditure. As such, we sometimes use the term 'liability' as shorthand. However, the cost is not a formal part of the Government's balance sheet – for example, given the interactions between social sectors and the overlap in vulnerable populations, a reduction in housing liability could lead to an increased or decreased liability in another sector.

Highlights

About the social housing population

There were about 63,500 households in social housing as at 30 June 2016, and another 4,300 households on the register. Half the social households in 2015/16 were in Auckland, one in three households have a Māori primary householder, and one in four have a Pacific primary householder. One in four households in social housing have a primary householder aged 65 or older.

Segment level results

This year we have a new segmentation. At a high level, this looks at a household's current social housing status – on the register, in social housing (primary over or under 65 years) or recent exits (either from housing or from register). It drills down into 23 individual segments, giving MSD the ability to analyse specific cohorts of interest. Notably:

» Over 75% of the total liability is attributable to households currently in social housing with a **working age primary householder** (such householders are expected to be in social housing for an average of 18 more years of their lifetimes, with an additional 4 to 5 years of AS receipt, and an average lifetime housing cost of $286k per household). This masks significant variation in cost for working age householders. Those further from the private market (in which Auckland is overrepresented) have an average liability about double the remainder ($321k versus $158k). This is not surprising as the higher IRRS directly leads to higher cost, but there are also durational effects – a household less close to the market will spend an extra five years in social housing.

» While a quarter of primary householders are **65 or older**, these households comprise only 10% of the total liability – primarily an age effect as they have fewer future years left in which to receive housing support (an average of 9.3 more years of their lifetimes, with an average lifetime cost of $141k). Future costs are also significantly higher for those further from the market.

» Those **on the register** make up less than 4% of the total liability – and on average can expected to be in social housing for an average of 10 years over their lifetime (with a further 10 years of AS receipt)

» The average liability for **recent exits** is higher for those who are exiting the register than for those who exit housing ($72k versus $46k). Part of this is due to incidence of AS receipt after exit (three fifths of individuals exiting the register are receiving AS at the valuation date, compared to one fifth of housing exits).

Change analysis

In 2014/15 we estimated the lifetime housing cost of adults in social housing or on the register to be $16.4b. We estimate the lifetime housing costs as at 30 June 2016 to be $18.7b.

The bulk of the increase is related to changes in the discount rate. This masks a $579m decrease due to throughput – an analysis of the actual versus expected cost of the 30 June 2015 social housing cohort, as at 30 June 2016. While any results re: attribution of this figure at a segment level should be considered alongside data limitations – the largest proportionate reductions are for working age NOMB primary householders closer to the market, which is consistent with policy intentions. Additionally, there has been a throughput reduction for working age NOMB primary households who are further from the market.

Re-engagement of recent exits

The throughput results for recent exits showed a large proportionate increase – a much higher level of return to the social housing system than predicted. Of the 22,000 clients who were recent exits at June 2015, one in ten have re-engaged with the system over the year to June 2016. Some of this may be data related – but we will continue to monitor.

Regional results

While Auckland represents just over a third of the national population, it has just under half of social housing places, and three-fifths of total future lifetime housing cost. While the Auckland effect dominates, some other regional variations are notable – Wellington and Canterbury have higher future lifetime costs driven by higher rents, and the Southern region has low numbers of social households and low lifetime costs, reflecting a relatively strong labour market and relatively low cost of private rental.

Compared to 2015, most regions saw decreases in average household liability after allowing for economic assumption changes. Relative to the national average, the largest decreases were in the Southern, Northland, Bay of Plenty and Waikato regions. The average household liability increased materially in Canterbury, and slightly in Taranaki, Nelson and Wellington. Canterbury's increase was despite rent indicators for the region decreasing.

Projected pathways

Compared to last year, households with a working age primary are now projected to exit the housing system sooner – leading to a higher proportion projected to be in receipt of AS. Households on the register are projected to move into housing faster. Recent exits from housing are now projected to be significantly less likely to receive AS in the next ten years, and less likely to re-enter social housing in the long term. Recent exits from the register are now projected to be significantly more likely to receive AS over the next ten years. Note data issues present in last year's valuation have been compounded by another IT system change which took place during the year – as such, housing data, and results should be interpreted with some caution.

Key predictors of future lifetime housing cost

The most important predictor for households in housing or on the register at 30 June 2016 is market rent – and is closely correlated with household size and IRRS level – large households tend to be in large houses with higher market rents, and higher market rents tends to lead to higher IRRS levels. Housing status is important – as those on the register tend to have lower housing costs. Age is important as older householders have fewer remaining years in a place, and younger households tend to exit faster. Benefit history and benefit status are also important.

3.2 Valuation population

There were about 63,500 households in social housing as at 30 June 2016 and another 4,300 households on the register[19].

Additionally, there are another 25,000 adults who have been in a social housing place or on the register sometime in 2015/16. In all, this gives about 150,000 adults[20] in scope for the current cohort valuation. The numbers of households and people are similar to the previous valuation. However, the number of households in CHP managed social housing places has increased from about 200 to 3,200. This increase was expected and is part of MSDs plan to increase the proportion of social housing provided by CHPs over time. A large portion of the CHP managed households are in the Maungakiekie-Tāmaki Local Board Area following the transfer of around 2,600 properties from HNZ to a CHP.

We group tenants into segments to better monitor performance and describe trends. Using the results of previous valuation, we have worked with MSD to develop a revised segmentation. This revised segmentation contains 23 segments shown in the figure below.

Figure 3.2 Segmentation of valuation population
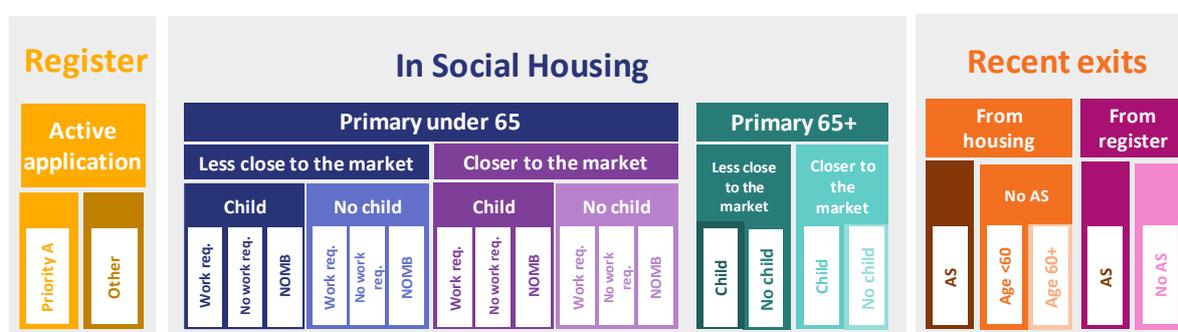
These segments naturally collapse to form five top tier segments based on a household's current social housing status. Those on the register are split according to the assessed priority of their application. Other segment splits are based on age, IRRS level, welfare benefit receipt and whether there are children in the household.

We use 'closer to the (private rental) market' to describe clients with an IRRS level ≤ $150 per week. Conversely, we describe those with an IRRS level above this level as 'further from the (private rental) market'. A client may be in receipt of a main benefit with work requirements (namely Jobseeker Work-ready, Emergency Benefit and Sole Parent Support with youngest child at least 3 years old), in receipt of a main benefit without work requirements (any other main benefit such as Supported Living Payment), or not on a main benefit (NOMB). Recent exit segments are split on whether people receive Accommodation Supplement (AS).

Of the social housing households:

» Almost five out of ten are in Auckland and of these:
  • Two out of five households are one- or two-person households in Auckland
  • Three in five households are in Auckland and have three or more people
» A further two in ten are in Wellington or Canterbury
» The remaining three in ten households are in other regions
» One in three households have a Māori primary householder
» One in four households have a Pacific primary householder

---

[19] These numbers differ from official statistics due to differences in how client status is determined for the purpose of our modelling. Please see Section 8.4.6 for further detail.
[20] We generally include signatory youth (aged 16 or 17) as 'adults' in our commentary.

Auckland households are larger, on average. In Auckland, 28% of households have five or more people, whereas this is true for only 13% of social housing places in other regions.

3.3 Trends over 2015/16

3.3.1 Overview of trends to key transition models

There are several transition models that drive movements through the housing system. The most important is the exit rate from social housing (particularly for primary tenants). This rate affects both the expected duration for those in social housing, but also the rate at which those on the register can enter. These assumptions were discussed in Section 2.2.2; we have increased the rate slightly, in the face of volatile trends in the data.

A second important model relates to whether clients enter AS or not when they exit social housing. This overlaps with benefit system status; those on benefit are much more likely to also receive AS. Overall, the proportion receiving AS in the quarter after housing exit was up two percentage points to 31%. However, this is driven by a larger number of exits amongst main benefit welfare clients (37% of exits in 2015/16, compared to 34% in 2014/15[21]). After adjusting for change in benefit status, the number receiving AS after exit actually fell slightly.

Transition rates from AS to no housing support for clients **not** receiving a main benefit have fallen materially over the past two years. Thus durations on AS have lengthened for these clients and so too lifetime cost. The lengthening durations have caused AS and TAS to increase as a proportion of total lifetime cost (10.7% to 11.8%).

New Housing Register applications amongst people known to the housing or benefit systems generally rose in the last few quarters in 2015/16, consistent with the overall trend discussed in Section 2.2.3. The effect was particularly pronounced for those aged over 65.

Finally, the mortality rate (applied to clients aged over 65) has plateaued in 2015/16. It had maintained a steady downward trend for the past 10 years, but saw limited improvement in the past year. Although we have retained the same rate of mortality improvement as the previous valuation, it starts from a (very slightly) higher rate of mortality than we otherwise would have expected.

---

[21] Percentages here only for primary tenants, who are most likely to be matched correctly to benefit system data.

3.3.2   IRRS payment levels

The level of IRRS support reflects how far a household is from being able to rent in the private market. Higher IRRS for a particular property can be driven by a high market rent, or a low household income, or a combination of both. Historically market rents have grown faster than income while average IRR levels remained flat; this creates a leveraged effect where IRRS has grown at 5.5% p.a. above the rate of CPI inflation over the past 15 years. This growth is a little slower in Auckland, but applies to a higher base; see Figure 3.3. IRRS now represents 69% of the market rent in Auckland and 62% in other regions. These trends have continued in 2015/16, with Auckland IRRS growth particularly large at 11.5% for the year (compared to flat CPI).

Figure 3.3 Average IRR and IRRS for those in social housing (dollars have been inflated to June 2016 dollars using the CPI index), for Auckland (left panel) and other regions (right panel)
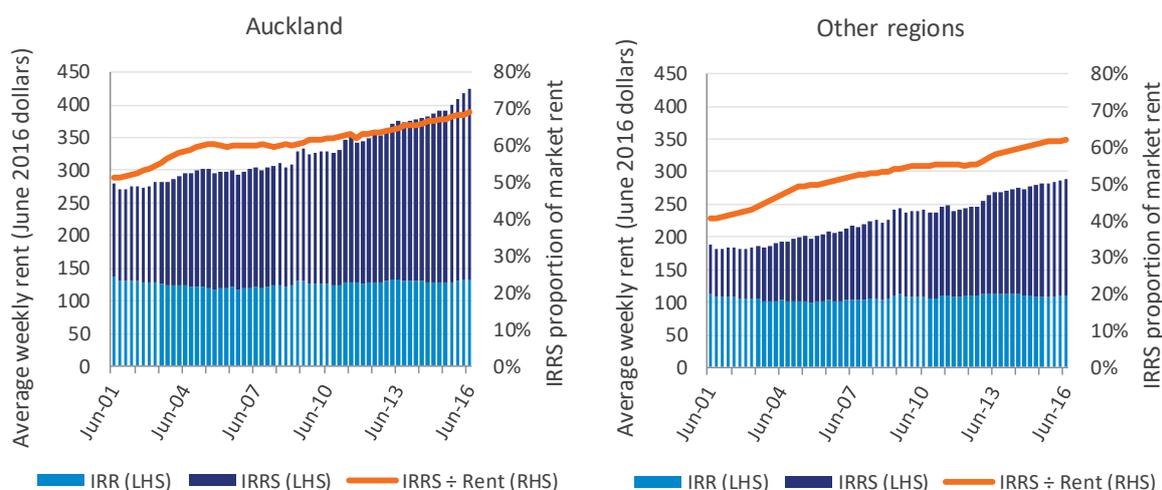
An increase in IRRS can also be an effect of transitioning those closer to the rental market to private rental and placing a household with a higher IRRS level in the subsequently available social housing place. However, in this case the IRR would show a strong decrease which is not observed. For example, replacing the 12% of households in social housing at June 2015 with the lowest IRRS levels with those with the highest IRRS levels over the year, the average weekly IRRS level would grow even more (around 20%) and the IRR would also decrease (around -14%).

3.3.3   AS and TAS payment levels

Average payment levels for AS were slightly up for the year, although the drivers of change were varied. The overall increase was less than we would have expected given the observed increase in market rents (higher market rents tend to increase the average amount claimed). The average increase in Auckland was higher than that seen in other regions.

TAS payments to those also receiving AS also increased over the year by about 8%. These payments represent a small portion of total lifetime cost and so the overall impact of this is small.

3.4   Segment level results

3.4.1   Lifetime housing cost

The table below expands on Table 2.2, showing the breakdown of the results by segment and average household cost and duration.

Table 3.1 Current cohort lifetime housing cost results[22]

Segment			# House-holds	# Adults	2016 Valuation IRRS payts ($b)	Future lifetime housing cost ($b)	Average HH future cost ($k)	# future years in social housing	2015 Valuation # House-holds	# Adults	IRRS payments ($b)	Future lifetime housing cost ($b)	Average HH liability ($k)	# future years in social housing
On register	Priority A		2,808	3,658	0.4	0.46	164	10.7	1,990	2,624	0.2	0.29	144	11.5
	Priority B and other		1,494	2,012	0.1	0.19	128	7.1	1,957	2,594	0.1	0.21	109	7.9
	Sub-total		4,302	5,670	0.5	0.65	152	9.4	3,947	5,218	0.4	0.50	127	9.7
IRRS recipients, primary aged < 65	Less close / IRRS > $150	Child in the household — Work obligated	8,575	15,540	2.6	2.86	334	19.9	8,361	15,362	2.3	2.51	300	21.3
		Not work obligated	8,405	17,375	2.8	3.04	362	20.4	8,531	17,702	2.5	2.74	322	21.6
		NOMB	7,577	20,044	2.5	2.70	356	19.5	7,231	19,255	2.2	2.33	322	20.5
		No child in the household — Work obligated	1,757	2,715	0.4	0.44	253	16.6	1,661	2,757	0.3	0.38	230	17.3
		Not work obligated	9,647	15,001	2.5	2.66	276	17.9	9,052	14,439	2.1	2.23	246	18.4
		NOMB	3,309	7,137	0.8	0.90	272	16.6	3,170	6,882	0.7	0.79	251	17.5
	Closer / IRRS ≤ $150	Child in the household — Work obligated	1,351	2,028	0.2	0.21	154	14.6	1,531	2,360	0.2	0.22	141	15.9
		Not work obligated	1,227	2,111	0.2	0.21	171	15.5	1,396	2,439	0.2	0.21	152	16.3
		NOMB	3,239	8,649	0.6	0.66	205	15.0	3,794	10,169	0.6	0.72	191	16.5
		No child in the household — Work obligated	417	532	0.0	0.05	116	12.7	454	588	0.0	0.05	101	13.2
		Not work obligated	2,336	2,853	0.2	0.28	119	14.8	2,655	3,298	0.3	0.29	109	15.4
		NOMB	2,216	4,578	0.3	0.30	134	12.4	2,685	5,656	0.3	0.34	127	13.9
	Sub-total		50,056	98,563	12.9	14.32	286	18.0	50,521	100,907	11.7	12.81	254	18.9
IRRS recipients, primary aged 65+	Less close / IRRS > $150	Child in the household	1,402	4,061	0.3	0.35	252	10.4	1,399	4,088	0.3	0.32	229	10.5
		No child in the household	9,119	13,877	1.3	1.34	147	9.4	8,513	13,027	1.1	1.13	132	9.5
	Closer / IRRS ≤ $150	Child in the household	220	608	0.0	0.03	136	9.3	235	645	0.0	0.03	112	8.7
		No child in the household	2,735	3,929	0.2	0.17	60	8.3	3,031	4,302	0.2	0.17	56	8.2
	Sub-total		13,476	22,475	1.8	1.89	141	9.3	13,178	22,062	1.5	1.64	125	9.3
Recent exit from housing	Receiving AS			3,140	0.2	0.33	104^	6.9		3,219	0.2	0.29	90^	7.8
	Not receiving AS	Aged <60		14,308	0.3	0.52	36^	2.8		9,851	0.2	0.32	32^	3.3
		Aged 60+		1,325	0.0	0.01	10^	0.4		1,537	0.0	0.01	7^	0.3
	Sub-total			18,773	0.5	0.85	46^	3.3		14,607	0.4	0.62	42^	3.9
Recent exit from register	Receiving AS			3,110	0.2	0.30	98^	5.5		4,038	0.2	0.35	87^	6.3
	Not receiving AS			2,566	0.1	0.10	40^	2.9		3,344	0.1	0.13	38^	3.7
	Sub-total			5,676	0.2	0.41	72^	4.3		7,382	0.3	0.48	65^	5.1
Total			67,834	151,157	15.9	18.12	224	13.8	67,646	150,176	14.3	16.05	203	14.7
CHP Loading												0.06		
Expenses						0.61						0.32		
Grand total						18.73						16.42		

^Estimated. Average future costs for recent exits are per individual, rather than per household.

The top-level segment results are that:

» Over 75% of the total liability is attributable to households currently in social housing with a working age primary householder. These households are expected to be in social housing for an average of 18 more years over their lifetimes, with a further four or five years of AS receipt. The average lifetime housing cost for these clients is $286k per household.

» In one in four households in social housing the primary householder is 65 or older. Despite this these households make up only 10% of the total liability. This is almost entirely an age effect; these clients have fewer future years left in which to receive housing support, and their expected duration in housing is half that of those under 65.

» The liability attributable to those on the register is $0.65 billion, which is less than 4% of total liability. These households are expected to be in social housing for an average of ten years over their lifetimes, with a further ten years of AS receipt.

» Those who have recently exited social housing or the register make up about 7% of the liability. Among these clients about 60% of the future cost is IRRS compared to 90% across other segments; more of their future cost is attributable to AS and TAS.

Figure 3.4 compares, by segment, average household future lifetime housing cost as well as the future years in social housing and AS receipt. For example, Priority A applications on the social housing register have an expected lifetime cost of $164k per household, 10.7 future years in a social housing place (which is three quarters of the total cost), plus 9.5 future years receiving AS. This segment is thus expected to receive 20 years of future housing support.

---

[22] The expenses in this table are those attributed to the current cohort, this excludes some large appropriations related to emergency housing as discussed in Section 7.3.

Valuation of the Social Housing System
30 June 2016

Figure 3.4 Average household future lifetime housing cost and futures year by segment
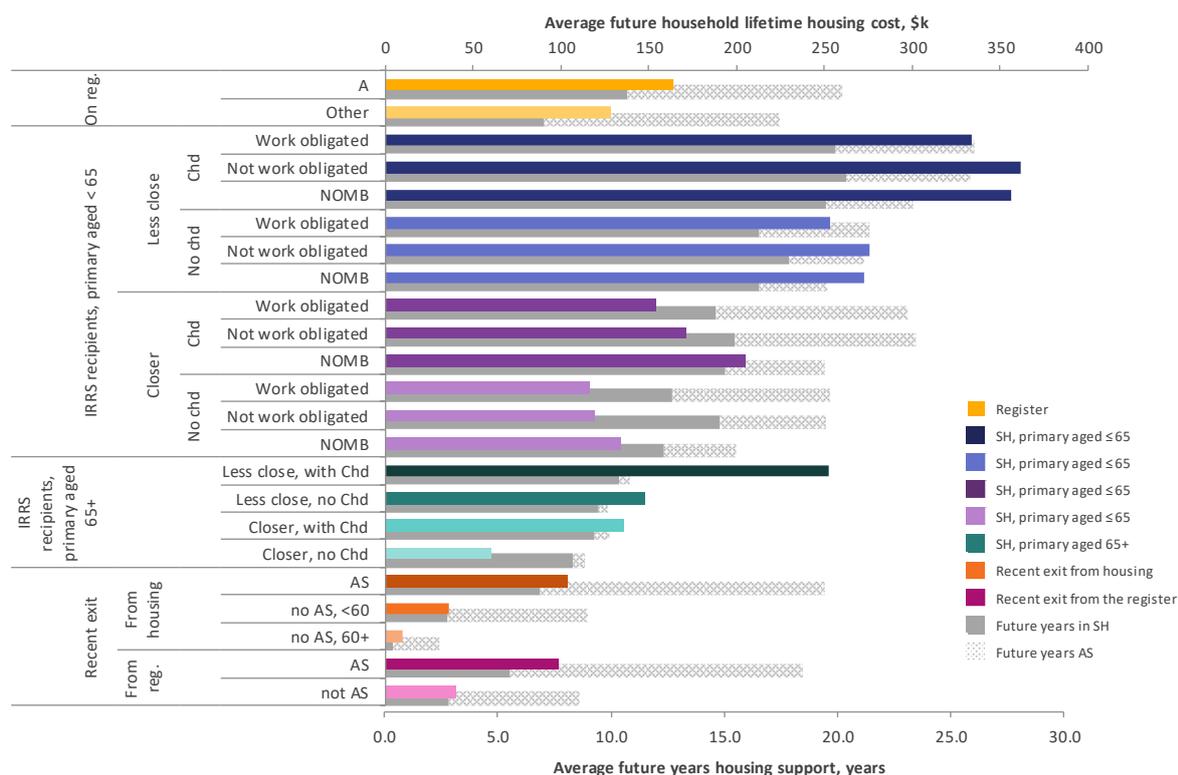
Using the table and figure above, we can drill further into how future housing cost differs by segment.

Housing register

The average lifetime cost for Priority A households is 30% higher than for others on the register. This is primarily due to their faster rate of entry into housing; Priority B households are moved into a house more slowly and a larger proportion of them move off the register before being placed.

The primary householders for Priority A applicants are also expected to receive more AS over their lifetime; this suggests both important compositional differences between the two groups and that 'need' as measured by the register correlates to benefit system need too.

Working age social households

The navy and purple shading in Figure 3.4 show the tremendous variation in lifetime cost for different types of households. The second tier of the segmentation is closeness to the private market (as indicated by IRRS support level). This is related to income, but also tightly related to household size and region. For instance, 53% of those further from the market are in the Auckland region, compared to 17% of those households closer to the market. That lifetime cost is higher for those further from market (about double – $321k versus $158k) is not surprising; the higher IRRS directly leads to higher cost. More importantly, there are clear duration differences too. A household less close to the market will spend an additional five years in social housing. While other correlated factors such as age and household size contribute to this, IRRS level is very important; it forms a financial barrier to social housing exit.

When comparing those closer and further from the market, a substitution effect is also evident in the chart; those closer to market have shorter future duration in housing, but longer duration in AS. Total years of housing support is thus more balanced across the two groups.

The third tier of the segmentation is whether there are children in the house. This is more common for households further from the market (57% of households, compared to 51% for those close to market). Households further from the market with children have lifetime cost $78k higher than those without children. The difference is $61k for those closer to market. Again, these differences are also reflected in expected duration in social housing; those households with children typically have an additional two years in a social housing place.

The final tier relates to benefit status, including whether a work obligation exists. Again, there are compositional differences amongst the tiers (those on benefit and with children are more likely to also have a work-obligated benefit). Social housing durations are typically a little higher for those with a benefit without a work-obligation.

Further understanding of how different effects contribute to segment-level results can be gained by looking at the impact charts in Figure 3.5. The top-left panel shows how future social housing duration differs for households who are working-age, further to market, with children and with a work-obligated benefit (and compared to all working age households). These households have a duration that is two years longer than the average for the top-tier segment, but the drivers of this are varied. While the higher IRRS levels adds about a year to duration, the age of the primary householder adds even more; segments with children are typically younger (mostly in the age range of 30-50), which increases future duration compared to tenants without children, typically aged 50-65.

Similar conclusions can be drawn for the other two working-age panels. Regional effects (often dominated by Auckland versus non-Auckland effects) are particularly important for those closer to market, with children and a work-obligated benefit.

Figure 3.5 Breakdown of impact on future years in social housing by key components for various segments. Impact is relative to top-tier segment (e.g. Working-age households in social housing).
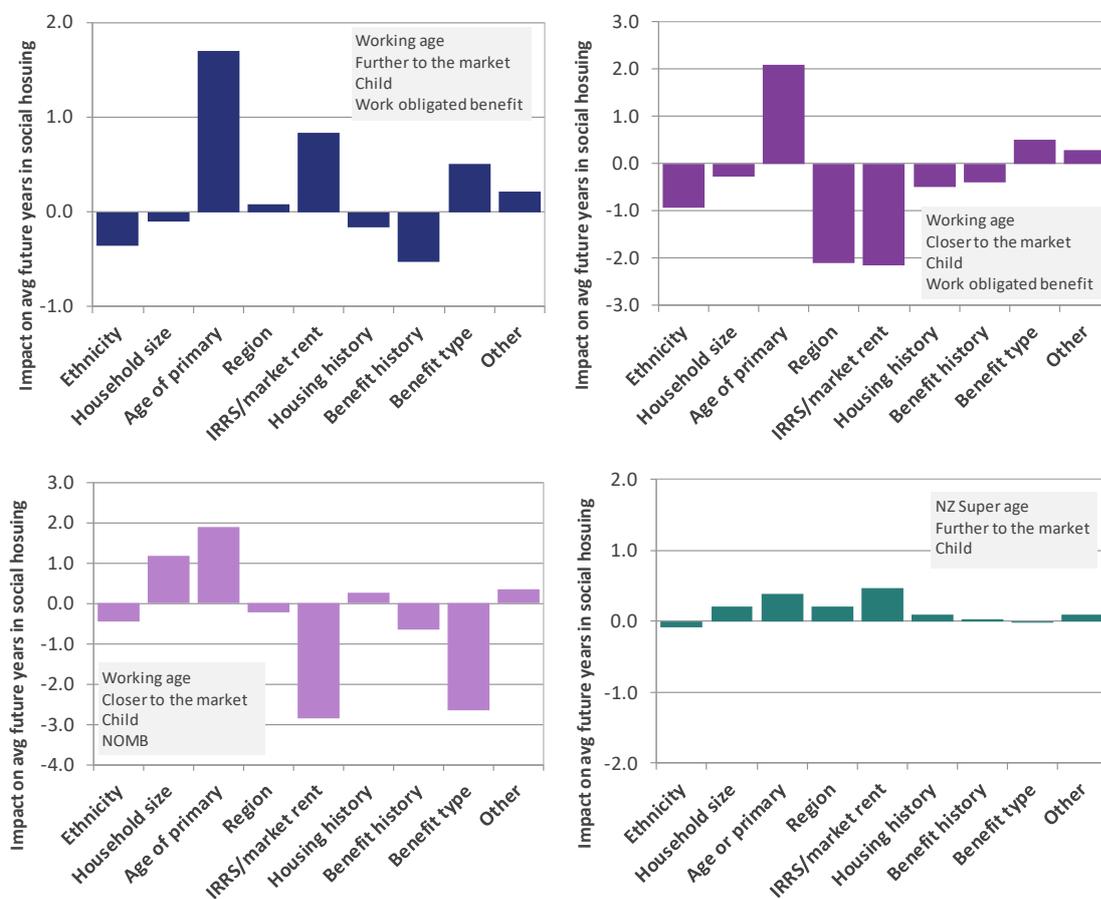
Households with primary householder aged over 65

Households in social housing with older primary householders have about half the future cost and duration compared to those with working-age primary householders.

The average lifetime cost for those with children (aged under 18) is $109k higher than those without. However, this difference is not reflected in longer social housing duration for the primary householder. The cause of this is household composition, those with children usually have an intermediate generation; 73% of these households have a non-signatory adult, typically aged between 18 and 40. Future housing costs for these people are considered in scope and added to the household average. For households without children, only 19% have a non-signatory adult.

Future costs are also significantly higher for those further from the market (with higher IRRS). This is primarily a direct consequence of the higher weekly IRRS cost; durations are not markedly longer, since the main cause of exits for these segments is death.

The lower right panel of the impact charts in Figure 3.5 shows that while the overall differences between segments are small, variables such as age and IRRS are important compositional differences.

Recent exits

For recent exits the average future lifetime cost is higher for those who exit the register than for those who exit housing ($76k versus $46k). Part of this is due to the incidence of AS receipt after exit; three-fifths of individuals exiting the register are receiving AS at the valuation date, compared to one-fifth of housing exits.

However, even just consider those who are receiving AS we see slightly higher average costs for register exits. This effect is suggestive of higher need amongst register exits compared to housing exits – many housing exits were paying close to market rents and not on a main benefit, whereas many register exits are people receiving a benefit. Another important difference between the two groups is that many housing leavers are young adults (children of the primary tenants) with little other benefit history, many of whom are not projected to interact heavily with social housing.
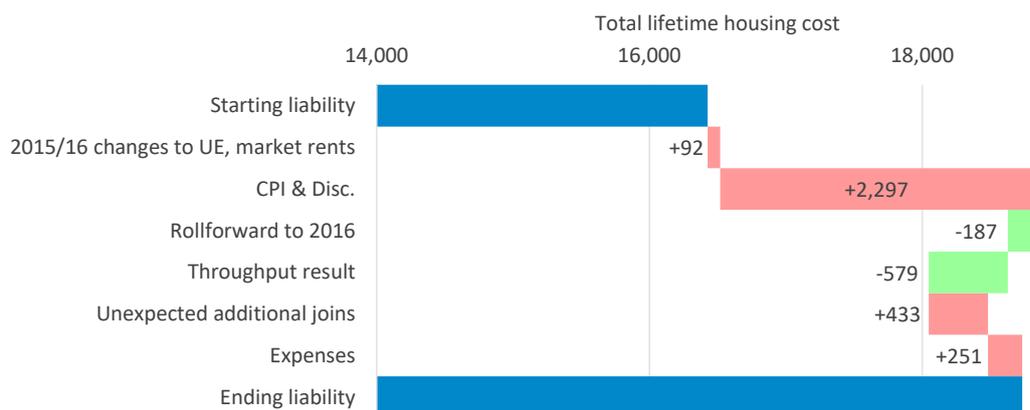
People in AS segments have higher costs, driven by both longer future duration receiving AS plus more expected years in social housing (due to a higher probability of re-joining the register). For those on AS, projected number of years with housing support (IRRS or AS) is comparable to many of the segments in social housing.

Future IRRS cost is still 60% of the projected lifetime housing cost for these clients, even though they are neither on the register or in a social housing place.

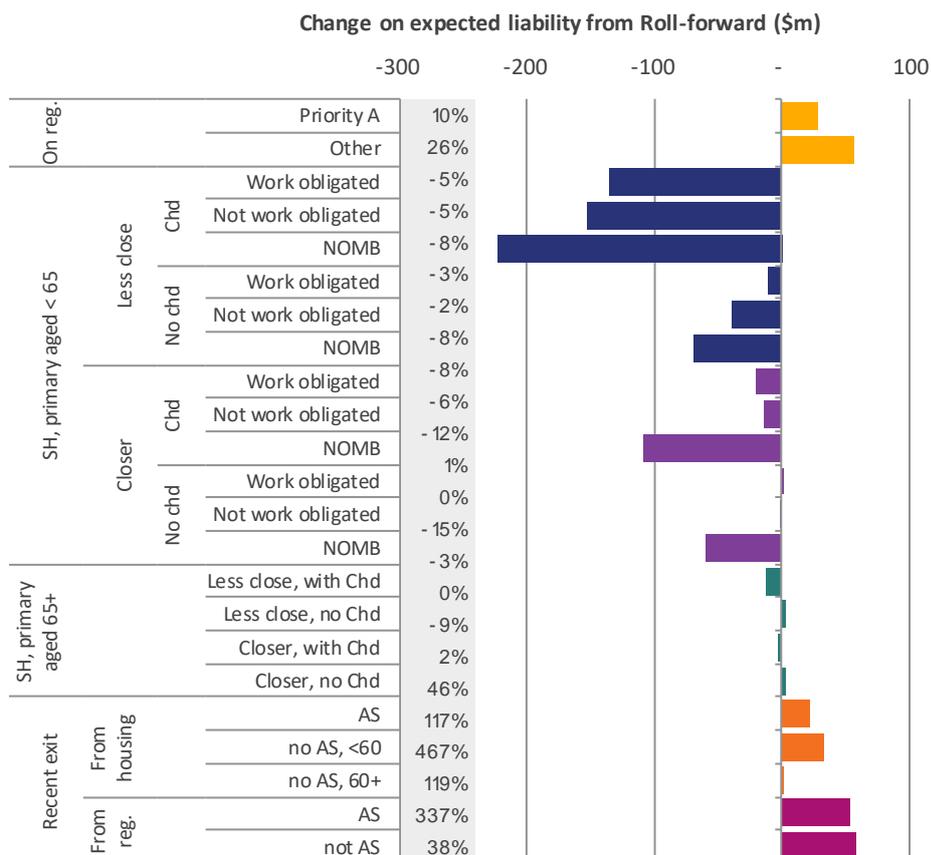### 3.4.2 Change analysis and throughput

There are many factors that drive the change from the $16.4 billion estimated in the previous valuation. We isolate the most important in the figure below, a reproduction of Figure 2.6.

Figure 3.6 Change in total liability between 2015 and 2016

Total lifetime housing cost

Starting liability	
2015/16 changes to UE, market rents	+92
CPI & Disc.	+2,297
Rollforward to 2016	-187
Throughput result	-579
Unexpected additional joins	+433
Expenses	+251
Ending liability	

Throughput is a useful indicator of change in how existing households are moving through social housing. It shows a $579m decease over the year, although some limitations were discussed in section 2.2.2. The throughput results can be broken down to a household or individual level; this allows us to see how throughput has varied by segment (as at 30 June 2015). This is shown in Figure 3.7.

Figure 3.7 Breakdown of change due to experience by June 2015 segment

Change on expected liability from Roll-forward ($m)

On reg.		Priority A	10%	
		Other	26%	
SH, primary aged < 65	Less close / Chd	Work obligated	-5%	
		Not work obligated	-5%	
		NOMB	-8%	
	Less close / No chd	Work obligated	-3%	
		Not work obligated	-2%	
		NOMB	-8%	
	Closer / Chd	Work obligated	-8%	
		Not work obligated	-6%	
		NOMB	-12%	
	Closer / No chd	Work obligated	1%	
		Not work obligated	0%	
		NOMB	-15%	
SH, primary aged 65+		Less close, with Chd	-3%	
		Less close, no Chd	0%	
		Closer, with Chd	-9%	
		Closer, no Chd	2%	
Recent exit	From housing	AS	46%	
		no AS, <60	117%	
		no AS, 60+	467%	
	From reg.	AS	119%	
		not AS	337%	
			38%	

Regarding the segment-level throughput results:

» For households in social housing at June 2015 there has been a decrease in lifetime future cost as future durations have decreased. The largest proportionate reductions are for working age NOMB

primary householders closer to the market. This result is **consistent with policy intentions**. Tenancy reviews aim to increase social housing exit rates for those most able to manage in the private rental market and free a place for a needier household on the register.

» The throughput reductions for working age NOMB primary households who are further from the market are also significant.

» The future lifetime costs for those on the register at June 2015 have increased; this is partly a result of more households than expected moving into a social house over the year. When considered in the context of notional liability (see Sections 2.3.2 and 4.4), we view this as an encouraging trend.

» Very high numbers of recent exits re-engaged with the social housing system compared to what we projected. This is discussed further in the next subsection.

» Data limitations are also relevant when considering results. In particular, higher exits amongst non-signatory adults contribute to the result, but may be due to rates of exit being unreasonably low in the previous valuation due to under reporting (see Section 2.2.2).

3.4.3   Re-engagement of recent exits

The throughput results for recent exits shows a large proportionate increase. This indicates a much higher level of return to the social housing system than predicted.

The definition of the valuation cohort is those adults interacting with the social housing system in 2015/16. If someone is a recent exit at 30 June 2015 and does not enter a social house or the Housing Register, then they drop out of the June 2016 valuation cohort. The throughput result is thus primarily due to a much higher than expected proportion of recent exits re-engaging with the social housing system in 2015/16.

We will monitor this result closely in future years; it may be that data irregularities implied exits where many had not actually left a social house or register. If such effects are consistent over time, we can allow for them by increasing our assumptions for the rate of re-engagement.

The figure below shows the segment at June 2016 for those who were recent exits at June 2015. Of the 22,000 clients who were recent exits at June 2015, roughly one in ten have re-engaged with the system over the year to June 2016. This rate was much higher for register exits compared to housing exits.

Figure 3.8 Recent exits at June 2015 by June 2016 segment
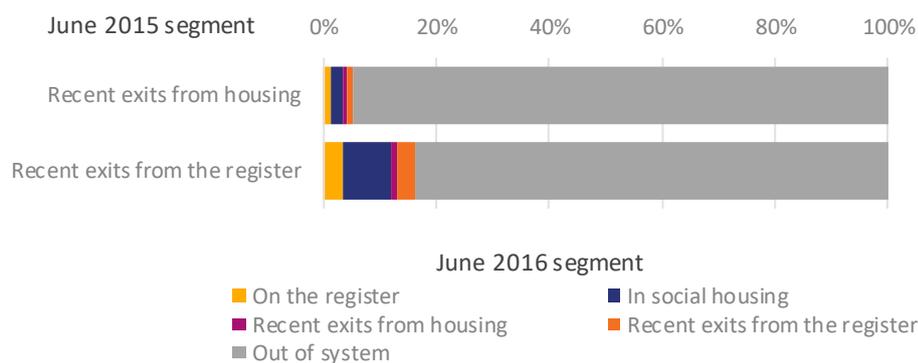
Compared to what was projected in the previous valuation, those who were recent exits at June 2015:

» Made more register applications (around 350 register applications per quarter, compared to around 200 projected).

» About 250 people per quarter entered housing directly (not via the register). This occurred mostly in the September 2015 quarter, where 500 people entered housing without appearing on the register. It seems likely that this spike is related to the data migration that occurred in that quarter.

» Around 1,200 were in housing at the end of June 2016 compared to around 400 projected.

The resulting liability for this group at 30 June 2016 was $312m, compared to an expected value of $171m.

3.4.4　Joins to existing households

The change analysis in Figure 3.6 also showed a large increase to the liability attributed to unexpected joins over the year to 2016. The liability associated with people who entered the social housing system over the 2015/16 year is $0.43 billion higher than expected. As shown in Figure 3.9 this is driven by far more adult additions to existing households than expected (that is, entries not via the Housing Register).

Figure 3.9 Breakdown of Joins over 2015/16 compared to roll forward

Joins: Actual and expected liability ($m)
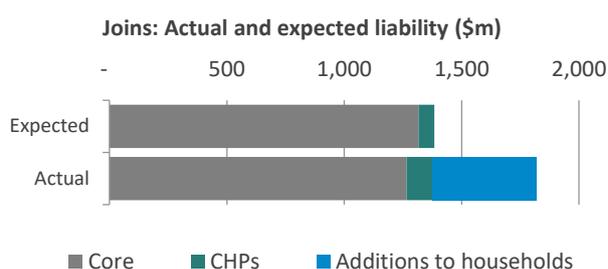
This is likely, at least in part, related to the data migration in the September 2015 quarter. As with re-engagement, we will continue to monitor this area carefully.

3.5　Regional results

3.5.1　Lifetime housing cost

There are regional[23] differences across New Zealand in private rental markets, labour markets, demographics and average AS levels. These factors lead to large variations in both need of housing support and lifetime housing costs. The figures below compare the distribution of population, social housing household population and liability. Figure 3.10 shows Auckland is significantly overweight in terms of both numbers of households and future cost; the Auckland region represents just over a third of the national population, but just under half of social housing places and three-fifths of total future lifetime housing cost.

Figure 3.10 Regional composition of lifetime housing cost – households in social housing only


---

[23] As discussed in Chapter 8, we model and forecast at a TLA level (and board level for Auckland). However, this report generally gives results at a regional level for interpretability and brevity.

The Auckland effect is large and squeezes out other regional effects; we show these in Figure 3.11 where the Auckland region has been excluded.

Figure 3.11 Regional composition of lifetime housing cost, excludes Auckland – households in social housing
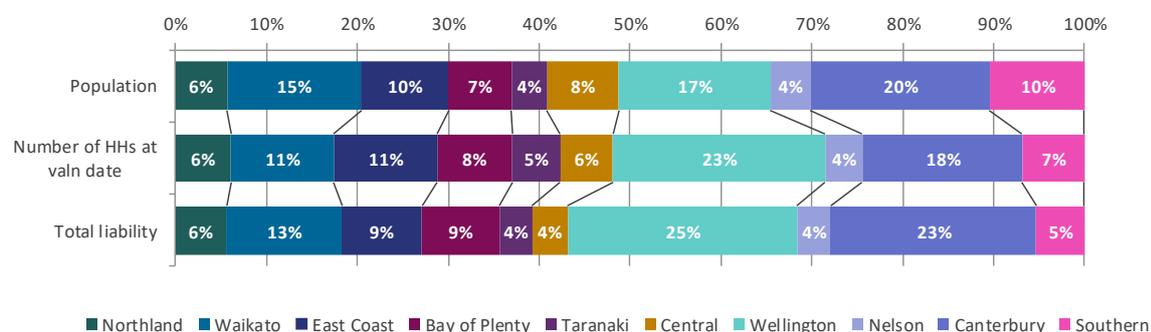
With Auckland removed, some further interesting regional variations are observable in the figure:

» Wellington and Canterbury have higher future lifetime costs driven by higher rents in these cities. Higher rents generally led to higher IRRS levels (income doesn't increase proportionally by region), longer durations in housing (as households are further from the private market) and, the average AS payment level is higher.

» Waikato is also overweight in terms of future housing cost; average IRRS levels in Waikato are fairly close to the (above-average) levels seen in Wellington, despite a cheaper rental market. Compared to Wellington, houses are a little larger in Waikato, on average, and IRR contributions a little lower.

» Southern is underweight in terms of both number of social households and lifetime cost, this reflects a relatively strong labour market and a low cost of private rentals.

Because the number of households is generally limited by the supply of housing rather than the demand for housing we can't conclude that demand is low for regions where the social housing population is underweight. We discuss demand further by considering register applications in Chapter 4.

Figure 3.12 shows how the average household lifetime cost for those in social housing varies by region and compares this to both the:

» Average cost at June 2015
» Average cost at June 2015, but updated for changes to economic assumptions (including lower discount rates).

Most regions saw a decrease in average household liability after allowing for economic assumption changes. Relative to the national average, the largest decreases were in the Southern, Northland, Bay of Plenty and Waikato regions. Auckland and East Coast regions had smaller proportionate decreases. The average household liability increased materially in Canterbury and slightly in Taranaki, Nelson and Wellington regions. The Canterbury movement is opposite to market rent movements; rent indicators for the region decreased in 2015/16, which means we'd expect the average household lifetime cost to decrease. However, a combination of changes to the social housing population and higher social housing rents (despite the decrease in the private rental market) led to the increase visible in the figure. Our 2016 cohort had 400 (or 7%) more households in social housing in Canterbury at June 2016 compared to June 2015, with repaired HNZ stock becoming available as well as 136 CHP properties being visible. This is the largest regional change in both relative in absolute terms. The increase in average cost in Canterbury may also reflect the entry of higher need households.

Figure 3.12 Lifetime housing costs for current clients compared to the previous valuation – households in social housing only
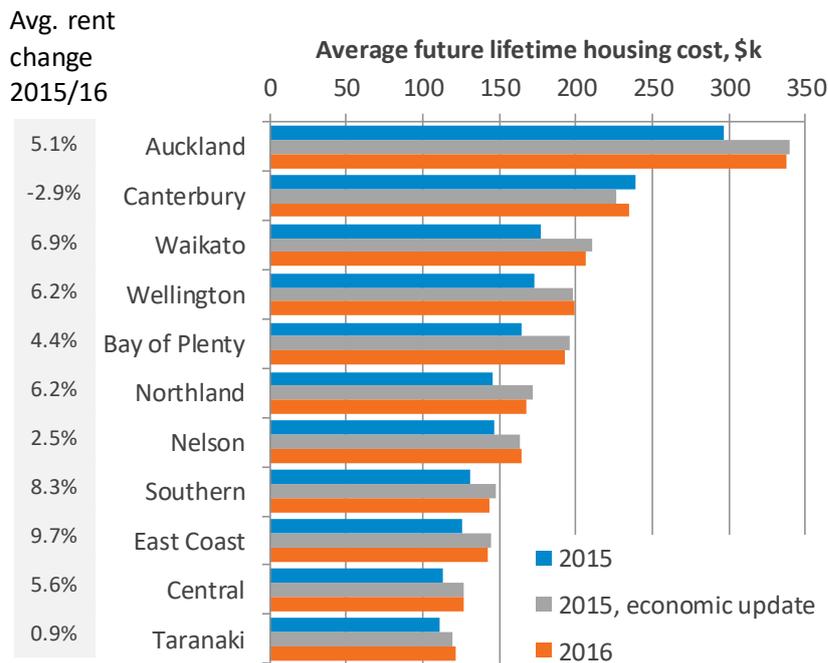
Average future lifetime housing cost for households is shown by territorial authority and Auckland local board in Figure 3.13. The map shows that there is considerable variation between territorial authorities in the same region. This is to be expected – rents vary significantly between territorial authorities and local boards, and there are also significant demographic differences which will affect the averages.
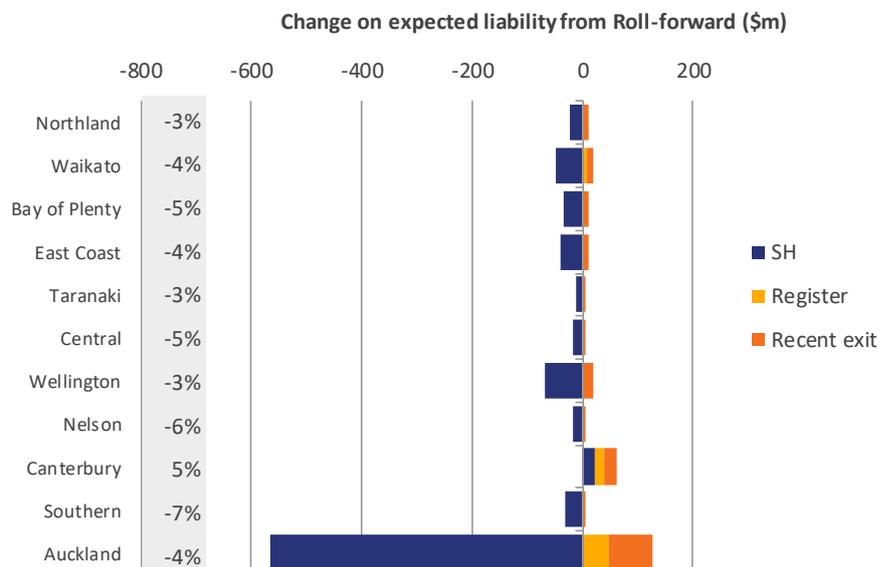
Figure 3.13 Regional variation of average future lifetime housing cost – households currently in social housing only
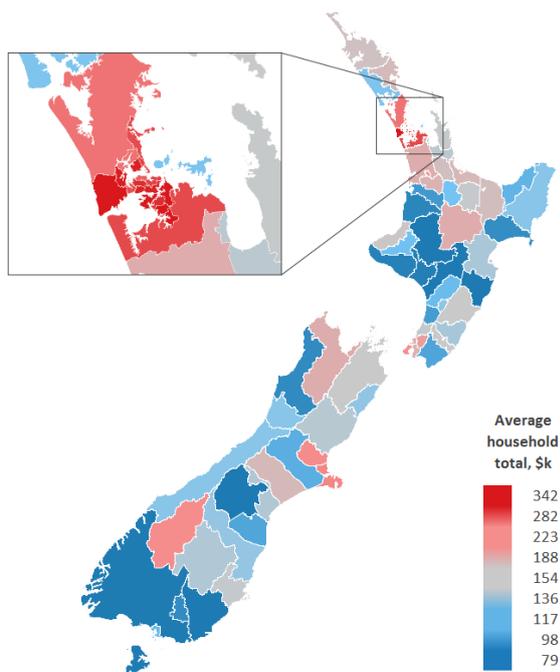
3.5.2   Throughput by region

Figure 3.14 splits the $579m throughput decrease by region at 30 June 2015. This is shown in the figure below.

Figure 3.14 Throughput change by region and social housing status (at June 2015)


Notably:

» The throughput increases for those on the register and recent exits are visible nationwide.

» Canterbury was the only region to see a throughput increase for those in social housing.

» Auckland has had the largest absolute decrease for those in social housing. Its contribution to the total decrease was slightly larger than its portion of lifetime cost.

» In relative terms, Southern, Nelson, Central and Bay of Plenty saw similar decreases, although the small size of the social housing portfolios in these regions make results more volatile year to year.

3.6   Projected pathways

The pathway plots below show the average housing projection pathway for top-level segments and compare this to at the previous valuation.

Figure 3.15 **Lifetime plots for various housing segments compared to the previous valuation; first 40 years**
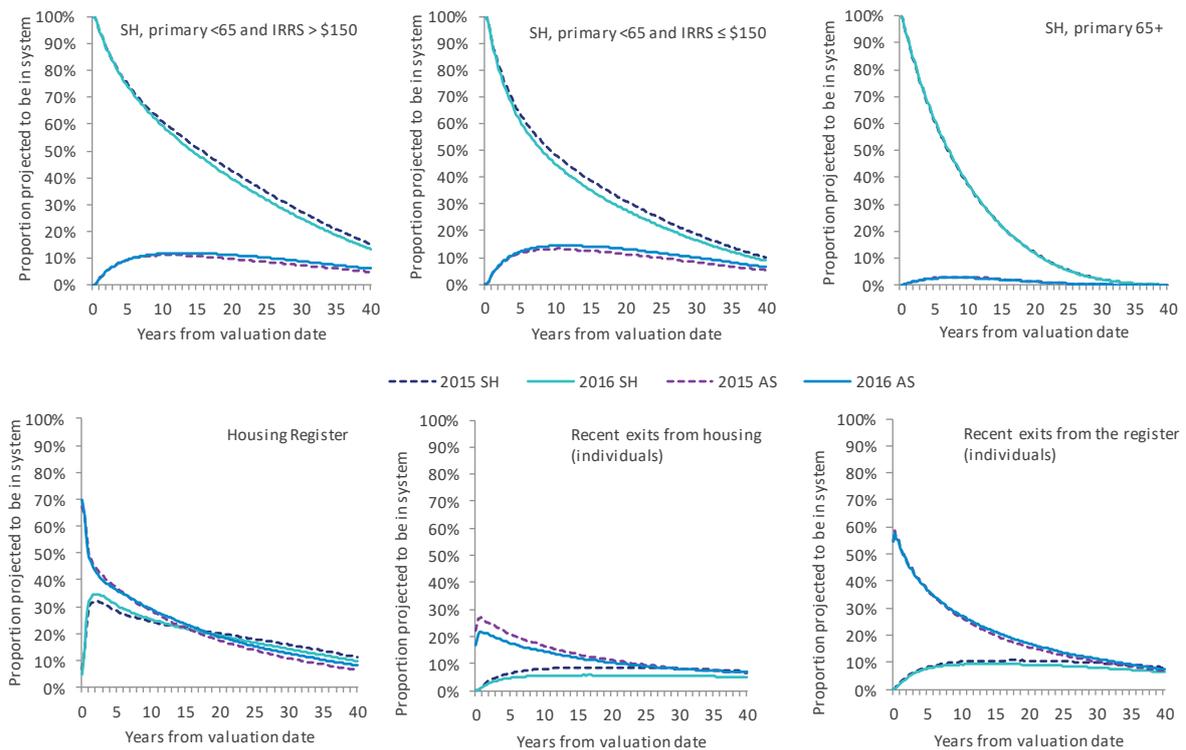

We observe:

» Households with a working age primary householder (top left and centre) are now projected to exit the housing system sooner and this in turn leads to a higher proportion of AS receipt.

» Pathways are unchanged for those household where the primary is aged 65 and over.

» Households on the register are now projected to move into housing faster, and subsequently exit housing faster too.

» Recent exits from housing are now projected to receive less AS in the next ten years and are less likely to re-enter social housing in the long term.

» AS receipt among Recent exits from the register is similar to last year. Projected future entries to social housing are slightly less than last year and the rate is about 1.5 times that of those exiting from housing.

It is interesting to explore differences in pathways across (lower-level) segments, however this is complicated by distributional effects; for example, if a higher proportion of clients live in Auckland within a given segment then that segment will show slower social housing exit rates, all else being equal. We have attempted to partially control for this in the figure below which shows the lifetime projections for those currently in Auckland with a primary householder aged 35-40 inclusive.

Figure 3.16 Pathways by segment at June 2016 for households in Auckland with a primary age 35-40 inclusive and on the register (left panel), in a social house with a child and NOMB (middle panel), and in a social house with a child (right panel).
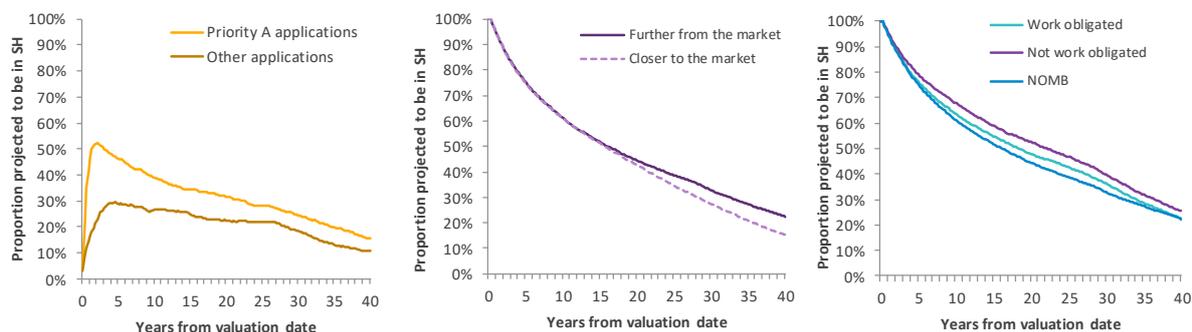
While some distributional effects will still be present we can see:

» In the left panel, Priority A applications enter housing at a much faster rate than other applications; this reflects the effectiveness of the prioritisation process and is in line with policy intentions.

» In the middle panel, those closer to the (private rental) market are less likely to be in social housing in the long term, although the difference is less visible in the short time. This effect is interesting; the higher exit rates generally seen for those closer to the market in Auckland are counteracted by other factors.

» In the right panel, those on a main benefit but without work obligations show the slowest exits. These clients typically have long-term health conditions and disabilities, so a lower ability to transition to the private housing market is intuitive. Those not on main benefits exit faster; their IRRS is generally lower and higher throughput for these tenants is in line with policy objectives.

3.7   Future cohorts and total IRRS

The overall future cost of the social housing system is relatively easy to forecast – assuming a near full housing portfolio (which our forecast does), total cost is the average IRRS level (inflated for rent increases) for this housing portfolio. Total IRRS paid is then a combination of households (and individuals) who:

» Are in the current housing cohort, as described in Section 3.2
» Are not in the current housing cohort, but are in the current welfare cohort
» Have not interacted with the housing or welfare systems in 2015/16.

IRRS payments for the next five years are shown in Figure 3.17 as attributed to these three groups.

Figure 3.17 Forecast total IRRS payments (HNZ and CHPs current and planned places)
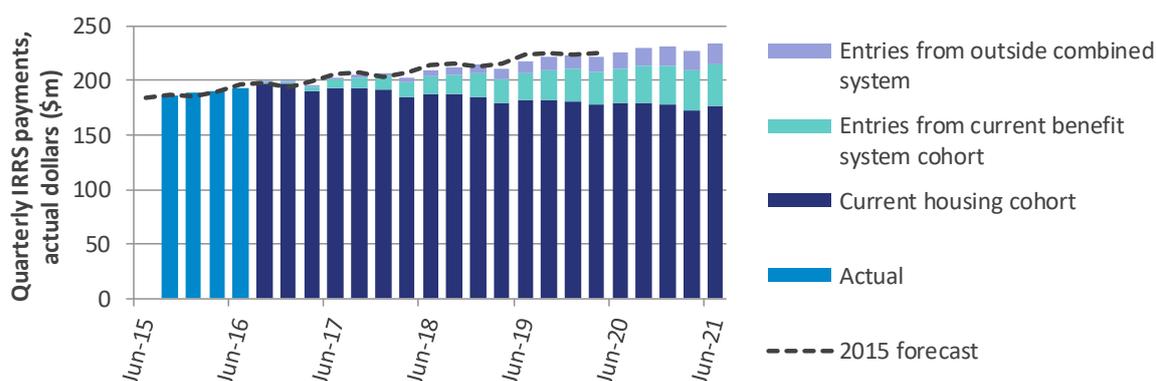
Total IRRS is forecast to grow at 4% p.a. in absolute terms for the next five years – quarterly IRRS is forecast to grow from $193m to $234m over this period. This is slower than the average rate over the last 5 years' growth (about 6.2% p.a.). This slower rate partly reflects lower rental growth assumptions than seen in the recent past[24]. Rental growth is assumed to be about 0.75% higher than AWE over the next five years, and Treasury forecasts for AWE for the next five years are low at 2.5%. Payments to adults currently in social housing places are projected to decrease slowly; this reflects a combination of increasing rates of housing exits as clients age offset by higher IRRS payments for those who remain as growth in rents continues to outstrip growth in wages. Payments to current tenants are about three-fifths of the total over the next twenty-five years. Another one fifth of payments will be to people in the benefit system cohort (current and recent beneficiaries entering social housing places), and the remaining fifth of payments will be to applicants from outside these groups.

3.8   Key predictors

There are many factors included in our model which are predicative of future lifetime housing cost. In the figure below we show the relative importance of some of these. As with most analyses of this type, the link is statistical rather than causal – we do not attempt to attribute causality to any identified risk factor.

The most important predictor is market rent, with household size third and IRRS level sixth. These three variables are highly correlated; larger households tend to be in larger houses with higher market rents, and higher market rents tends to lead to higher IRRS levels.

Current housing status separates households on the register and already in social housing. Those on the register have a substantial probability of exiting the register without entering social housing, and those that do enter social housing will have some delay before they receive IRRS support. Both these effects decrease lifetime cost.

Age of the primary householder is also very important. Older householders have fewer remaining years, while the youngest households also exit relatively quickly.

Benefit history and benefit status are also important. For example, more time on jobseeker benefits lowers exit rates from social housing.

Figure 3.18 Relative risk factor importance for lifetime housing cost, for households in housing or on the register at the valuation date

Relative importance

---
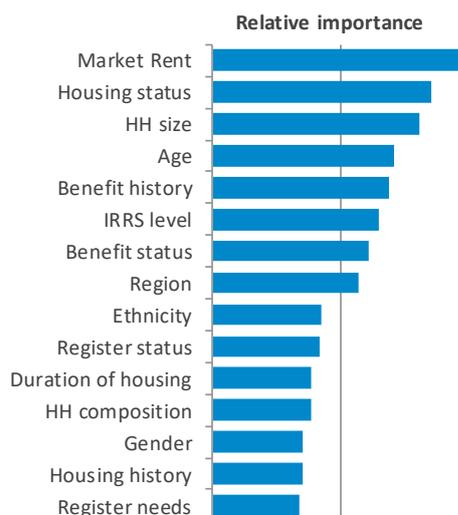
[24] The sensitivity of valuation results to rates of rental price growth are discussed in Section 6.3.

Some factors, particularly IRRS level, contribute to both the time in social housing as well as the cost per unit time. To help unpick this, we can also consider what drives expected future **duration** in social housing, rather than cost. Figure 3.19 shows a similar risk-factor importance chart in predicting how many further years a household[25] will spend in social housing.

When switching to duration, age (of the primary householder replaces market rent as the most important predictor. The importance of age is fairly unsurprising – older clients have less future years left to spend in social housing, so exit faster. At younger ages clients are also more likely to exit social housing, which offsets the increase relating to more future years.

Benefit history is the second most important predictor. As above, more time on benefits increases expected duration in social housing.

Region is third. All else equal, people tend to stay in social houses longer in the bigger cities, especially Auckland. IRRS level is next; it is important to note this variable (along with region and market rents) are very important for predicting duration, not just cost; households requiring a higher IRRS level and in regions with high market rents are less likely to exit social housing.

Figure 3.19 Relative risk factor importance for future duration in social housing, for households in housing (primary under 65) at the valuation date
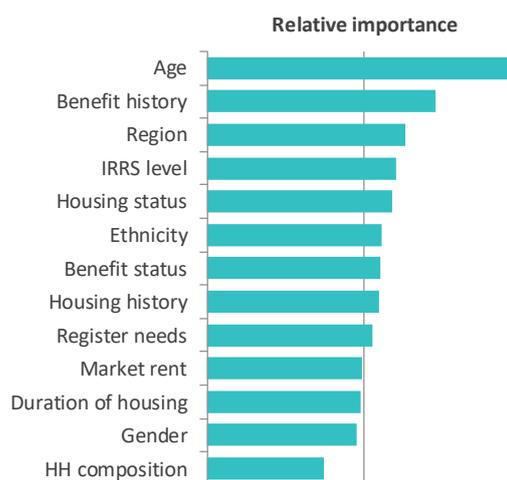
Compared to predicting lifetime cost (previous figure), market rent and IRRS level are relatively less important and everything else relatively more important.

For households in social housing or on the register at June 2016 our projection shows large variation in the number of future years in social housing. In Figure 3.20 we have taken all households in social housing, and grouped them into deciles based their expected future years in social housing. The 10% of households in the highest decile (on the left) are expected to spend a further 25 years in social housing, on average. Those in the lowest decile are expected to spend just 6 years.

---

[25] Or more accurately, a primary householder

Figure 3.20 Future years in social housing split by decile – households in social housing or on the Housing Register
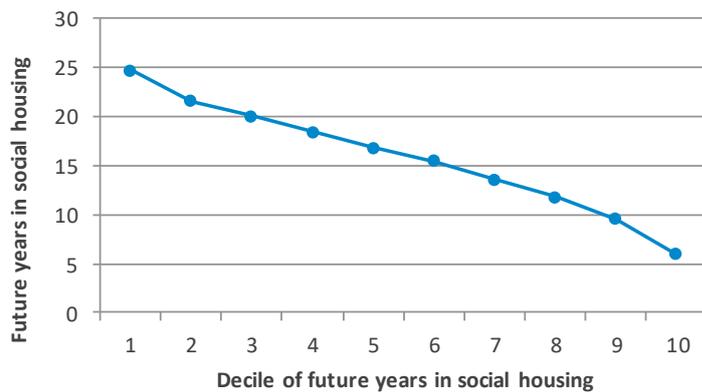
Partial dependence plots[26] for some of most important predictors are shown in Figure 3.21 for future duration and Figure 3.22 for lifetime cost. The plateau seen for age less than 40 reflects the higher housing exit rates for these tenants balancing out the additional years of potential housing support. Above age 40 every additional five years of age reduces future duration by about 1.7 years (holding other factors constant).

The level of weekly IRRS support can add up to $80k in extra lifetime cost. This effect applies continuously as IRRS increases, but the shape is different when considering future duration. Future duration increases strongly with IRRS (about two years per $100 of IRRS) until about $300 per week; beyond this the duration is uniformly high.

Regional effects are also material, noting that these are on top of any regional differences caused by differing market rents and IRRS levels.

Current benefit receipt is also a strong predictor, the partial dependence effect shows households where the primary householder is Not On Benefit (NOB) will spend an average of 1.8 years less in social housing than an equivalent household where the primary is a work-ready jobseeker (JS-WR) and 3.2 less than a supported living client (SLP).

---

[26] An 'all else equal chart' – it shows the average effect of a variable on duration or cost, while holding all others factors constant.

Figure 3.21 Partial dependence effects – average future years in social housing, holding all other factors constant. The blue line is the effect size (left axis), and the grey bars the number of households (right axis).
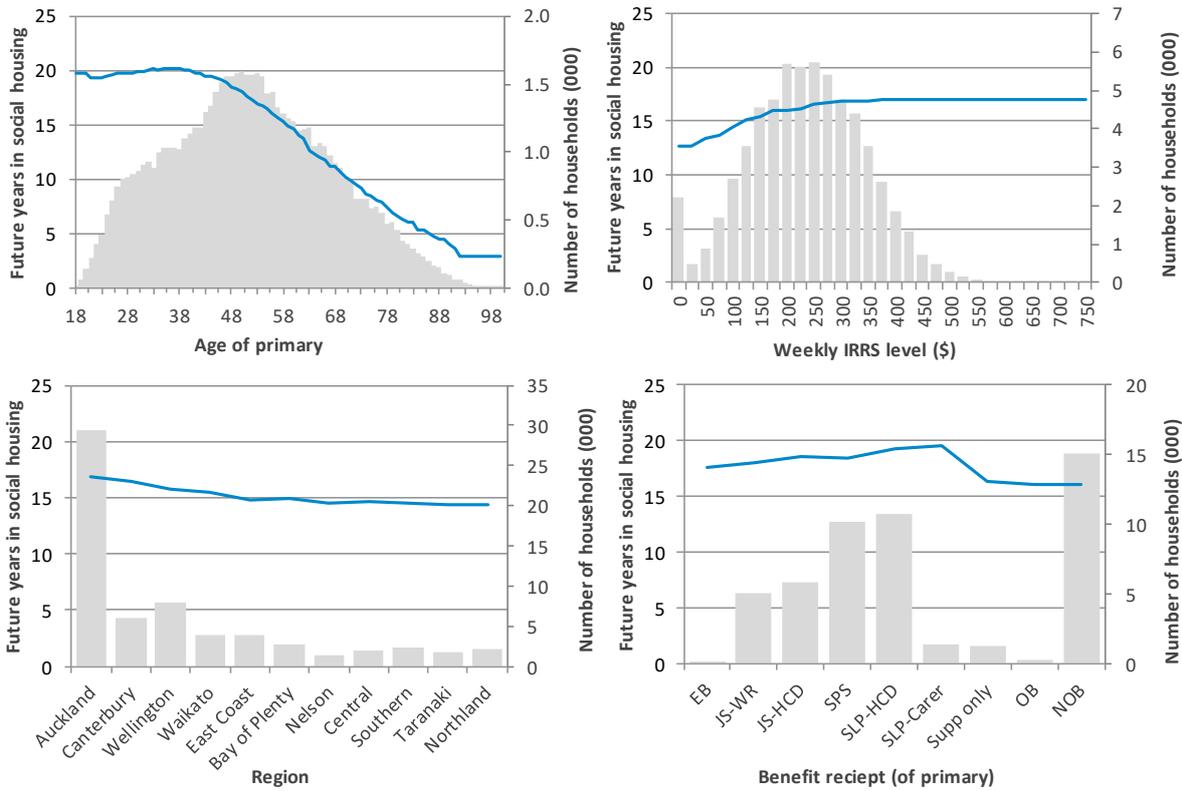
Figure 3.22 Partial dependence effects – average future housing cost
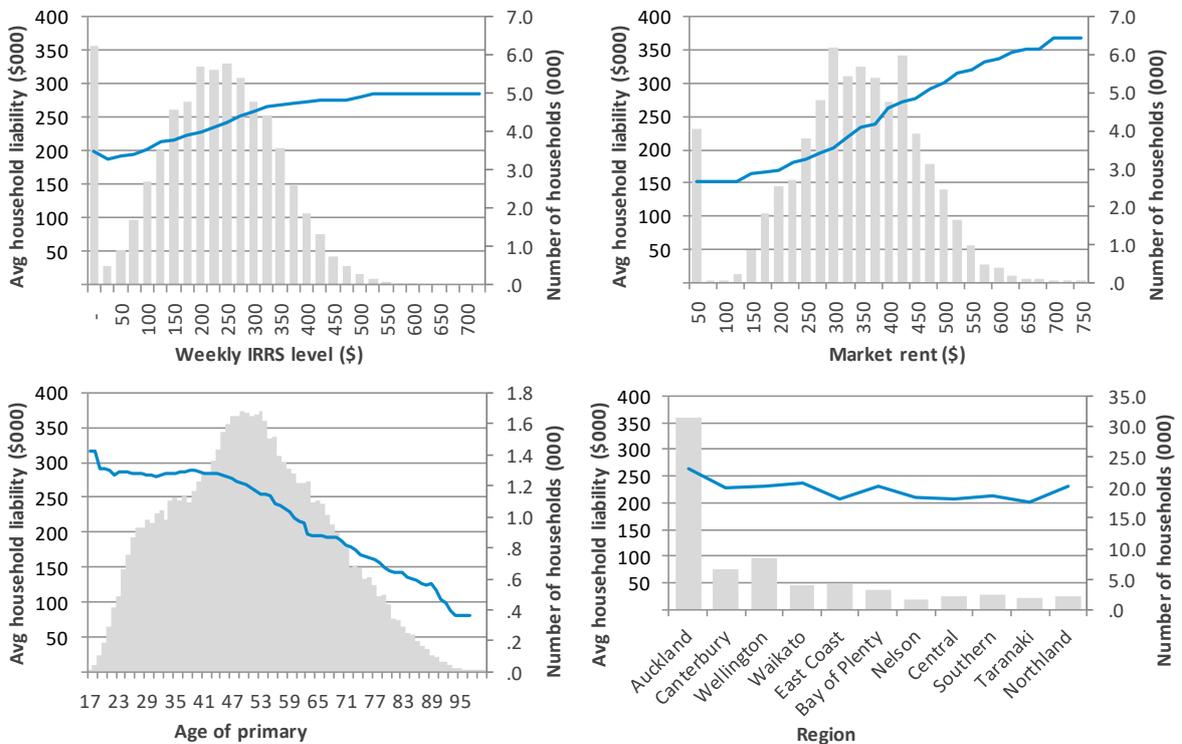
4   DEMAND

4.1   Introduction and highlights

This chapter focuses on the 'demand' component of the social housing framework. Here we look at drivers of need for social housing and seek to understand and quantify 'unmet need,' as represented by the social housing register. The figure below summarises demand as discussed in Section 1.4.2.

Figure 4.1 Valuation metric 'Demand'
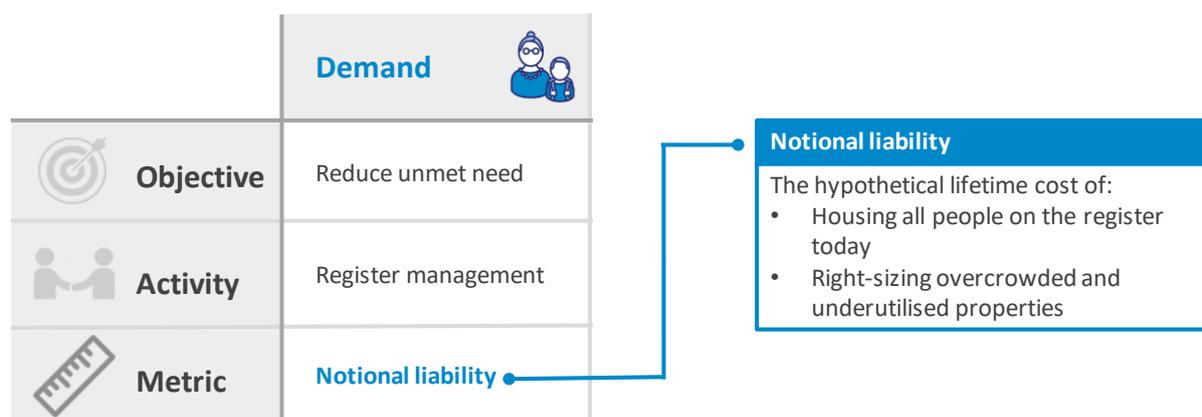
The social housing register provides an indication of demand for social housing. We examine register dynamics over 2015/16 in Section 4.3 then evaluate the notional lifetime housing costs and changes in this notional cost over 2015/16 in Section 4.4.

KEY RESULTS

» Over the 2015/16 year, register applications have risen, which is reasonably consistent with our projections in the previous valuation. The proportion of applications that are Priority A has increased.

» The household size of Priority A applicants has fallen in 2015/16, continuing a longer-term trend.

» Over 2015/16 the placement rate into social housing for Priority A applications has increased slightly over that in 2014/15.

» The additional notional liability associated with the register is $0.24b, which is a 33% increase on lifetime cost for those on the register. This takes the average household liability for these households from $152k to $209k.

» The additional notional liability for the register is less than the previous valuation, after allowing for economic factors. This, combined with a positive main throughput result, suggests unmet need is being reduced via faster placement.

» In contrast to the main throughput the notional liability throughput for register segments is negative; the increase in lifetime costs associated with those on the register is more than offset by a decrease in the additional notional liability. This combination of results indicates these clients are moving into housing faster than projected.

4.2   About the social housing register

The register is comprised of those people who have applied and been assessed as eligible for social housing following pre-assessment processes. Households apply to the register, giving detail about their level of need and their preferred locations for housing. Need is assessed on five dimensions with each dimension given a Social Allocation System (SAS) score between 1 and 4 inclusive. These are added together to give a total SAS score.

Two dimensions relate to a household's need to move:

» **Adequacy:** The physical condition/structure of the household's current residence and availability of basic facilities. This dimension only takes values 1 or 4.

» **Suitability:** Crowding, lack of security of tenure of current accommodation and medical and personal needs.

Three dimensions relate to the ability to be housed in the private market:

» **Affordability:** The ability to afford alternative, suitable housing in the private market.

» **Sustainability:** Financial management difficulties and difficulties in social functioning and lack of social skills.

» **Accessibility:** The ability to access and afford suitable and adequate housing as a result of discrimination, lack of financial means to move and availability of alternative, affordable, suitable housing in the private market.

These are summed to give a total score out of 20. Additionally, an overall priority level is assigned. The combination of priority level and score is used to prioritise the placements of housing. Rules are applied to establish how many bedrooms are required (see Section 5.2.1). Ideally an exact match of location and size can be found. Sometimes this is not possible, so there is a balance between not achieving an exact match on placement – with one too many bedrooms or in a neighbouring area, say – versus waiting for a matched social housing place to become available.

Households remain on the register, periodically updating their details. They exit the register when they are placed in a social housing property, or withdraw for other reasons.

The register also contains transfer register applications; these are applications from current social housing tenants who have successfully applied to move to more suitable social housing. Some transfers are 'business initiated,' rather than by tenant choice, which can occur if there are some particular

tenancy issues at the current location or if the social housing property is scheduled for sale or renovation. Business initiated transitions have been excluded from consideration in this report.

4.3 Trends over 2015/16

4.3.1 Register dynamics over 2015/16

The schematic below summarises the main register movements for the year. All numbers are materially affected by the data migration (August 2015), which makes total numbers over the year difficult to estimate. Entries were higher in 2015/16 than the previous year (2,300 per quarter versus 2,000). The year also saw a material increase in the proportion of applications assessed as Priority A (74% compared to 69%). All the growth in total application numbers are attributable to more Priority A applicants; Priority B application numbers were stable. Placements into housing were slightly down for the year (although estimation of this is further complicated by property transfers to CHPs), which was consistent with the lower number of exits from social housing.

Figure 4.2 Schematic of social housing register related movements in 2015/16. Household numbers per quarter in 2015/16 based on those quarters where data deemed reliable.[27]
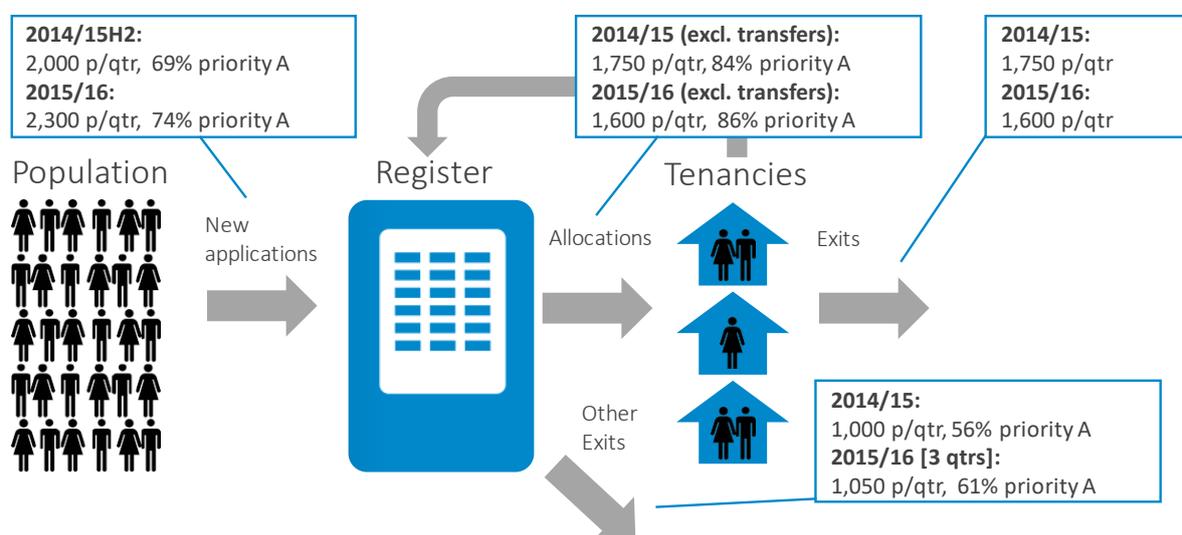
‘Other Exit’ rates (exits from the register, but not into Social Housing) were up slightly. This is consistent with policy intentions; those in genuine but temporary need are to be supported with new forms of emergency housing assistance, for which additional funding has been allocated. However, without better information on the nature of register exits we cannot comment on whether this increase should be viewed as ‘good’.

The net result of these trends is an increase in the size of the register. The Housing Register size has grown from 3,947 at June 2015 to 4,302 households at 30 June 2016[28].

---

[27] Generally the September 2015 quarter is omitted, but included if an observable bounceback is visible in December, giving reasonable total numbers.
[28] The official MSD statistics at http://housing.msd.govt.nz/information-for-housing-providers/register/index.html have a similar trend (an increase from 3,352 to 3,877). Exact numbers differ due to the treatment of lower priority applicants and applications that are pending.

 Overall trends

The number of new applications per quarter has been volatile over the past few years. There have been important changes to policy and delivery over time that influence these trends:

» The needs assessment process was overhauled in mid-2011. Entry onto the register was restricted to those assessed as Priority A or B (although those pre-existing applications with Priority C or D on the register at the time were retained) and there were some adjustments to the criteria for (and hence the characteristics of) Priority A and B applications. The process for client contact, pre-assessment and assessment saw further refinement in 2012.

» The service delivery model changed substantially in 2012, including over-the-phone pre-assessments.

» The responsibility for assessment was transferred to MSD in April 2014. The first couple of quarters saw some unusual patterns as the changeover was bedded down. This included unusually high numbers of applications.

» Application numbers in the Canterbury region have been particularly volatile and application rates are currently very high by historical standards. Some of this change is likely earthquake (and rebuild) related, although the effect is unclear; the increase occurred recently, rather than immediately after the quakes. Canterbury applications have a slightly different SAS scoring mechanism, although this is more likely to cause more applications to move from priority B to A, rather than increase the total number of new applications.

Historical and projected patterns of successful applications to the social housing register are shown in Figure 4.3. Over the 2015/16 year, register applications have risen and have been reasonably consistent with the total numbers projected in the previous valuation.

In making our 2016 projections, we have kept total projected application numbers about the same as the previous valuation. Additionally, the assumptions reflect the growing proportion of Priority A applications. Assumptions around new applications have limited impact on the lifetime cost of those already in social housing, but have a material impact for recent exits.

Figure 4.3 Past and projected numbers of register applications per quarter
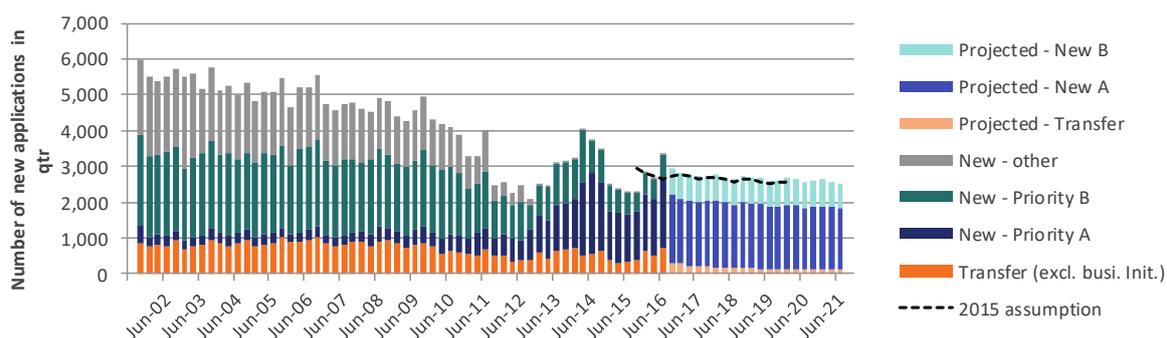
Note that the too-low level of transfer applications in the projection is partly driven by labelling and model setup; many of these are children becoming adults and applying for a new house. These should probably be treated as new applications, and are treated as such in the projection. Furthermore, business initiated transfers have also been excluded this year.

Another consequence of the irregular patterns over time is that it has been hard to establish a direct link between the level of register applications and the broader macro-economy. We have allowed for a moderate signal associated with market rents – regions with very low average rents tend to have lower applications. However, we do have a strong indirect macroeconomic effect – the application rate is much

higher for welfare benefit recipients (see below), and the number of recipients is projected to fall in line with lower projected unemployment rates. This contributes to the visible decrease in projected register applications in the figure above.

The higher rate of applications in 2015/16 was seen across almost all regions. The increase was particularly large for the East Coast region, but was less pronounced in Taranaki and Waikato. The regional distribution of new applications to the Housing Register is shown below.

Figure 4.4 Regional distribution of new applications last 2 years
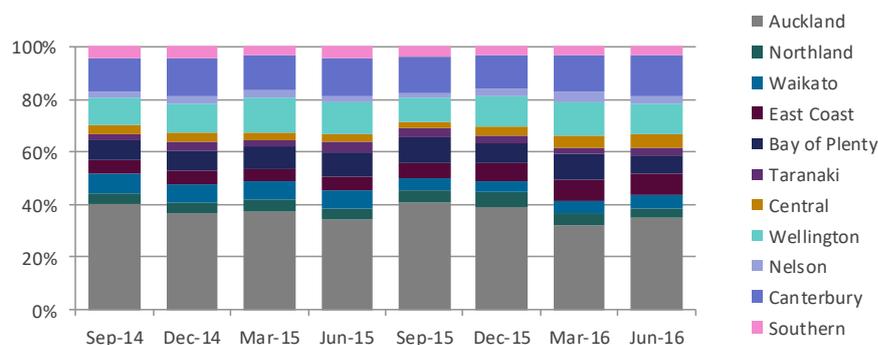
There are also some visible time trends in the nature of applications, as shown in Figure 4.5. The household size of Priority A register applicants has fallen in 2015/16, continuing a longer-term trend. Almost two-fifths of applicants require just one bedroom. The proportion of Priority A applications with the maximum possible score for Accessibility has grown to 26% in 2015/16, another trend visible across recent years.

Figure 4.5 Priority A application characteristics. The left panel shows the distribution of bedrooms needed by application year. The right panel shows what proportion of Priority A applications have the maximum score for a SAS subcategory.
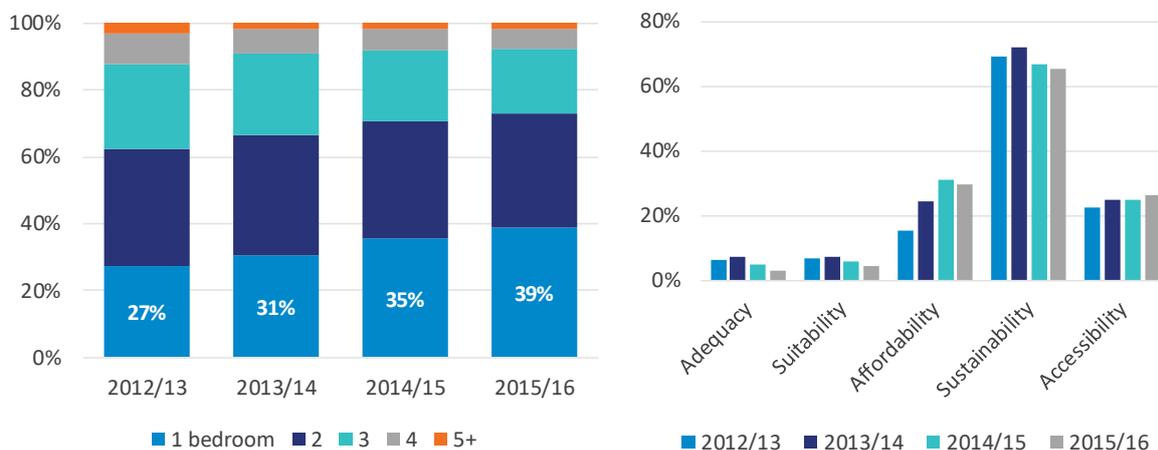
4.3.3   Placements and other exits

Figure 4.6 shows the quarterly transition rates for entry from the register into housing, split by priority.

Figure 4.6 Entry rate to social housing from the register for Priority A applications (left panel) and Priority B applications (right panel)
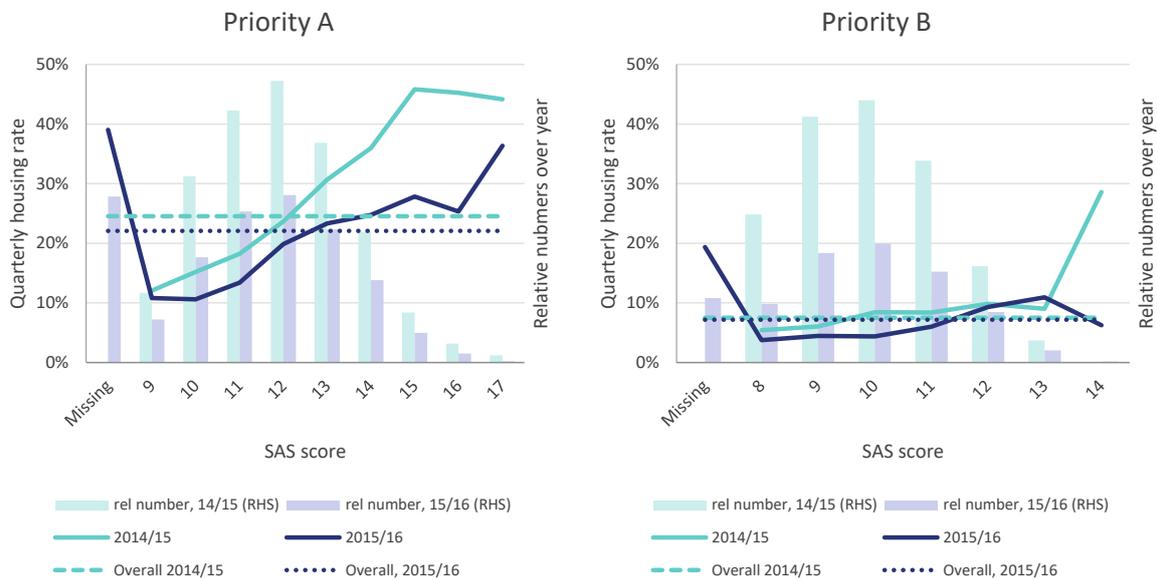
The entry rate into social housing is ultimately driven both by demand (the size of the register) and supply (rate of new social houses becoming available). This rate has decreased slightly for Priority A applications (left panel): 22% of register applications active in a quarter will see a housing placement. Compared with 2014/15, the alignment between placements and SAS score is weaker due to the high incidence of missing SAS scores on the new IT system.

Placement rates for Priority B applications are unchanged.

Figure 4.7 Exit rates from the register but not into social housing for Priority A applications (left panel) and Priority B applications (right panel)
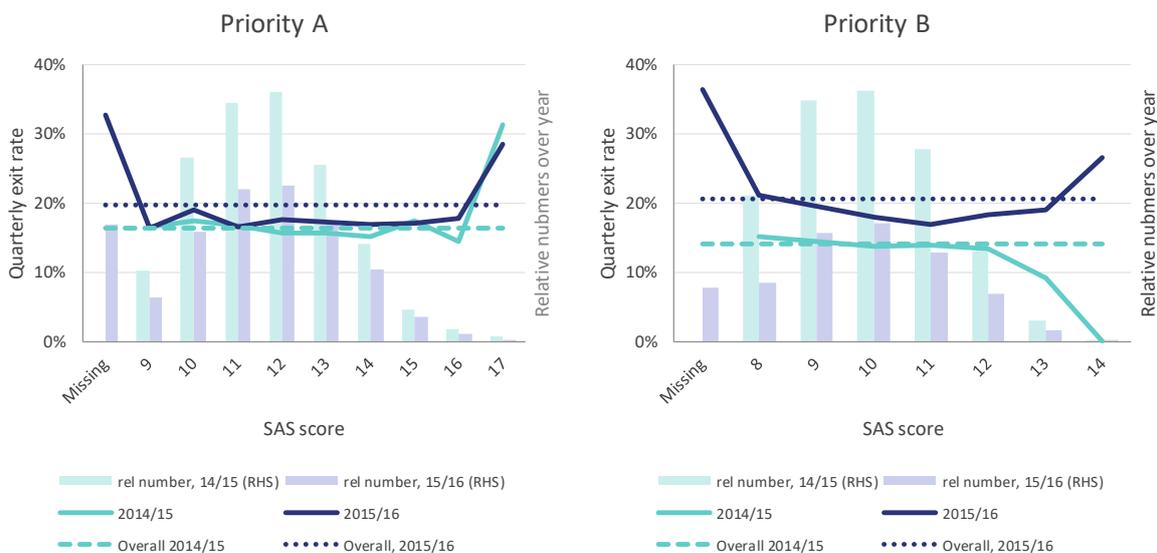
Exits from the register, but not into a social house, are affected by demand – a longer wait increases the change of such an exit. It is also driven by substitution effects – the availability of alternative pathways to social housing. These exit rates are shown in Figure 4.7. They have increased for both priority A and B applications – to about 20% per quarter for both. Our analysis indicates that there is generally a weak negative correlation between SAS score and the likelihood of non-housing exit.

Comparing housing placements and housing exits

Figure 4.8 Entries and exits, by weekly IRRS band, age of primary householder and benefit receipt

Figure 4.8 shows a comparison of the distributions for households entering and exiting social housing for a number of key variables, split into Auckland and other regions. This extends the discussion of Section 2.2.3.

Both Auckland and other regions show the same overall trends:

» Those entering social housing are much more likely to be on benefit, particularly SPS and JS-WR
» More low-IRRS households exit relative to entrants
» The age of social housing leavers is significantly older than entrants.

Furthermore, some differences between Auckland and other regions are visible. Auckland tends to have very few entries or exits in the 'intermediate' IRRS range between $50 and $150. This range tends to have a lower financial barrier to exit, particularly with AS support after exit. The absence of this group helps explain the lower exit rates in Auckland. Next, Auckland tends to be a little older for both entries and exits. Only 40% of entries are aged under 45 in Auckland, compared to 50% elsewhere. Lastly, Auckland has a higher rate of non-beneficiary entry; two in ten Auckland entrants are not on benefit on receiving NZ Super, compared to one in ten for other regions.

Table 4.1 Change in the register June 2015 to June 2016

	Jun 16						Jun 15		
	#		% A		3+ beds		#	% A	3+ beds
	Value	Change on 2015	Value	Change on 2015	Value	Change on 2015			
Northland	149	-3%	79%	+31%	30%	-1%	153	48%	31%
Waikato	220	-22%	57%	+14%	27%	+4%	281	43%	23%
East Coast	389	+79%	66%	+7%	29%	-2%	217	59%	30%
Bay of Plenty	270	+23%	66%	+9%	27%	+1%	219	56%	26%
Taranaki	86	+43%	69%	+14%	24%	+1%	60	55%	23%
Central	138	+200%	86%	+30%	26%	+7%	46	57%	20%
Wellington	411	+49%	71%	+12%	24%	+1%	276	59%	22%
Nelson	111	+54%	59%	+4%	15%	+3%	72	54%	13%
Canterbury	537	-7%	70%	+7%	14%	-4%	580	63%	18%
Southern	109	+6%	75%	+26%	15%	-4%	103	50%	18%
Auckland	1,882	-3%	60%	+16%	23%	-2%	1,940	45%	25%
National	**4,302**	**+9%**	**65%**	**+15%**	**23%**	**-1%**	**3,947**	**50%**	**24%**

Table 4.1 displays some detail of changes in the register from June 2015 to June 2016 at a regional level. There are 350 more households on the register than at the previous valuation. There are fewer households on the Auckland register (-58) but this is more than offset by higher number of households in many of the other regions.

Overall, the proportion of Priority A applicants on the register has increased by 15%. Again, this differs at a regional level, with Northland, Central and Southern all showing a higher increase in Priority A applicants and, indeed, overall higher proportions of Priority A applicants than other regions. This increase reflects a higher proportion of Priority A applications, rather than a slowing of placements.

The number of applicants requiring three or more bedrooms is down slightly from June 2015.

Changes to the composition of the register increase the lifetime housing cost by $3,600; a shift to higher priority (and need) applicants is partly offset by a relative shift away from Auckland. This was discussed in Section 2.3.2.

Table 4.2 below summarises some key register metrics and how they differ by region. Note that the average duration of applications (the last column) is different to the "time to house" statistic reported by MSD. The average duration of applications is the average duration of people on the register at the valuation snapshot date (30 June 2016). There are a number of reasons why this average duration might differ from MSD's statistic, including the fact that the people who remain longer on the register are less likely to be the high priority cases that are housed quickly.

There are significant regional differences in social housing dynamics. Auckland and Wellington have an above average number of social houses per capita, but higher durations mean that the register size is around the national average. In contrast, Waikato and Southern regions have low supply of social housing, consistent with lower demand.

Canterbury has fewer social housing places per capita, but application rates in 2015/16 are comparable to the national average. This contrasts with the historical experience where the application rate has been below the national average. Further, the percentage of these applications having priority A is very high. This has contributed to a larger than usual register at the valuation date.

Table 4.2 Register differences by region

Region	Population (2013)	SH per 1,000 pop.	New applns per 1,000 pop.	Reg. size @Jun16 per 1,000 pop	Avg dur (yrs) for active applns @Jun16
Northland	170,000	12.4	2.2	0.8	0.7
Waikato	440,000	8.8	0.9	0.5	0.7
East Coast	290,000	13.5	2.3	1.3	0.6
Bay of Plenty	210,000	13.5	3.5	1.3	0.5
Taranaki	120,000	15.7	2.1	0.7	0.5
Central	230,000	8.3	1.4	0.6	0.4
Wellington	500,000	16.0	1.8	0.8	0.5
Nelson	130,000	10.6	2.1	0.8	0.4
Canterbury	590,000	10.2	2.1	0.9	0.6
Southern	310,000	7.5	1.0	0.3	0.5
Auckland	1,570,000	18.8	2.0	1.1	1.0
Total	**4,550,000**	**14.0**	**1.9**	**0.9**	**0.7**

Relative to last year:

» The size of the register has increased from 0.8 households per 1,000 population to 0.9.
» There is an increase in register size, driven by more applicants seen in East Coast, Bay of Plenty, Central, Wellington and Nelson.
» A fall in register size has been seen in Waikato
» Other regions are stable or show a slight increase.

Some of these effects could be temporary, such as the high Canterbury application rates compared to historical levels. Assumptions regarding whether effects are temporary or not will heavily impact the results of any idealised purchasing intentions analysis (as discussed in Section 5.5).

Longer duration register applicants

There are about 850 households who are on the register at 30 June 2016 who were similarly on the register at 30 June 2015. Of these around:

» One-third of primary applicants exited and re-entered the register over the year

» One-fifth are priority A applications that entered the register during 2014/15. These are largely households of 1-2 people requiring a 1-bedroom place. Half are in Auckland compared to 45% of the register at June 2016.

» One-fifth are Priority B applications that entered the register during 2014/15

» One-quarter are applications that entered the register before June 2014, largely not priority A. Some of these are very low priority applicants (assessed under an older assessment model) and unlikely to be housed quickly. Others are potentially dormant applications but have not been properly removed from the register.

4.4 Lifetime housing cost and notional lifetime cost

4.4.1 Introduction

An important part of understanding the effectiveness of the social housing system is the degree of unmet need. The objective is to manage the housing register to ensure that housing places are available

to households who need them most, but also that services are available – where appropriate – to resolve any underlying issues driving housing need.

There are many ways to understand unmet need. A complete view of unmet need is not possible since we can only measure the need MSD is aware of. Some unmet need is thus 'unknown.' One financial metric that attempts to estimate the known unmet need is notional lifetime housing cost (or 'notional liability', for short), which was introduced in Section 1.4.2. It represents the hypothetical lifetime housing cost if current (known) needs were met. We can estimate the notional liability for four subgroups:

» **Housing Register applications:** The total lifetime cost if those on the register were placed in a social housing place today.

» **Transfer Register applications:** If people are applying for a larger social housing place or are applying for a social housing place in a more expensive area, this may indicate an unmet need amongst existing tenants. There are also notional releases (that is, negative notional costs) associated with tenants applying for cheaper or smaller housing.

» **Overcrowded social housing places:** Some tenancies are overcrowded, even in the absence of a transfer application. There is a notional long-term cost associated with addressing this unmet need.

» **Underused social housing places:** Some social housing places are underused, even in the absence of a transfer application. There is a notional release (a negative notional liability) associated with moving such a household to a right-sized social housing place.

Notional metrics are hypothetical – interpreting them can be counter-intuitive. Additional notional 'costs' associated with overcrowding can be understood as the extra costs that would be incurred on allocating these households to places that suit their requirements. Notional 'release' associated with underuse can be understood as the opportunity cost of inefficiencies currently within the system. That is, they are the potential financial savings that would arise if households were not allocated to places that exceed their requirements. This matters, because more dynamic management of the portfolio over the long-term would enable these savings to be invested elsewhere in the housing portfolio.

We estimate notional liability for each of the four categories above. Overcrowding and underuse are revisited in more detail in Chapter 5.

4.4.2   Notional liability estimates

The difference between the main lifetime housing cost and total notional cost for each of the four subgroups is shown in the table below. A comparison to the previous valuation is also given. The liability of the well-matched group, which does not accrue notional liability or release is also shown for completeness.

Table 4.3 Lifetime housing costs for current clients compared to previous, excludes expenses.

	2016 Valuation				2015 Valuation			
	Main ($b)	Additional notional ($b)	Total notional ($b)	% additional	Main ($b)	Additional notional ($b)	Total notional ($b)	% additional
Register	0.63	0.24	0.87	27%	0.47	0.24	0.71	33%
Transfer	0.31	0.01	0.32	3%	0.51	0.02	0.53	4%
Over-crowding	2.81	0.64	3.45	19%	2.46	0.54	2.99	18%
Underuse	5.26	-1.56	3.70	-42%	4.53	-1.38	3.15	-44%
Well matched	9.11	0.00	9.11	0%	8.07	0.00	8.07	0%
Total	**18.12**	**-0.68**	**17.45**	**-4%**	**16.05**	**-0.59**	**15.46**	**-4%**

The result for the register is important – it reflects the cost of placing these households more quickly, and/or at a greater rate (in reality, some households on the register do not end up in social housing – this is discussed in Section 4.3.3). The additional notional liability associated with the register is $0.24b, which is a 33% increase on lifetime cost for those on the register. This takes the average household liability for

these households from $152k to $209k. This is still below the average lifetime cost of those already in social housing – this is because exit rates are higher at the beginning of a tenancy, and for younger households (as register applicants typically are).

The notional liability for the register is less than the previous valuation, after allowing for economic factors. This suggests unmet need is being reduced via faster placement – we discuss further in the next subsection.

The results for the other groups are also interesting:

» The additional notional liability attributable to the transfer register is virtually zero; the households with a notional release almost exactly balance those with an increase.

» The notional release associated with underuse of the social housing portfolio is very large; over seven times the additional notional liability of the register. This reflects a large number of small households in 2- or 3-bedroom social housing places.

When combining all categories there is a notional release associated with these groups of $0.7b.

Comparing the evolution of notional liability over the year from June 2015 to June 2016:

» The increase in the main register lifetime cost is not matched by additional notional costs – this amount has remained flat. This is consistent with rates of placements and exits being largely maintained over the year.

» The notional liability of the transfer register has reduced. While we now exclude business initiated transfers, there were a significant number of transfer placements in 2015/16.

» Overcrowding and underuse are both relatively stable (after allowing for inflation and discounting effects).

4.4.3   Throughput for notional liability

As with the main estimate of lifetime cost (see Section 3.4.2) we can consider throughput over the year for the notional lifetime cost, that is the actual notional liability at June 2016 compared to what we expected from the previous projection, by segment at 30 June 2015. This breakdown is shown in the figure below.

Figure 4.9 Change in notional liability by segment

Change on expected liability from Roll-forward ($m)

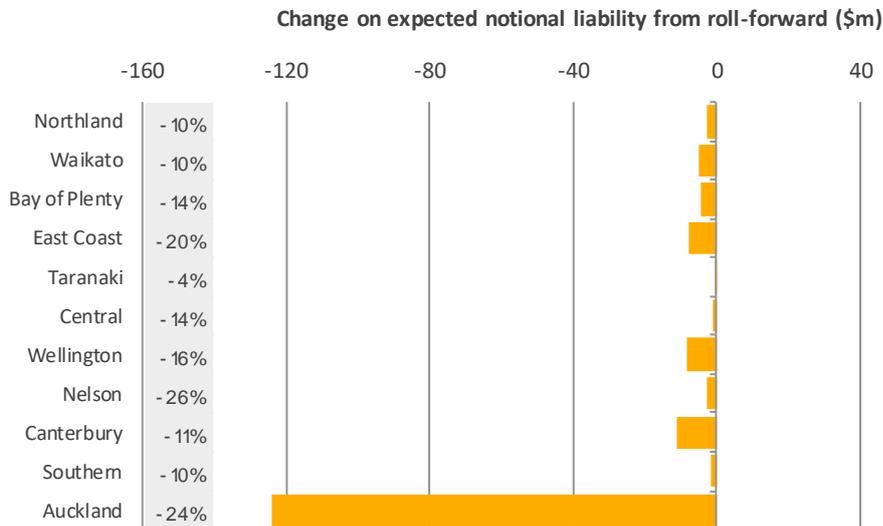|					
On reg.			Priority A	-16%	
			Other	-24%	
IRRS recipients, primary aged < 65	Less close	Chd	Work obligated	-6%	
			Not work obligated	-5%	
			NOMB	-9%	
		No chd	Work obligated	-3%	
			Not work obligated	-1%	
			NOMB	-8%	
	Closer	Chd	Work obligated	-9%	
			Not work obligated	-5%	
			NOMB	-13%	
		No chd	Work obligated	1%	
			Not work obligated	-1%	
			NOMB	-12%	
IRRS recipients, primary aged 65+			Less close, with Chd	-5%	
			Less close, no Chd	0%	
			Closer, with Chd	-11%	
			Closer, no Chd	-1%	
Recent exit	From housing		AS	55%	
			no AS, <60	97%	
			no AS, 60+	178%	
	From reg.		AS	126%	
			not AS	295%	

Noticeably the notional liability throughput for register segments is negative whereas it was positive for the main liability throughput. The increase in lifetime costs associated with those on the register is more than offset by a decrease in the additional notional liability. This combination of results suggests that these clients are moving into housing faster than projected.

This notional release is largest both in absolute and relative terms in Auckland, as shown in the figure below.

Figure 4.10 Change on expected notional liability for register segments by region

Change on expected notional liability from roll-forward ($m)

|		
Northland	- 10%	
Waikato	- 10%	
Bay of Plenty	- 14%	
East Coast	- 20%	
Taranaki	- 4%	
Central	- 14%	
Wellington	- 16%	
Nelson	- 26%	
Canterbury	- 11%	
Southern	- 10%	
Auckland	- 24%	

To understand this regional difference, Figure 4.11 splits the evolution of the register into Auckland and non-Auckland. For Auckland, relative to other regions:

» More people remained on the register for the whole year; their resulting notional lifetime cost would likely be slightly lower than if they had entered housing.

» Only 34% of the Notional cost 'converted' to households in social housing at 30 June 2016 (compared to 44% in other regions). This is due to lower durations for Auckland in the model update for those who did enter housing, plus the relatively lower rate of housing entry for the year.

» A lower portion of the notional liability converted to other exits.

Finally, regions outside Auckland had a greater influx of new applicants, leading to an increase in the June 2016 register notional liability. In Auckland, the effect of increased application rates was offset by the lowering of expected duration in Auckland once in a social housing place.

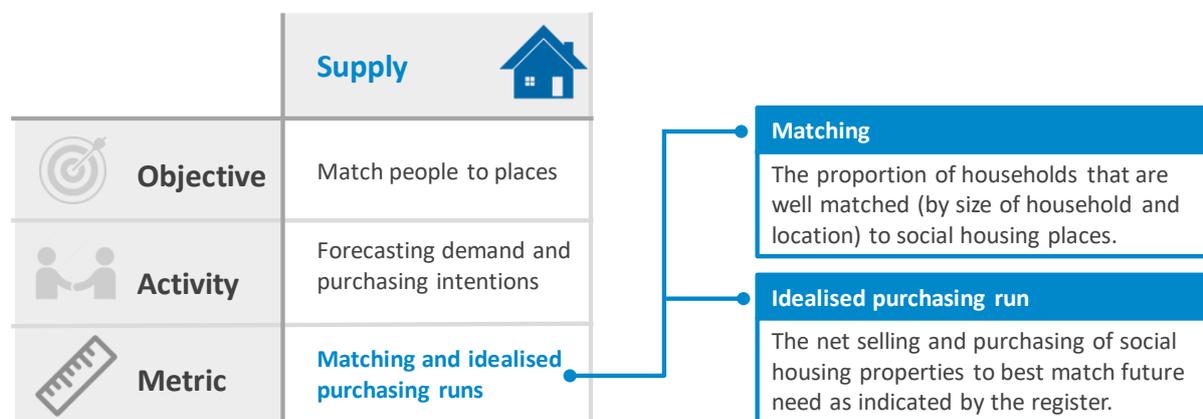**Figure 4.11 Evolution of the register, Auckland and other regions**
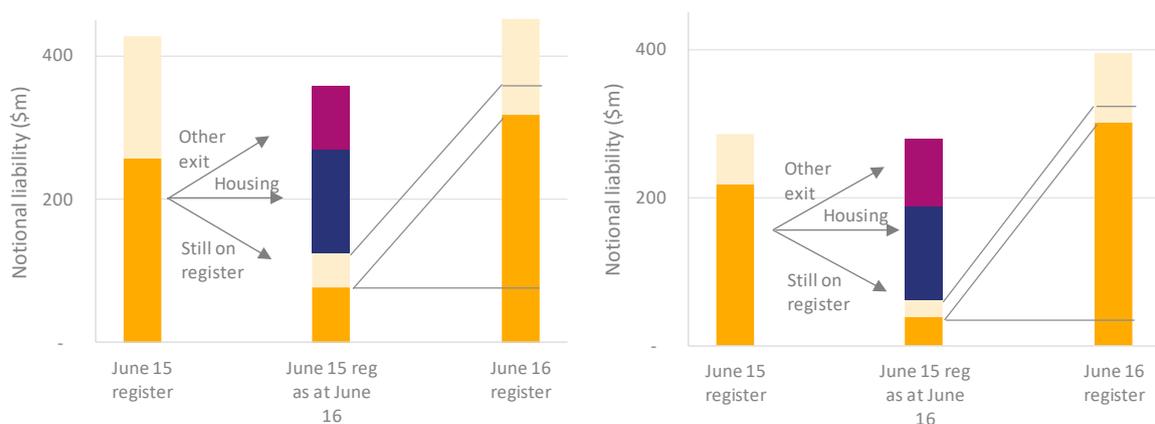
5   SUPPLY

5.1   Introduction and highlights

An effective social housing system should have social housing places in the right locations and of the right size to meet future demand. The reality is often different: the available places are driven more by where current tenants are exiting and it is difficult to quickly buy and sell properties to adjust to where current demand is. The composition of a household evolves over time, so an appropriately sized property today may not be appropriately sized in ten years' time. Projecting future demand can be difficult, as it is driven by a number of factors that are hard to forecast.

This valuation introduces two tools to help understand the appropriateness of the housing portfolio:

1. **Matching** measures how well the current portfolio is matched to current households
2. **Idealised purchasing** shows how the housing portfolio should be bought and sold over time, given a set of assumptions on place levels and register demand.

Figure 5.1 Valuation metric – 'Supply'

	Supply	
Objective	Match people to places	**Matching** The proportion of households that are well matched (by size of household and location) to social housing places.
Activity	Forecasting demand and purchasing intentions	
Metric	**Matching and idealised purchasing runs**	**Idealised purchasing run** The net selling and purchasing of social housing properties to best match future need as indicated by the register.

» We find that 90% of social housing places are near matched. This means that 90% of social housing places are occupied, and the bedrooms needed by the household is equal to, or within one of the number of bedrooms in the social housing place. On a dollar-weighted basis, we find that 95% of total market rent on social housing places are near matched.
» Over 2015/16 the near-match rate increased by 0.3%. Entries to social housing were on average better matched than existing households.
» By segment, households with children have slightly higher overcrowding rates and those without children have higher rates of underuse.
» Nationally there is an undersupply of 1-bedroom places and an oversupply of 3-bedroom places.
» Net housing stock changes over 2015/16 were small. The largest change was the transfer of around 2,700 places to a CHP provider in Tāmaki, Auckland.
» Idealised purchasing is another way to understand the future housing need by size and location. It assumes perfect flexibility in buying and selling properties between tenancies. This functionality has been provided to MSD.

5.2 Matching statistics

5.2.1 Defining the matching rate

Matching was introduced in Section 1.4.3. We define the matching rate to be the proportion of households that are appropriately housed, with a mismatch occurring if:

» A usable social housing place is **empty** [29]
» A household is (voluntarily) **on the transfer register**
» A social housing place is **over-crowded** (too few bedrooms)
» A social housing place is **underused** (too many bedrooms).

Then we can calculate the matching rate:

$$Matching = 1 - \frac{Weighted\ number\ of\ inappropriate\ social\ housing\ places}{Weighted\ number\ of\ social\ housing\ places\ in\ system}$$

There are various ways to define the weights used in the matching rate; we present two here. The 'raw' or unweighted rate gives every house equal weight. The 'dollar-weighted' rate would use dollars to measure the degree of mismatch:

$$Dollar\ weighted\ Matching = 1 - \frac{\begin{array}{c}Market\ rent\ of\ empty\ social\ housing\ places + Market\ rent\ changes \\ to\ fix\ transfers, overcrowding\ and\ underuse\end{array}}{Market\ rent\ of\ all\ properties\ in\ the\ social\ housing\ portfolio}$$

So a social housing place where a household needs two additional bedrooms would carry more weight than a household that needs one more, since the dollar cost of resolving this would be greater. Thus, the dollar weighting attempts to measure what percentage of social housing market rent is well allocated.

The number of bedrooms required is only available for register applications on our datasets. For people in social housing we have attempted to calculate this based on MSD's rules[30]:

» A primary householder and their partner are allocated one bedroom.
» Children are allocated bedrooms with maximum occupancy of two per room.
» A child aged under 10 years is able to share a bedroom with another child of either gender, while a child of 10 years and over is able to share a bedroom with another child of the same gender.

---

[29] Often an empty social housing place is 'unavailable' due to repairs, sale/transfer or other event. We exclude these from matching statistics.
[30] These rules are a modification of the approach used in Canada.

Valuation of the Social Housing System
30 June 2016

Other adults can be allocated one bedroom under some circumstances, but our data does not allow easy discrimination between those who qualify and those who don't. We have generally allocated other adults a bedroom, unless they are recorded as a boarder. We also don't allow for manual overrides, such as when an extra bedroom is allocated for medical reasons.

We note this approach has significant data-based limitations. We are not able to quantify how much higher or lower the matching rate would be if we better understood household characteristics.

We have also simplified bedroom numbers in the calculation. We have treated 0-bedroom social housing places – i.e. studios – as 1-bedroom social housing places, and we have defined no mismatch if a household needs more than 4 bedrooms but are in a 4-bedroom social housing place; as there are very few social housing places with 5 or more bedrooms.[31]

We define a **near match** as when the number of required and actual bedrooms differs by one or less. For example, a household which requires 3 bedrooms in a 2-bedroom house is a near match. MSD considers a near match as reasonable and would not consider moving such a household for right-sizing reasons. This approach enables applicants to be housed in a requested area faster given the exact number of bedrooms is not always immediately available.

It is important to note that while the results suggest a significant level of underutilisation this is based on the recorded data as disclosed by tenants. It's possible that a number of the "empty" bedrooms are occupied. It is similarly possible that houses that appear well matched based on the data available are actually overcrowded or underused.

5.2.2   Matching at the valuation date

The left panel of Table 5.1 shows the dollar-weighted matching rate is 84% if we require and exact match, and 95% when considering a near match (± 1 bedroom). For the near match calculation, the largest contributor to mismatch is housing underuse, with about 3% of total market rent being spent on bedrooms that are not strictly required (representing about $0.7m per week). Overcrowding is a much smaller effect; the extra rent required to supply larger houses for those that are overcrowded is less than 0.5% of total rent, or $0.1m per week.

When considering an exact match, the proportion of total market rent spent on underutilised bedrooms increases to about 11% of total market rent. The extra cost of larger houses for overcrowded households on this basis is just 3%.

Table 5.1 Matching rates at 30 June 2016. Left shows dollar weighted rates, the right is unweighted

Dollar-weighted	$m per week		Unweighted	Number	
	Exact match	Match within ± 1 bedroom		Exact match	Match within ± 1 bedroom
Unoccupied houses	0.3	0.3	Unoccupied houses	822	822
Transfer	0.1	0.1	Transfer	1,042	1,042
Overcrowded	0.7	0.1	Overcrowded	8,133	516
Underused	2.6	0.7	Underused	25,448	4,195
Total mismatch	**3.7**	**1.1**	**Total mismatch**	**35,445**	**6,575**
Total weekly rent	22.9	22.9	Total	64,354	64,354
Matching rate	84%	95%	Matching rate	45%	90%

---

[31] Of the register applications who require four or more bedrooms, about 25% require five or more. About 20% of the existing stock with four or more bedrooms actually has at least five; the similarity of these figures suggests the shortage of five-bedroom places is comparable (in a relative sense) to the shortage of four-bedroom places.

On an unweighted (raw) basis, we observe a near match rate of 90%. Underutilisation again represents the largest contribution. About 7% of social housing places have underuse and 1% have overcrowding. The exact match rate is much lower – 45%; about 35% of households are in a house which differs from their actual needs by just one bedroom. Table 5.2 shows the cross-table of bedroom need versus house size. The largest source of mismatch is households with one more bedrooms than actually needed. For example, 57% of households currently in 2-bedroom places only require one bedroom. Housing stock is largely 2- or 3-bedroom places, however over half the current households would be better suited in a 1- or 4-bedroom place.

Table 5.2 Occupied social housing places at June 2016, split by current number of bedrooms and need

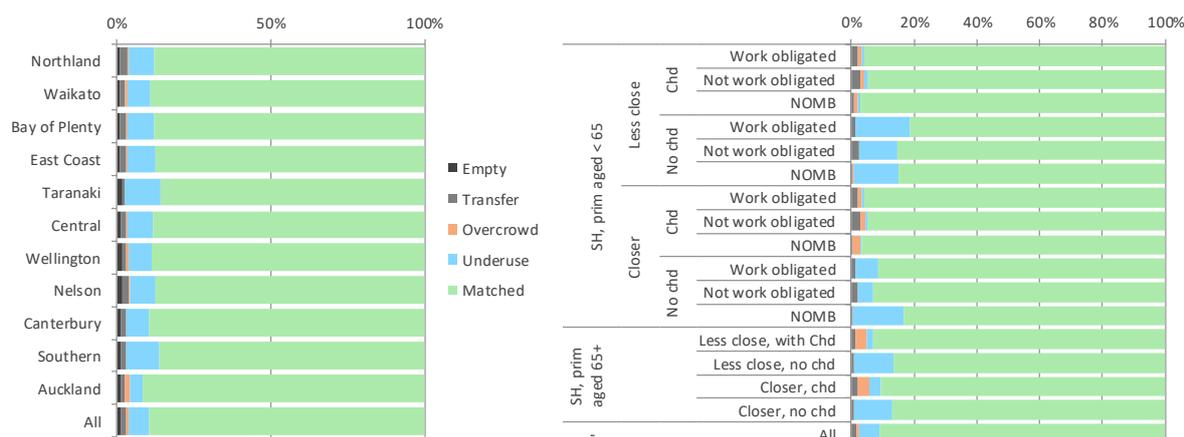| Bedrooms current	Bedrooms needed				Number
	1	2	3	4+	
1	97%	3%	0%	0%	5,920
2	54%	36%	8%	2%	24,133
3	13%	27%	38%	22%	26,139
4+	3%	8%	20%	69%	7,340
Total need	22,505	16,257	13,472	11,298	63,532

Match
Crowding
Underuse

The rate of matching varies both by region and segment as shown in Figure 5.2.

Figure 5.2 Unweighted near matching rates by region and by segment

Near match rates are slightly higher in Auckland; Auckland has relatively more 1-bedroom places, decreasing underutilisation. By segment, households with children have slightly higher overcrowding rates and those without children have higher rates of underuse. Households with primary householder over age 65 and no child in the household show higher underuse rates, possibly the result of children previously in the household moving out reducing the number of bedrooms required. Overcrowding is most common among household with an older primary and child in the household; these households usually have three generations present. Exact match rates show similar trends by region and segment. Note, the same information (disclosed by tenants) is used to determine both children in the household and calculate the required number of bedrooms.

5.2.3   Evolution of matching rates over 2015/16

The near match rate has improved slightly over the year to June 2016. Entries to housing were, on average, better matched than existing households. If existing households were static (in matching) the match rate would have increased by 0.6%. However, voluntary transitions via the transfer register have partially offset this improvement. The combination of entries and transfers lead to a net increase in the unweighted rate of underuse, and a slight decrease in the rate of overcrowding. There are slightly fewer unoccupied houses than at the previous valuation.

Table 5.3 Change in raw near match (±1 bedroom) rates over 2015/16

	June 2015	Net entries	Transitions	June 2016
Matched	89.5%	0.6%	-0.3%	89.8%
Transfer register	2.1%	-0.1%	-0.4%	1.6%
Overcrowding	0.8%	-0.1%	0.1%	0.8%
Underuse	6.3%	-0.4%	0.6%	6.5%
Unoccupied houses	1.3%	-0.1%	0.0%	1.2%
Total	100%			100%

Part of the improvement was due to fewer empty social housing places[32]. Many regions saw a slight decrease in the number of unoccupied available places over 2015/16, as shown in the figure below. Central, Northland and Wellington saw the largest decreases in proportion of unoccupied housing places. Conversely Auckland, Nelson and Taranaki saw very small increases in the proportion of unoccupied places. Overall this represents a small improvement in stock utilisation.

Figure 5.3 Change over 2015/16 in proportion of unoccupied social housing places by region. Labels indicate total number (occupied and unoccupied) of places at June 2016.

**Percentage point change in proportion unoccupied**
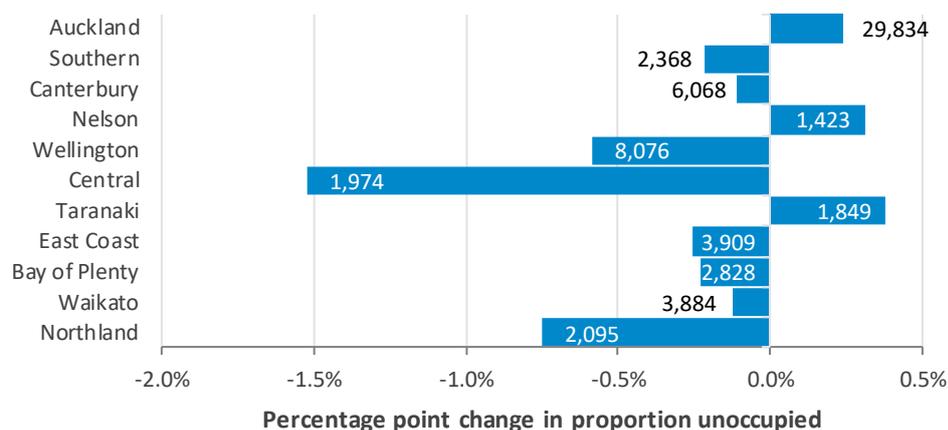
The other driver of improved matching is that entries are generally better matched than the corresponding exits. The matching for entries and exits are shown in the figure below. The exits had significantly more cases of both underutilisation (too many bedrooms) and overcrowding (too few bedrooms).

---

[32] This measure only considers empty and available houses; there was actually a small increase in empty and unavailable places (typically under repair or involved in a sale process).

Figure 5.4 Comparison of match status for entries into and exits from social housing places over 2015/16
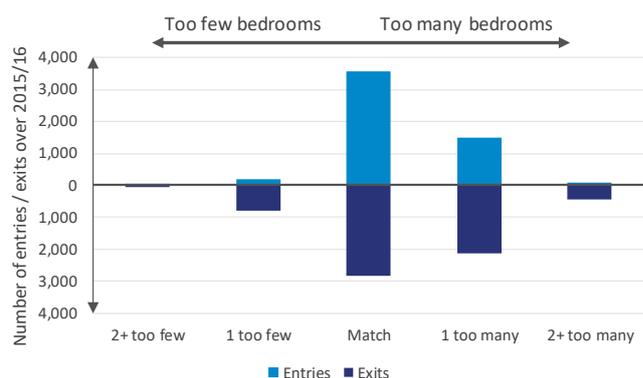
5.3   Comparing supply and demand

When a current household exits a social housing place, this property generally becomes available for a new household to move into from the register: This natural flow represents the main component of housing supply each year. Ideally this supply would be well matched to the demand (register applications) in terms of size and location, however in reality exiting households will likely differ to those on the register. The figure below contrasts historical demand and supply from social housing exits over the past two years (but excludes new supply).

Figure 5.5 Historical supply from housing exits and demand, past two years. Register demand is split by priority
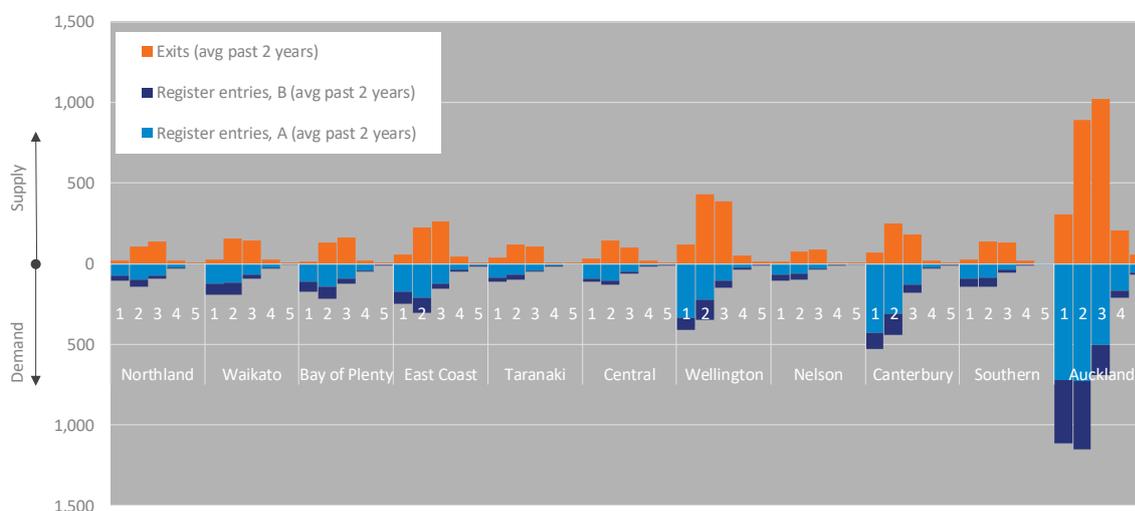
All regions show an:

» Undersupply of 1-bedroom places; nationally demand is three times higher than supply of current stock, and

» Oversupply of 3-bedroom places; nationally demand is less than half the level of current stock supply.

Overall register applications were about 30% higher than the number of exits for the two years. Using this measure, the highest levels of undersupply were in Canterbury and Bay of Plenty, regions which have both recently seen large increases in the number of register applications. In Canterbury, supply from current household exits would have provided enough places for less than half of the accepted register applications. Northland, Waikato, East Coast and Auckland have a slightly lower level of undersupply

compared to the national average. In Auckland supply from current household exits would have provided places for three quarters of register applicants.

5.4   Housing stock changes over 2015/16

MSD actively manages the housing stock through its relationships with housing providers, in part because of the mismatch in demand and supply of social housing places. . Social housing places may be sold, purchased or transferred in order to better meet demand – both current and future. In the following table, we have estimated the changes in stock over 2015/16.

Table 5.4 Housing stock changes over 2015/16

|	June 2015			Change over 2015/16			June 2016			
	Available	Unavailable	Occupied	Sells	Buys	Transfers	Available	Unavailable	Occupied (HNZ)	Occupied (CHP)
Northland	35	33	2,076	- 43	20	1	19	28	2,073	2
Waikato	42	107	3,871	- 51	34	36	37	140	3,790	63
East Coast	34	67	2,844	- 44	2	20	27	89	2,767	31
Bay of Plenty	50	191	3,935	- 117	-	15	39	160	3,845	25
Taranaki	25	139	1,907	- 92	-	2	31	133	1,813	7
Central	53	82	1,957	- 26	-	6	22	93	1,945	6
Wellington	171	400	7,980	- 155	20	30	122	369	7,895	47
Nelson	21	39	1,432	1	-	9	25	75	1,384	13
Canterbury	81	209	5,589	- 46	364	70	80	202	5,845	136
Southern	40	52	2,384	- 27	1	3	34	79	2,334	5
Auckland	270	407	29,729	- 366	320	2,680	340	620	26,720	2,795
Total	**822**	**1,726**	**63,704**	**- 966**	**761**	**2,872**	**776**	**1,988**	**60,411**	**3,130**

Note: Places become unavailable as they undergo repair, development or decontamination then return to housing stock.

We observe that:

»   In the year to 30 June 2016 stock changes were generally small. The largest change was the transfer of about 2,700 HNZ places to a CHP provider in Tāmaki, Auckland.

»   The sales in Bay of Plenty are in slight contrast to the register demand seen in 2015/16.

»   Purchases in Canterbury are in line with higher demand observed.

»   More properties are unavailable at 30 June 2016 compared to a year earlier; this contributed to the slight reduction in the number of social households in a place.

»   At a bedroom level, we see that buys and sells align with demand; the purchases have led to more 1-, 2- and 4-bedroom places and sales have reduced the number of 3-bedroom places.

Our projections also allow for the pipeline of expected new supply over the next few years. These assumptions have been made consistent with the MSD's 2016 purchasing intentions report. We include those properties in the pipeline but not MSD's purchasing intentions themselves, which represent further additions. The pipeline represents 2,600 properties over five years, with some being new properties and others from other sources such as council transfers. The supply is concentrated in Waikato, Canterbury and Auckland regions, with a predominance of 1- and 2-bedroom places. For these regions, the additional stock leads to a material reduction in the expected register size over the course of our projection.

Figure 5.6 Housing stock changes over 2015/16
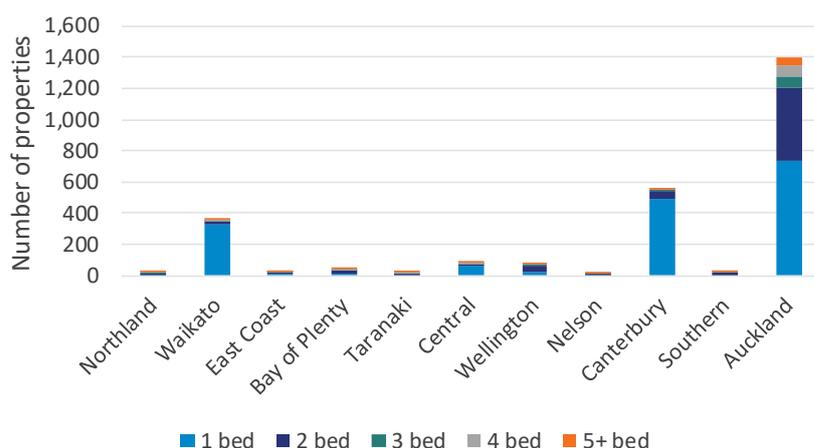
5.5 Idealised purchasing projections

5.5.1 Introduction to idealised purchasing

The main 'supply' of social housing places for new applicants arises from social housing places made available when an existing household exits. Current supply is not always well-matched to demand. There may be too many social housing places vacated in some areas and too few in others. The size of the social housing place might be too large or small. The vacated properties might be suitable for clients with lower need, rather than those with higher need. Several of the Social Housing Reform Programme policy changes aim to increase flexibility in purchasing housing places that better suit demand.

While MSD and HNZ attempt to adjust housing placements over time to better meet demand, our main projection has assumed that social housing properties remain fixed (in size and location) over the projection. This section relaxes this assumption to gain insight into where social housing places are needed; it explores idealised situations where the housing portfolio can be modified between tenancies.
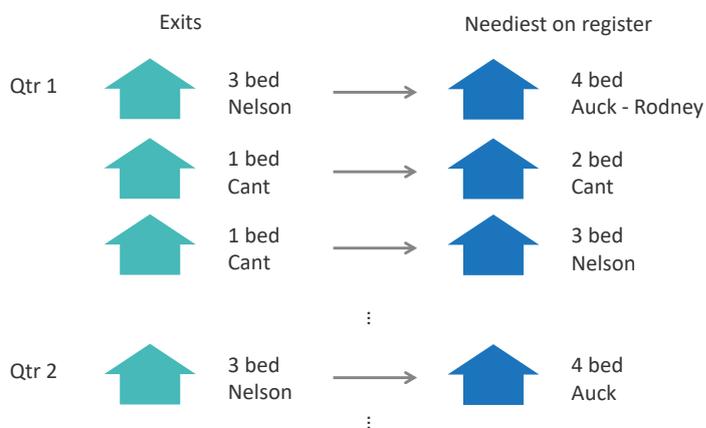
5.5.2 What is idealised purchasing?

Our base model projection performs a housing allocation step each quarter:

» We calculate the number of available social housing places (those empty at the start and a fraction of those made available during the quarter) by territorial authority and size.

» We produce an ordered list of applicants, including those on the register at the end of the previous quarter and those applying during the quarter. Their order on the list is based on their calculated level of need (needier are more likely to be towards the top), and we note their requirements (location and size). Variants of this are possible, including an ordering independent of need.

» Working down the list, we attempt to allocate each household to an available social housing place. If an exact match is unavailable, we allow some degree of mismatch in terms of neighbouring territorial authorities and bedroom size.

» If there are no available social housing places, the household remains on the register (or exits without being housed).

It is possible to create variations of the base model where we allow the housing portfolio to vary at the time properties are vacated. In particular, we can see what would happen if we sold the vacated property and then bought another to match the requirements of the neediest households on the register. So if there were 2,000 available properties in a quarter, we would sell these and buy 2,000 properties according to the needs to the 2,000 households at the top of the register waitlist. This buying and selling process gives a net change in housing places that responds to the current demand. It can be

thought of as a series of housing swaps in location and size, as shown in Figure 5.7 below. We refer to this process as 'idealised purchasing'.

Figure 5.7 Illustration of housing swaps for idealised purchasing

We have provided MSD with the functionality to make idealised purchasing projections for 25 years. It gives a net purchasing position for any quarter, for any territorial authority and, for any social housing property size. This functionality will form part of MSD's considerations for developing purchasing intentions.

Idealised purchasing is highly sensitive to assumptions, in a few ways:

» Numbers on the register are very sensitive to the register application rate, which we have observed to be volatile over time. A small change to the rate can cause the cumulative number waiting to either grow strongly or reduce rapidly; comments on future register size should be treated with appropriate caution.

» The level of need across regions is likely to evolve with time. For instance, Canterbury currently has higher need scores than Auckland, but this may not always be the case.

» The other characteristics of applicants (such as age and household composition), particularly those not currently known to MSD, is likely to evolve with time.

» The algorithmic allocation of register applicants to social housing places is unable to replicate the true allocation process; allocation has particular subtleties in timing and balancing competing demands that we have not attempted to replicate.

Idealised purchasing outputs are useful for considering a range of plausible scenarios and seeing how results vary. No single scenario should be thought of as our expectation of the future; rather, in combination they provide insight into how demand for housing places might evolve with time.

5.6   Allowance for CHPs

At the previous valuation we included a gross loading of $60m for 240 households in social housing places managed by CHPs; we were not able to model these with HNZ tenants due to lack of data. This year we have the additional data needed and have included CHP social households in the projection models properly and removed the loading.

At 30 June 2016, there were about 3,200 households in social housing places managed by CHPs. The bulk of these are in Auckland; 2,700 social housing places in the Maungakiekie-Tāmaki Local Board Area were transferred from HNZ to the Tāmaki Regeneration Company in March 2016. Other regions with significant, but much smaller, numbers of CHP managed social housing places are Canterbury (136), Waikato (63) and Wellington (136). The figure below shows the number of CHP managed households by region as well as the increase over the past year.

Figure 5.8 Number of social housing places by region and provider type, June 2015 and 2016
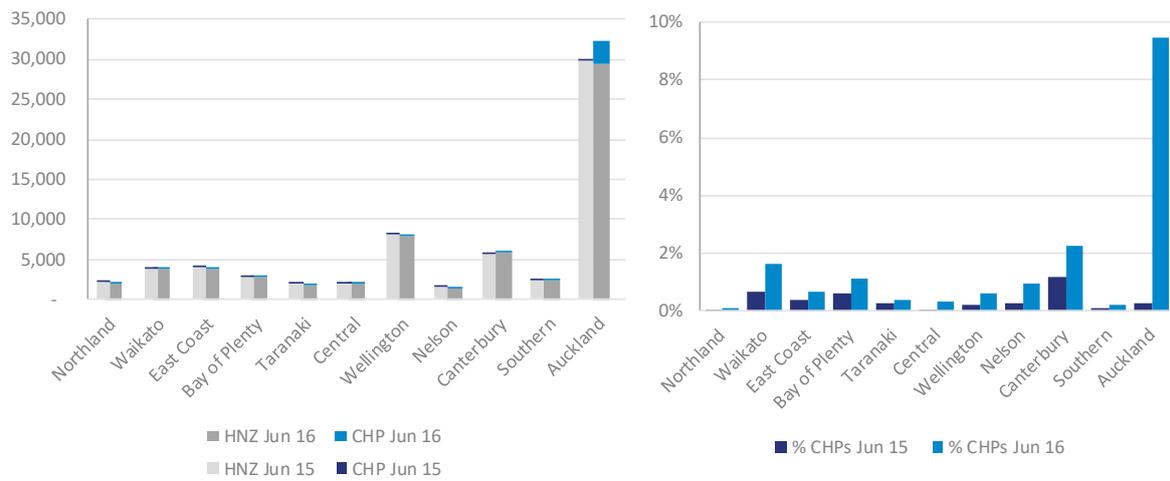
CHP properties tend to have a higher IRRS, leading to a higher than average lifetime cost. CHP properties represent 6% of high-IRRS segments (those further from market with weekly IRRS > $150), whereas they are only 2% of low-IRRS segments. This is perhaps unsurprising, as the overrepresentation of Auckland in CHP properties mean that IRRS would naturally be higher.

6 SENSITIVITY AND SCENARIOS

Inside this chapter

6.1   Introduction and highlights

This section looks at the level of simulation variability present in our lifetime cost estimates and how sensitive these estimates are to changes to the underlying projection assumptions.

KEY RESULTS
- » Averaging over 20 simulations for each individual, combined with the large cohort size means the segment level and total liability results have very little simulation error. At an individual level lifetime costs show much more variation and these projections should not be considered in isolation.
- » Lifetime cost estimates are extremely sensitive to assumed rental growth rates (relative to inflation). A one percentage point change in the assumed rate of growth changes the future lifetime cost estimate by about 20%.

6.2   Simulation variability

Our projections involve simulating the quarterly pathway through housing and welfare receipt at an individual level, using characteristics known at the valuation date. These pathways carry enormous variability. Given a group of individuals with similar characteristics, we would expect some of them to make heavy use of support from both the social housing system and benefit system, and others relatively little from either.

The simulation process adds variability to our results but we obtain stability for the overall liability estimate by:

- » Running 20 independent simulations for each individual and taking the average.
- » Aggregating many individual results. In any single simulation some individuals will be higher than their true average, some lower, but these will tend to balance across the projection.

We calculate the simulation error attributable to our overall liability estimate ($18.1 billion) to be ±$0.038 billion, to a 95% level of confidence. This means that the simulation error at an aggregate level is very small (around 0.1%).

The simulation variability at a segment level is summarised in Table 6.1. The coefficient of variation is the standard deviation of the estimate divided by the estimate itself; it provides a relative measure of variability. These coefficients of variation are less than 0.5% except for four relatively small segments. In absolute terms, all the confidence interval widths are very small; from $0.8m to $24m.

Table 6.1 Simulation variability by segment

Segment				Total liability ($b)	Simulation Confidence interval ($b)	Coefficient of variation
On register	Priority A			0.46	(0.458, 0.463)	0.31%
	Priority B and other			0.19	(0.190, 0.193)	0.46%
IRRS recipients, primary aged < 65	Less close / IRRS > $150	Child in the household	Work obligated	2.86	(2.853, 2.874)	0.18%
			Not work obligated	3.04	(3.032, 3.049)	0.14%
			NOMB	2.70	(2.688, 2.712)	0.23%
		No child in the household	Work obligated	0.44	(0.442, 0.448)	0.37%
			Not work obligated	2.66	(2.649, 2.672)	0.22%
			NOMB	0.90	(0.897, 0.906)	0.24%
	Closer / IRRS ≤ $150	Child in the household	Work obligated	0.21	(0.206, 0.211)	0.55%
			Not work obligated	0.21	(0.208, 0.211)	0.37%
			NOMB	0.66	(0.659, 0.669)	0.38%
		No child in the household	Work obligated	0.05	(0.047, 0.049)	1.06%
			Not work obligated	0.28	(0.276, 0.280)	0.41%
			NOMB	0.30	(0.295, 0.299)	0.40%
IRRS recipients, primary aged 65+	Less close / IRRS > $150	Child in the household		0.35	(0.352, 0.356)	0.29%
		No child in the household		1.34	(1.340, 1.350)	0.20%
	Closer / IRRS ≤ $150	Child in the household		0.03	(0.029, 0.031)	1.50%
		No child in the household		0.17	(0.164, 0.167)	0.45%
Recent exit from housing	Receiving AS			0.33	(0.323, 0.328)	0.42%
	Not receiving AS	Aged <60		0.52	(0.513, 0.520)	0.37%
		Aged 60+		0.01	(0.012, 0.013)	1.65%
Recent exit from register	Receiving AS			0.30	(0.302, 0.307)	0.43%
	Not receiving AS			0.10	(0.099, 0.104)	1.24%
Total (excludes expenses)				**18.12**	**(18.085, 18.162)**	**0.11%**

The stability of the presented aggregate level results somewhat hides the substantial variability that exists in the underlying individual results. The coefficient of variation is about 100%, which means that actual future cost for an individual could easily be double the average expected cost. To highlight this, Figure 6.1 shows the lifetime housing cost for a notional 40-year-old primary householder in Auckland. The 20 lifetime cost estimates arising from each simulation are shown as dark blue dots, and we have inferred a distribution around this. While the average future cost is about $140k, we can see significant variation. For similar individuals, we would expect to see actual lifetime cost under $50k about a quarter of the time, and higher than $300k about 10% of the time.

Figure 6.1 Simulated lifetime cost for a single individual (40-year-old primary householder in Auckland) and inferred distribution
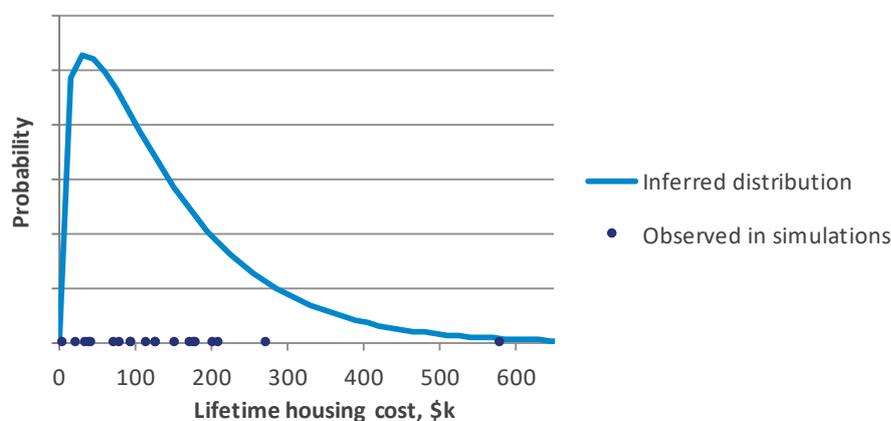
6.3   Sensitivity to assumptions

Our projections are sensitive to many underlying assumptions. We illustrate this sensitivity in Table 6.2, where we summarise the results of various scenario tests performed.

Table 6.2 Sensitivity of liability to changes in assumptions

Scenario	Liability excl. expenses, $ billion	Change, $ billion	Change %
Base	18.1		
Increasing housing exit rates by 5%	17.8	-0.3	-1.9%
Decreasing exit rates by 5%	18.3	+0.2	+1.0%
Adding 1% to rental growth pa	22.3	+4.1	+22.9%
Subtracting 1% from rental growth pa	14.7	-3.4	-18.8%
Subtracting 1% from CPI and AWE inflation pa	18.6	+0.5	+2.7%
Adding 1% to CPI and AWE inflation pa	17.2	-0.9	-5.2%
Unemployment flat (rather than falling)	18.5	+0.4	+2.0%
Register applications 5% higher	18.0	-0.2	-0.9%
Register applications 5% lower	18.2	+0.1	+0.5%

Note: Increasing the housing exit rates by 5% means if household has a 3% chance of exiting next quarter in the base scenario, they have a 3% x 1.05 = 3.15% chance of exiting in the scenario. Similarly, a 3% x 0.95 = 2.85% chance in the decreased exit rate scenario.

The main findings are:

» The results are extremely sensitive to the assumed rental growth rates (relative to price inflation). If rent increases were one percentage point higher (so 4% becomes 5%, say), then this causes a 23% increase in the estimated total lifetime cost. There is a three-pronged effect that causes this result:
  • The increase in market rents, increasing IRRS payments directly
  • The growth rate above CPI (and AWE) means that IRRS growth is higher than just rental growth; the proportion of rent paid by householders falls.
  • The higher level of IRRS decreases exit rates, increasing durations.

The effect is similarly large in the opposite direction; If long term rental growth rates were 1% lower then there would be a 19% reduction in the estimated lifetime housing cost.

» Housing exit rates have been relatively stable over time, particularly for primary householders; see Section 2.2.2. This would suggest that the ±5% change to rates tested here are a plausible variation. The impact on the total liability is relatively small with the liability changing 1 to 2% under the scenarios.

» Decreasing inflation (but keeping the rental growth rate assumptions constant) actually increases the liability. Future AS and TAS payments decrease (as we have tied these payment rates to inflation, as with other benefit system payments) by 15%, but this is more than offset by increased IRRS payments. The increased gap between rental and inflation growth means a household's income grows slower relative to rent, their IRRS increases and their exit rates fall.

» Unemployment rates have a relatively small impact on the total lifetime cost estimate; for those already on the register or in housing, the modelled influence of unemployment rates is indirect. While the total cost estimate only increases 2.0% with higher unemployment, AS and TAS payments increase more (5.0%).

» Changes to the number of register applications has a minor impact on the valuation cohort. Given an unchanged supply of social housing places, a change in the number of register applications won't directly lead to a proportionate increase in IRRS payments but will change the time taken to be

placed into a house for those currently on the register. An increase in the number of applications by 5% will delay placement and reduce the total liability by 0.9%.

The scenarios regarding register applications also show the sensitivity in the size of the register over time. This is shown in Figure 6.2. If register applications were 5% higher than forecast, the register would grow in size over time to about 5% higher than the base projection after five years. Conversely, if register applications were 5% lower, the numbers on the register over time fall to a level about 5% below the base projection. Thus, a change in application rates has a proportional impact to the size of the register over the long term.

Figure 6.2 Relative size of the register over time, sensitivity tests
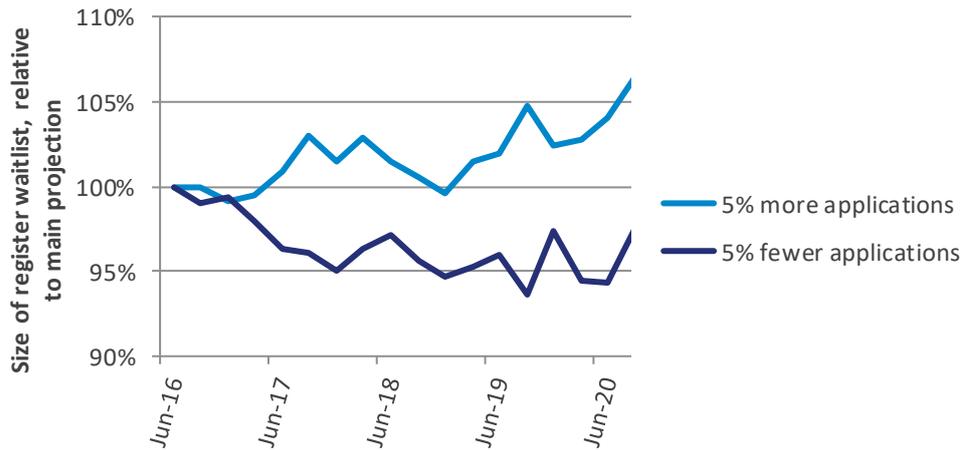
Part C – Approach

7 OTHER COSTS

7.1   Introduction

The lifetime housing cost estimate of $18.7 billion shown in Section 2.3.1 includes a $609m allowance for MSD expenses. This chapter describes these expenses and how we have estimated them.

7.2   Other MSD expenses

MSD incurs expenses in operating social housing system services and programs. These are in addition to the cost of IRRS and accommodation-related benefit payments. Specifically, the allowance covers expense items related to:

»   Operating the social housing register and associated interventions
»   Assessing eligibility and payment of IRRS

The expense allowance has been determined based on permanent budgeted appropriations for the financial year ending 30 June 2017, these are shown in the table below.

Table 7.1 Categorisation of appropriations included in current cohort expense calculation

Purpose	Appropriations	Budget 2016/17, $m
Operation of register, interventions, assessment & payment of IRRS	Services to Support People to Access Accommodation	36.3
	Services Related to the Provision of Social Housing	0.4
Products to support people to transition to independence.	Housing Support Package	2.6

The total budget for these expense items was $39.3m. Some other expenses in the social housing system are already captured in the 2016 benefit system valuation, such as investigations of errors, fraud and abuse; we have not included these in the social housing valuation.

7.3   Expense loading

While the costs described in Section 7.2 are relatively fixed over time, a share of these costs is associated with current clients and the rest attributable to future entrants.

Our methodology for determining the liability for administration and programs is to:

»   Assume the total expense costs are **fixed in real terms** and are based on the 2016/17 budgeted appropriations
»   Allocate expense costs to either current clients or future clients, weighted by expected IRRS payments

» Proportionally allocate these expenses into the various categories listed above, based on the expense budget information provided by MSD.

This gives an estimated $609m allowance for expenses for the current cohort.

The expense allocation has increased since the previous valuation. This is because the underlying appropriations have increased. The appropriations *Services to Support People to Access Accommodation* and *Housing Support Package* have each increased by about a third compared to the previous budget. This is part of the government policy initiatives of delivering the Social Housing Reform Programme and additional IRRS funding.

7.4 Emergency housing expenses

There are further large appropriations related to emergency housing which we have not allowed for in our expense estimate. In particular, the provisions *Emergency Housing Respo*nse (soon to be *Provision of Emergency Housing Places)* and *Emergency Housing Services* are budgeted at around $45m per year. We have excluded these expenses as they likely relate to people outside of the current cohort. The current cohort liability relates to tenants already in social housing, applicants on the register and recent exits from the register or a social house; expenses relate to managing these tenancies, applications and providing other support and interventions for these clients.

People requiring emergency housing support are likely to largely come from outside this current cohort. Those who seek emergency housing support may take one of many pathways, these will involve a combination of:

» Short-term accommodation
» Special needs grant
» Other support to enter the private rental market

For some clients, this support may be sufficient and they may not enter the register or social housing. Other clients could require ongoing support and may make a register application and potentially be placed in a social housing place – if so, they will become part of a current cohort at that point.

8   METHOD

8.1   Introduction

This chapter summarises how we carried out this valuation of the New Zealand social housing system. A more extensive description of the approach can be found in the baseline 2015 social housing report, and further technical details are also available in the appendices to this report.

At its most basic level, the valuation approach involves the following steps:
1. Identifying the number of New Zealanders who have interacted with the social housing or benefit systems over 2015/16r.
2. Predicting the number of new applicants (who aren't already included in the projection) to the housing register for every year through to the end of the projection.
3. Predicting the housing and benefit system state in each projection quarter for all these clients.
4. Estimating payments to these clients for each projection quarter. These are initially estimated in 30 June 2016 dollar values, but subsequently adjusted to allow for inflation from that date to the date of payment. Housing payments modelled include all IRRS, AS and TAS payments.
5. Discounting the inflated payments to allow for investment return.
6. Adding an amount to cover MSD expenses.
7. Running additional analyses for items such as notional liability estimates and scenario testing.

8.2   Data and data quality

8.2.1   Data supplied

Individual client level datasets have been provided relating to social housing tenancies and register applications, benefit receipt, previous use of child protection (CP) and youth justice (YJ) and criminal convictions history for both benefit system and social housing clients.

To protect the privacy of individuals, original social welfare numbers (SWNs) were not supplied in any datasets. The client identification numbers used for matching datasets were separately created by MSD. Other personal information such as names and addresses were not supplied, only a general geographical area was given. A full list of files provided is in Appendix D.

Household and individual level housing data

Responsibility for the management of social housing data (tenancies, register applications, houses) moved from Housing New Zealand (HNZ) to MSD in August 2015. Records provided by HNZ up to this

date were detailed in the previous report. MSD provided records covering the period from August 2015 to June 2016 via the following datasets:

» **Monthly register snapshots**:
- Data at a household level, showing the status of both new and transfer applications. This provided the application date, reasons for application, household size, type and current location of the applicant household, housing requirements such as number of bedrooms and preferred locations, and SAS scores measuring need.
- Data at an individual level, showing all applicants on new or transfer applications. This provided demographic information (age, gender and ethnicity) for household members as well as their relationship to the primary applicant.

» **Monthly tenancy snapshots**:
- Data at a household level, providing information on the size, type and weekly income of the tenant household, the current social house and date of entry, and details of income-related rent and subsidies that make up the market rent of the house. The data also distinguishes between HNZ and CHP providers.
- Data at an individual level, providing information on the age, gender and ethnicity of each household member as well as information regarding their relationship to the primary householder and whether they are a signatory.

» **Monthly property snapshot:** The snapshot provides information regarding location, characteristics, rent and occupancy status. Supplied for HNZ properties only.

» **Extra evidence items**: Social housing spell information for tenants missing from the main tenancy snapshots after the data migration. Approximate age was also provided. These tenants are mostly children with some additional occupants not in receipt of benefits.

Social housing identities were matched by MSD. This involved:

» A mapping of social housing identities to benefit system identities

» A migration file that examined identities moving from HNZ to MSD systems, at both a household and individual level.

We used a combination of these to link individuals and households across the 2015 data migration. Reliability and difficulties associated with the social housing data are discussed below in Section 8.2.2 and we discuss our approach to data cleaning further in Section 8.2.5.

Other housing information

We have also been provided with:

» A supply forecast spreadsheet, indicating planned social housing purchases and developments.
» A summary of MSD administration and programme expenses relating to the social housing reform programme.
» Other background documents for data reconciliation and descriptions of the social housing system.
» Treasury forecasts for future discount and inflation rates.

Historical rent information was taken from MBIE's website[33]. We used territorial authority level synthetic lower quartile rates in our analysis. Economic forecasts were generally taken from the Treasury where available, as discussed in Section 1.7.

---

[33] http://www.mbie.govt.nz/info-services/housing-property/sector-information-and-statistics/rental-bond-data

Benefit system data

Our projection model combines social housing and benefit system pathways, so MSD also supplied data on the benefit system. This was used, with the social housing data, to construct a combined longitudinal series for modelling. The benefit system datasets are detailed in the 2016 benefit system valuation report, and covered:

» Benefit system payments up to 30 June 2016 but extracted as at 31 July 2016. This includes the type of benefit received.

» Demographic information such as education level and ethnicity for benefit system clients.

» Benefit rates, Treasury forecasts for population and unemployment.

Other data

MSD also provided datasets on usage of child protection (CP) and youth justice (YJ) services, and criminal convictions history, for both benefit system and social housing clients.

Matching between systems

To link the social housing, benefit system, Corrections, and CP and YJ information, MSD provided a match between anonymous identities across these four systems. Such matching processes have the potential for false positives (people matched when they are in fact different) and false negatives (people not matched when they are in fact the same). Rates of mismatch are difficult to estimate, but may carry consequences:

» For Corrections and CP/YJ they will tend to dilute the signal associated with criminal convictions and CP/YJ history slightly, but the presence of mismatches should not affect the main conclusions related to these variables and does not affect the overall liability estimate.

» The impact of poor matching between social housing and benefit system data will be greater. The projected pathways through the social housing system rely on current benefit system status and how that is simultaneously projected to evolve.

In some instances, more than one anonymous CP/YJ or Corrections identities has been matched to a single anonymous MSD client. Allowing these identities to be the same person would create unlikely overlapping Corrections spells, or unlikely age-time relationships. Therefore, in consultation with MSD, we have only allowed one match per person. This affects about 3% of Corrections records and less than 1% of CYF records.

8.2.2   Reliability of data

Social housing data

The 2015 social housing report noted several issues with the social housing data relating to the combination of data from several legacy systems. These issues remain for data prior to August 2015 which we still use for modelling in the 2016 social housing valuation. We briefly repeat them here:

» Missing household relationships between 2009 and 2012.

» Secondary matching fields that suggest a material failure in benefit system-housing identity matching, particularly for the pre-2009 data.

» Only partial agreement between register entry and exit files and active register snapshots.

» Duplicate records for both individuals and social housing properties.

» Non-primary householders exiting at three times the previous historical rate in the September 2012 quarter following a system change.

- » Missing values, including age, ethnicity, property location and IRRS level.

- » Material differences in age and ethnicity variables across benefit system and housing datasets where ID matches have been made.

In addition to the above, the data migration to MSD in August 2015 has led to further disruption in the longitudinal series and new data issues. In particular:

- » Significant changes to some households; some people who were believed to be in houses prior to the transfer are no longer on the system, while others not on the previous data have been added. Total numbers of people in housing has remained broadly constant over the switch, and some of the change may be due to the identity matching process rather than a genuinely different person on system.

- » Difficulty fully matching HNZ tenants to HNZ properties.

- » Missing or unreliable records, particularly for the first three months of the switchover. Individuals and their roles within a household, rent and subsidy information were all affected.

- » Missing ages for a relatively small number of individuals and significant changes in age for a slightly larger number.

- » Material changes to dynamics. Clients, particularly non-signatory clients, appear to be exiting social housing at faster rates than in the old system. This is likely to be partly due to different recording practices.

- » More complex register entries, with duplicates and additional sub-states. This made comparisons to previous register statistics more difficult. There were also difficulties reconciling which applications were the transfers indicator and current housing status of applicants.

For all data issues, we have taken steps to try to minimise errors across the longitudinal series. However, some dynamics still appear highly volatile over the last year.

The main consequence of the data issues is that the longitudinal view of the datasets is incomplete; some people have too little housing history because they have not consistently been identified over time. This has led to increased weight being placed on trends seen in the last few years. Another consequence is that dynamics for non-primary householders are less reliable than that of primary householders.

Future improvements in data quality are possible, with more careful cleaning of the longitudinal series. This may materially alter results – we would have to restate old results on the new basis to properly attribute change.

Benefit system data

The benefit system data is of higher quality; the consistency with previously supplied data is good. As with previous years, we found small differences, affecting less than 0.5% of records. Fuller discussion of benefit system data quality can be found in our 2016 benefit system report.

Other system data

The expanded approach to identity mapping to combine social housing, benefit system, Corrections, and CP and YJ data has led to different matches compared to those provided previously for the 2015 welfare valuation. The previous social housing valuation already made use of the expanded identity mapping; therefore the 2015 and 2016 valuations have been prepared on the same basis and this should not materially impact results when comparing the two.

Conclusion

Overall, we believe that the dataset, after cleaning, is fit-for-purpose; it is possible to estimate overall dynamics and long term trends. Aggregate summaries are broadly consistent with other statistics produced by the government.

Note that while we make significant efforts to check and improve the quality of data used in our analysis, we do not take ultimate responsibility for the accuracy and completeness of the data. Our reliance on the data provided is further discussed in Chapter 9.

8.2.3   Missing values

The social housing data has a number of fields that have a material percentage of missing entries:

» Current territorial authority of register applicant
» Location of social housing property
» Relationship to primary householder (particularly between 2009 and 2012)
» Signatory flag
» Ethnicity
» Other variables to a lesser extent: gender, age.

A number of variables from the benefit system data also have a significant percentage of missing values:

» Ethnicity
» District
» Incapacity (type and number)
» Education and qualifications.

We have imputed missing ethnicity, region (at a TA/Local Board level), incapacity, education and gender variables using the distribution for non-missing cases across various strata.

The education and qualifications field are of particularly poor quality. The high rate of imputation tends to dilute the effect of different education levels; differences in results by education reported are likely to be larger than estimated.

We have attempted to infer other missing housing related variables from surrounding data and by linking datasets. We have not modelled or projected a small number of clients where we cannot establish age; age is too pivotal a predictor for both housing and benefit trajectories.

8.2.4   Missing eligibility fields

The benefit payment data files contain an eligibility field to distinguish between some benefit subtypes. About 50,000 payment spells since the reform dates (0.4% of the total) had a missing eligibility field. This has been inferred using surrounding payments.

8.2.5   Cleaning

The main data quality issues were discussed above in Section 8.2.2 above. To address these, the main data cleaning steps included (but were not limited to):

» Reconciliation of housing snapshots with entry and exit data, filling in snapshot data where needed.

» Inferring missing higher-level location fields from postcode or suburb, or by interpolation.

» Filling in missing or unreliable fields by copying information backwards and forwards in the time series, where possible.

» Removing duplicate observations and filling in observations where they appear to be temporarily missing.

» Ensuring a single primary householder at any time, including cases of no primary and more than one.

» Identifying pairs of individual IDs which (based on household ID, age and the time series) appear to be the same person, and consolidating as a single individual.

» Tidying up inconsistencies in the relationship field and assigning signatory status to partners.

» Cleaning ethnicity, gender and age fields using matched welfare information.

» Checking the implied household size (number of individuals linked to a particular social housing property) against the corresponding "household size" field.

» Un-matching a small number of social housing - benefit system matched identities where the match gave implausible ages and dynamic combinations.

» Un-matching a small number of duplicate household matches across the data migration.

8.3   Economic assumptions

Economic assumptions underlying the valuation results were outlined in Section 1.7. Some additional background is provided here.

8.3.1   CPI Inflation and discounting

Our projections are performed on a 'June 2016 dollar' basis. Historical payments are inflated to June 2016 values using the historical Consumer Price Index (CPI) index (consistent with benefit rate increases).

For inflation factors that are different to CPI (namely average weekly earnings and market rents) we express these as the inflation *relative* to CPI in the projection.

For final results, we apply future CPI inflation assumptions to express amounts in actual dollars. We then apply discount factors to reflect the time value of money – effectively allowing for interest earned if money was put aside today. We use CPI assumptions and risk-free discount rates consistent with the Treasury's assumptions[34]. These are the same rates used in the 2016 benefit system valuation.

8.3.2   Wage inflation

Superannuation payments to those aged over 65 are pegged to changes in average weekly earnings (AWE). For this reason, IRRS payment levels to pensioners will tend to grow more slowly than working-age benefit system clients.

We have assumed that incomes for working-age individuals in social housing grow at the rate of CPI, regardless of benefit status. This appears reasonable based on historical data. However, there is no inherent reason why the income of non-beneficiaries should be limited to CPI.

8.3.3   Rent inflation

We have used first quartile rent throughout our analysis – it is much closer to average social housing rents than the average or median.

We have assumed that growth in rents will be faster than AWE growth in the short to medium term. There are a number of reasons why rents can temporarily grow faster than average wages for example:

» National average wages may mask regional effects such as higher wage growth in major cities

---

[34] http://www.treasury.govt.nz/publications/guidance/reporting/accounting/discountrates

» Housing costs can grow as a proportion of total income

» Housing supply constraints can push both the home purchase and rental markets higher. These supply constraints can be further compounded by population growth, both from births and migration

Figure 8.1 compares rental growth to that of wages. Overall rental growth has been higher than wages, particularly in the periods 1994-97, 2002-08 and 2014-16 (current). However, an assumption that rents grow faster than wages indefinitely leads to implausible results; beyond ten years we assume they both grow at the same rate.

Figure 8.1 Historical AWE, CPI and rental growth rates
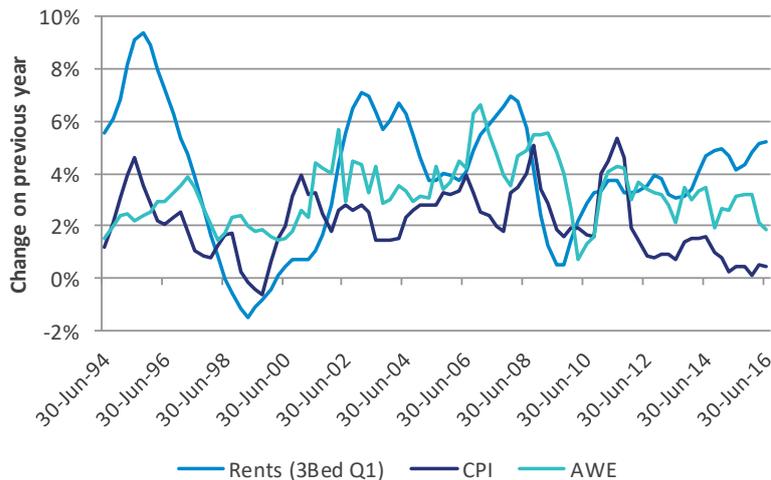
Assumptions regarding the growth in rents have a very large influence on the valuation. Section 6.3 showed that the total liability was extremely sensitive to a small change in the growth of rent: a one percentage point change in rental growth gives a 23% increase in the liability.
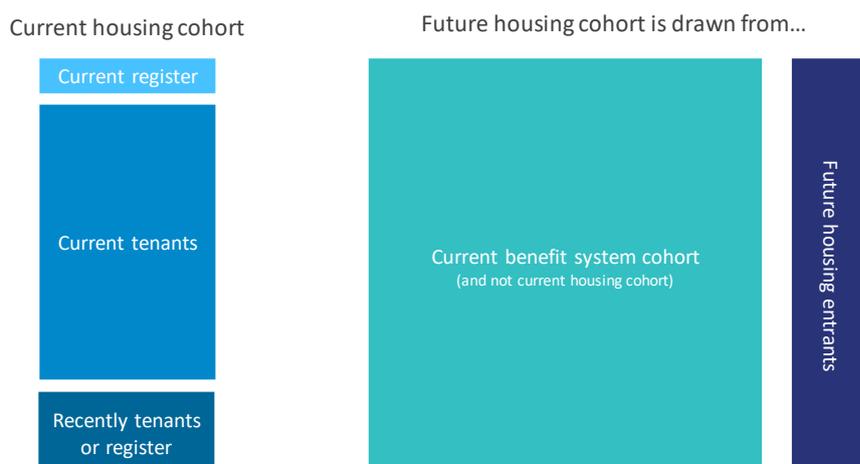
8.4 Valuation scope

8.4.1 Social housing system population and valuation definition

Our projection takes a cohort with their characteristics as at the valuation date and projects their quarterly pathway forward in time using transition and payment models. This is a single simulation, which we repeat multiple times to get an 'average' value for each individual.

It is useful to distinguish between people who are participants of the social housing system, and those who will be in the future. There are three distinct subgroups as depicted in Figure 8.2. and listed below:

» **Current housing cohort:** About 150,000 adults who have interacted with social housing in the 12 months to 30 June 2016.

» **Current benefit system cohort (who aren't also in housing):** About 500,000 clients who have interacted with the (working-age) benefit system but are not already in the current housing cohort. Over the first 10 years this group represents about 60% of future housing clients.

» **Future housing entrants**: About 1,000 new register applicants enter the projection each quarter to simulate the entry of people not in the two cohorts above. This number increases slowly over the projection. These people are notional, in the sense that they do not have known IDs and their characteristics are based on the distribution of similar entrants in the past.

Figure 8.2 Schematic of projection population

Current housing cohort

Future housing cohort is drawn from…

Current register

Current tenants

Recently tenants or register

Current benefit system cohort
(and not current housing cohort)

Future housing entrants

8.4.2 Future payments in scope

We attempt to estimate future lifetime social housing costs. While further details on scope are given in Appendix E, the main components of are:

» **Income related rent subsidy:** For those in social housing, the amount the Government pays towards the market rent of a property.
» **Accommodation supplement:** A benefit paid by Work & Income for eligible clients (those in social housing are ineligible).
» **Temporary accommodation supplement:** Another benefit paid by Work & Income. Over 90% of TAS is related to housing so it has been treated similarly to AS.

Other costs in scope are:

» Administrative expenses incurred by MSD
» Payment integrity services

8.4.3 Length of projection

Lifetime social housing cost includes payments from the valuation date until death. However, this is not clear cut as we do not always have death events recorded. For clients over 65 we have used cessation of NZ Super benefits as a proxy for death to build a mortality model. For clients under 65 death events are not allowed for explicitly, however the transition models allow for them implicitly. We cap the projection at age 100 (plus an adjustment for longevity), this means once a client reaches age 100 we assume they exit housing support and do no return. In all, the main projection runs for about 100 years.

8.4.4 Attribution of IRRS payments

The projection is individual level, but we sum the results by household to obtain a household level lifetime cost estimate. We have allocated IRRS evenly across signatories in the household, but future housing support to current non-signatories is included. So if a non-signatory leaves a current household and re-enters social housing as a signatory in a new household, this will contribute to the lifetime cost estimate of the initial household. There are alternatives for attaching IRRS payments to household members. We believe our current approach is a reasonable basis for operational intervention, as the income for signatories is the main determinant of the level of IRRS support.

8.4.5 Other parameters

The valuation has been conducted as at 30 June 2016, with a one-month delay before data extraction to allow data to mature; for example, adjustments due to abatement against earned income. Valuations are

gross of tax for consistency with Crown accounts, and to better reflect the liability from MSD's perspective.

8.4.6 Reconciling Taylor Fry and MSD numbers

There are a few reasons why our numbers may not reconcile exactly to published MSD statistics:

» **Number of register applications**: There are two ways in which our model simplifies register movements. First, we view a person as still on the register if they have been on the register for a consecutive quarter. This understates the number of applications as some people withdraw and reapply. Second, we class an application by someone in housing for some part of the quarter as a transfer application; in reality, some people exit housing during the quarter and apply while not in a social housing place. We have estimated factors to reconcile our numbers to those used by MSD.

» **Number of social housing places available:** There is some difficulty in reconciling the exact number of social housing places available at the valuation date as timing of exits, repairs, purchases and sales are dynamic in nature. We have adopted values based on the individual level data, which is relatively close to the HNZ management numbers reported at the same date.

8.5 Modelling the social housing system

This section briefly summarises the approach to modelling the social housing system. A more extensive description can be found in the appendices, as well as the baseline 2015 social housing valuation report.

8.5.1 Overview of the valuation model structure

In the broadest of terms, the valuation methodology is as follows:

» Finding the **number** of current clients, in the valuation year, who have interacted with the social housing or benefit systems over 2015/16.
» Predicting the **number** of new applicants to the register, for every year through to the end of the projection, who aren't already included in the projection.
» Predicting the **housing state** and **benefit state** in each projection quarter for all these clients.
» Estimating **payments** to these clients, for each projection quarter. These are initially estimated in 30 June 2016 dollar values, but subsequently adjusted to allow for **inflation** from that date to the date of payment.
» Estimating the **future lifetime cost** by:
  - Discounting these inflated payments to allow for investment return
 - Adding an amount for other MSD expenses

Each client is assumed to be in a single benefit 'state' and a single housing 'state' each quarter. We define three housing states:

» SH: If the person is in a social housing place for any part of the quarter
» AS: If the person is not in a social housing place for any part of the quarter and receives AS
» Neither: If the person is not in a social housing place for any part of the quarter nor receives AS

Because clients can be on the register while in any of these three housing states we overlay register status onto these three states.

There are also nine possible benefit states, corresponding to seven main benefit types, supplementary-only beneficiaries and those not receiving benefits (NOB). Figure 8.3 depicts both the housing and benefit states.

Figure 8.3 Benefit states (left), housing states (right) and the projection steps that determine them (centre)
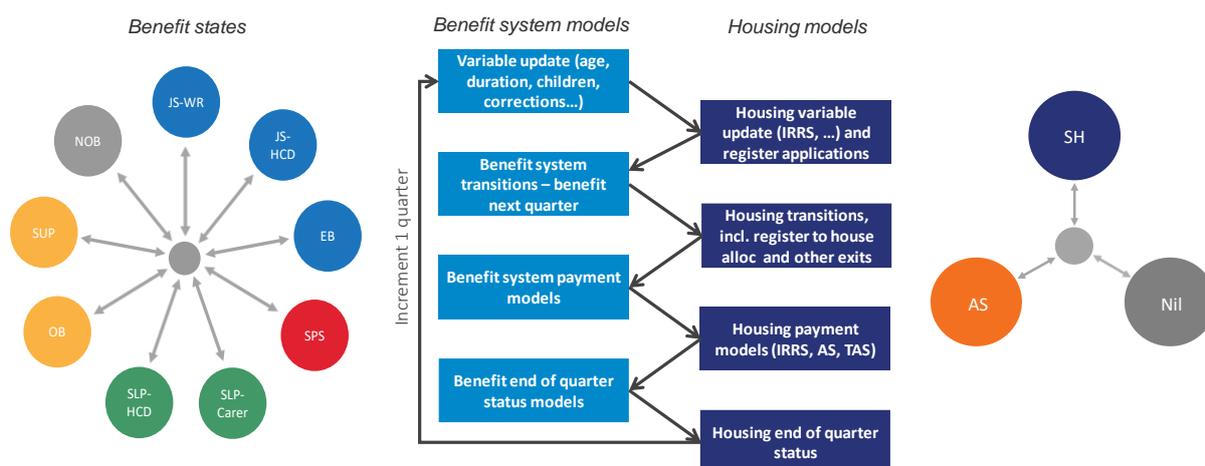
With the combined benefit system – housing system projection, the housing transition models depend on an individuals' benefit status, both in the current and the subsequent quarter. For example, if a client is not receiving any benefits (main or supplementary) in the next quarter then they cannot move to the AS housing state. The ordering in which the benefit system transition, housing transition and payment models are run is indicated in the figure above.

The most important transitions are those out of and into social housing; we describe these in further detail below.

Treatment of households

Households evolve in time; children leave home, singles become partnered and couples can split. The grouping of individuals into households in future years is difficult. Further, the data available is scant; household evolution while in social housing is available, but there is little data for what happens after exiting social housing. We have simplified the treatment of households for tractability:

» Existing households in social housing are modelled as a group, the movements of one householder will be closely related to the movements of the primary householder. We refer to these as 'real' householders.

» Future households are notional; we model people as individuals and assign them to **notional households** ('Person A is the partner in a household of size four'), but we do not formally link these individuals as a household.

» Householders that start in housing but exit become notional too. This means for a couple who exit social housing, the future housing state of one is not affected by the other.

8.5.2   Key housing models

Probability of exiting social housing

We use a number of binomial regression models to predict the pathway a householder exiting social housing takes. For those in real households, as depicted in Figure 8.4:

» We first model the probability of the primary householder exiting social housing, using separate models for working age and NZ Super age clients.

» Conditional on the primary householder, we then model the probability that other householders have the same transition event as the primary householder. This allows non-primary householders to exit even if the primary householder remains, or vice versa.

Figure 8.4 Transition models for individuals in real households currently social housing
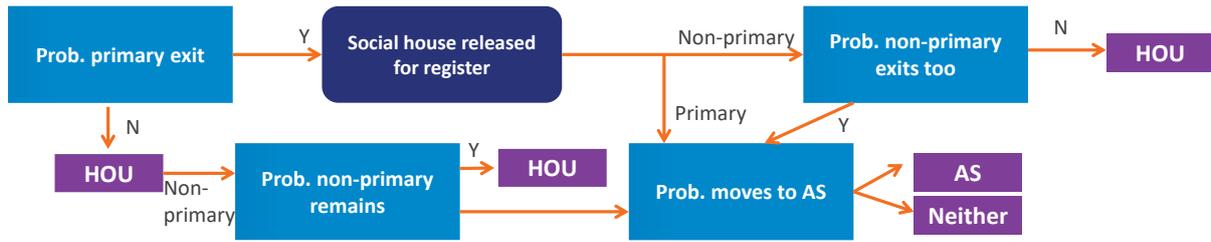
For individuals in notional households there is no conditioning on the primary and so the models are simpler as shown in Figure 8.5.

Figure 8.5 Transition models for individuals in notional households currently social housing


For those who exit, real or notional individuals, we then model the probability of moving to the AS or Nil state.

Probability of moving from the register to social housing or other register exits

The allocation of register applications to housing is complex; our approach to allocation is a simplification of reality. We first build a probability model of placement based on historical data. This gives a data-based estimate on the relative importance of SAS priority and scores in allocation. Applications are then semi-randomly[35] sorted from high need to low. Working down the list, households are placed in social housing places, preferring places that are well matched to the household as depicted in Figure 8.6.

Figure 8.6 Depiction of placement of register applications in projection
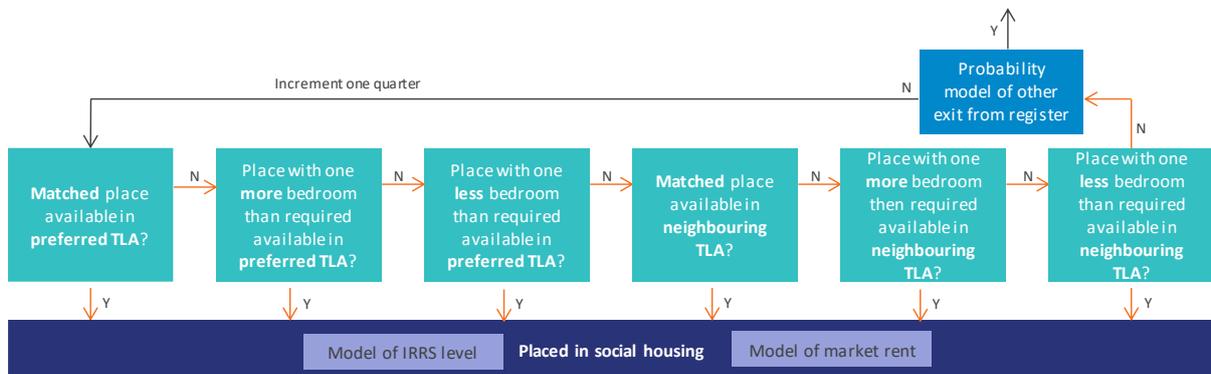
For applications that are not placed within the quarter, there is an additional model for the likelihood of exiting the register without being housed. For applicants that are placed in a social housing place, we initialise the market rent and IRRS level from distributional models. Other variables (such as household size) are taken from the equivalent variables on the register application.

---

[35] The semi-random sort keeps the relative probabilities; if application A is twice as likely to be allocated a house than application B, then it will be twice as likely to be higher than B in the sorted list.

Payment models

We use eleven separate payment models to predict the future lifetime cost. These are shown in table below. While tenants in a social house are not eligible for AS, a tenant may receive AS in a quarter when they are in the SH state, as they may enter or exit the place part way through the quarter.

Table 8.1 The various payment models

Housing state	Payment type					
	IRRS		AS		TAS	
	Age < 65	Age ≥ 65	Age < 65	Age ≥ 65	Age < 65	Age ≥ 65
Social housing	●	●	●	●	●	●
Accomodation Supplement			●	●	●	●
Neither					●	

Other models

Further models simulate, among other things, register applications and IRRS level evolution for those in social housing. A complete list of models can be found in Appendix F.

8.5.3 Modelling variables

Numerous modelling variables are used to predict the housing transitions and payments described above. These are listed in Appendix F and include:

» Household information (including register households)
» Region, at a Territorial Authority (Local Board in Auckland) level
» Private market rents
» Social housing and AS history variables
» Quarter and the corresponding unemployment rate (at a national and regional level)
» Individual demographics
» Benefit history
» Family-related variables
» Health and disability-related variables
» Criminal convictions history
» Child protection and youth justice history

8.5.4 Housing portfolio and availability

In the main projection we assume:

» The number of properties for every number of bedrooms in a territorial authority (or Auckland Board) is largely fixed. At the start of the projection this includes occupied housing and a smaller number of unoccupied but available properties.

» The number of unavailable properties remains constant.

» Additional supply is added, based on HNZ and CHP intentions over the next four years. These numbers are shown in Table 8.2 below. In cases where the exact territorial authority or the number of bedrooms is unknown, we assume a distribution of bedrooms consistent with the existing portfolio.

Table 8.2 Housing places at the valuation date and assumed net changes over the next four years

	Occupied		Available	Unavailable	New supply	Assumed total supply (occupied + available)
	HNZ	CHPs	HNZ	HNZ	HNZ + CHP	
At June 2016	60,411	3,130	776	1,988		64,317
2016/17					471	64,788
2017/18					604	65,392
2018/19					927	66,319
2019/20					627	66,946
Later					0	66,946

Whenever a primary householder exits a property, this property is 'added' back to the available portfolio. Most of the time this property will be reused within the quarter (about 73% of the time, based on historical data), but sometimes it will become available in the subsequent quarter. This allows for the time between exit and placing a new household; a property that becomes available late in a quarter has little chance of being filled before quarter end.

The approach ignores the dynamics of housing disrepair, this was judged a reasonable simplification; over time we expect that the number of houses made unavailable for repair should balance the number of houses made available after repair.

8.5.5 Future housing entrants

In 2016/17 we expect about 15% of register applications per quarter to come from people who are not in the starting cohort. That is, they have not interacted with the benefit system or social housing system in the 2015/16 year. Similarly, there will be entrants in 2017/18 who were not in the starting cohort and not added in 2016/17. We refer to these as future housing entrants.

Our approach to adding these applications to the projection is:

» To create a high level aggregate estimate for total applications per quarter.

» To estimate the proportion of these that are attributable to the 'known' cohort (either the initial cohort, or as a future entrant in a previous projection quarter). We are able to estimate this plausibly for about 10 years, using historical data.

» We extrapolate this percentage beyond 10 years.

» We use the percentage to estimate the number of outside applications. This is then converted to the number of individuals, using historical household compositions.

8.6 Notional liability and idealised purchasing

8.6.1 Notional liability

We have defined the notional liability as the main liability plus:

» The additional future lifetime costs if those on the register were placed in a social housing place at the valuation date

» The addition (or reduction) in future lifetime costs if those on the transfer were moved to a social housing place of the required size and desired location at the valuation date

» The additional future lifetime costs associated with placing those in an overcrowded social housing place in a bigger social housing place at the valuation date

» The reduction in future lifetime costs associated with placing those in an underused social housing place in a smaller social housing place at the valuation date.

To measure these costs, we create a modified notional cohort for projection in which we implement the four changes listed above. This gives the total notional liability, and the change relative to the main projection for the altered households is the additional notional liability.

8.6.2   Idealised purchasing

For idealised purchasing projections, we do not retain a social housing place's location and size at exit; instead we add the social housing place to a pool of available housing, and note a 'sell' for the original social housing place. When a client is allocated to a social housing place we remove a social housing place from the pool and note a 'buy' for the size and location (based on their register preference).

8.7   Model checking and validation

There are many checks performed on the models to ensure their appropriateness. These relate to the:

» Individual models used, which are generalised linear model diagnostics statistics and plots
» Analysis of model changes from 2015 to 2016
» Detailed cohort-level analysis of differences in projection patterns
» Testing of models against historical data
» Sensitivity testing as detailed in Chapter 6

These allow us to ensure the reasonableness of the projections and to better understand the limitations of the model.

8.8   Compliance with actuarial and accounting standards

There are currently no accounting or actuarial professional standards strictly applicable to the valuation of social benefit or social housing liabilities. However, in general we carried out the valuation in accordance with standards applicable to the valuation of accident compensation liabilities.

As such, we have generally complied with the New Zealand Society of Actuaries Professional Standard No. 30 entitled "Valuations of general insurance claims". We have also attempted to comply with International Financial Reporting Standards (IFRS). Specifically, estimates of liability incorporate an allowance for future inflation, investment return and administration expenses on a basis specified by the Standards.

However, we have not estimated nor incorporated a prudential margin as is sometimes required by such standards. In our opinion, this seems unwarranted given the use to which the valuation will be put.

It is worth noting that in October 2013 the International Actuarial Association has published an International Standard of Actuarial Practice 2 (ISAP 2) "Financial Analysis of Social Security Programs".

9　RELIANCES AND LIMITATIONS

Inside this chapter

9.1　Introduction

This chapter notes the reliances and limitations associated with this report. While there are standard reliances and limitations that usually accompany a valuation of this type (see 9.4), this valuation has limitations that extend beyond these. These relate to limitations in data, simplifications in modelling and the uncertainty of undertaking relatively new valuations. These are important – fully addressing them could materially affect absolute level of lifetime housing cost (although the conclusions regarding relative differences between households with different risk factors, or change over time, are less likely to be impacted).

9.2　Data limitations

The quality of the housing data was mixed, as discussed in Section 8.2.2. Some of the data issues may materially affect the results, and are flagged again below for completeness.

9.2.1　Step changes in the data and missing fields

The individual and household level data has been sourced from HNZ and MSD and required extraction from four different databases (the most recent MSD system, the most recent HNZ system plus two legacy HNZ databases). There were inherent limitations to the data associated with this change points. For instance:

» At August 2012 (one of the system changes) a significant number of non-primary householders erroneously appear to exit.
» Relationship data is missing for much of 2009 through 2012.
» We do not have a clean field for indicating non-primary signatories.
» There are significant changes to the exit rate for non-primaries following the August 2015 system change.
» Some tenants and applicants disappear and reappear around the time of the migration, which makes the September 2015 quarter somewhat unreliable.

To the extent that these issues might be resolved in the future, the resulting analysis and projections could be affected.

9.2.2　Combining welfare and housing datasets

The matching of client identities between social housing and benefit systems is imperfect and affects the longitudinal history of current clients. This history is important in predicting future transitions, so may have material impacts on the projections for some client groups. Some housing clients will have missing benefit system history, and vice versa.

9.3 Modelling simplifications

All models are a simplification of reality. While sophisticated, our approach does simplify some important household dynamics. These might materially affect the results, and future improvements to address them would be accompanied with an analysis of change.

9.3.1 Notional households for future entries

Current households are treated properly as a unit – the housing state transitions of one householder will affect the transitions of another. However future households are not linked together (see Section 8.5.2). This potentially biases the projection results.

9.3.2 Household evolution

We have simplified the evolution of households within social housing. We have not explicitly allowed for the aging of children (for instance, the number of bedrooms needed falls once children are adults), nor the changing size and composition of notional households. We have not allowed for direct entry of adults into social housing; we always assume they enter via the register.

9.3.3 Sensitivity to assumptions

Sensitivity to assumptions was discussed in detail in Section 6.3 and the impact of certain scenarios on lifetime housing cost estimates detailed. Suffice to say, some assumptions are very significant in driving overall results, and we cannot offer any certainty in how economic parameters will evolve over time.

9.3.4 Future social housing system changes

Our valuation is a baseline simulation that assumes the dynamics of the current policy arrangements continue indefinitely. Future policy and operational changes will influence these forecasts; our valuations are intended to measure these changes as they occur, rather than attempting to anticipate them.

9.4 General limitations

The estimation of the liability is subject to influences whose effects cannot be determined with complete accuracy. Consequently, it is a virtual certainty that the ultimate liabilities will depart from any estimate, but the extent of this departure is subject to uncertainty. If potential outcomes and their relative likelihoods were expressed as a probability distribution, we would consider our liability estimates to be the mean of that distribution. In particular, the estimates provided in this report contain no deliberate bias towards over or under estimation.

10 GLOSSARY

The following tables give definitions for common acronyms and terms used in this report.

Table 10.1 Acronyms for social housing status, segments and their determination

Term	Definition
Basis of segment definitions	
AS	Accommodation Supplement (and related assistance) – a payment to help with accommodation costs. Not available to signatory householders in a social housing place.
BEN	Receiving a Main Benefit, this includes Jobseeker support, Sole Parent Support, Supported Living Payment, Young Parent Payment and Youth Payment.
IRR	Income-related rent – IRR is calculated based on a client's assessable income and their household type. Social housing providers (HNZC and CHPs) then charge this rate as rent to the client (market rent = IRR + IRRS). If the calculated rate of IRR is higher than the market rent for the property, the housing provider will charge no more than the market rate as rent for the property.
IRRS	Income-related rent subsidy – a top up payment to housing providers to bridge the difference between the income-related rent a client pays and the market rent of the property. Market Rent = IRR + IRRS.
JS	Jobseeker Support – a new benefit type introduced July 2013 (replaced Unemployment Benefit and Sickness Benefit, and partially replaces Domestic Purposes benefit). We sometimes refer to people receiving JS as Jobseekers.
MR	Market Renter –clients who are paying market rent and residing in a property managed by Housing New Zealand or a Community Housing Provider.
Neither	Not in a social housing place and not receiving Accommodation Supplement. Sometimes referred to as NIL.
NOMB	Not on main benefits (in a given calendar quarter); such a client might still potentially be receiving supplementary benefits.
NZ Super	NZ Superannuation – A non means tested payment to New Zealanders aged over 65 who meet the residency requirements, also includes the Veterans Pension.
Recent exit	Recent housing or register exit – a client who is currently not in a social housing place or on the register but has been in the last 12 months.
Recent housing exit	A client who is currently not in a social housing place but has been in the last 12 months. They were more recently in social housing than on the register unless both occurred in the same quarter, in which case social housing is prioritised.
Recent register exit	A client who is currently not on the register but has been in the last 12 months. They were more recently on the register than in social housing.
REG	Register – refers to the social housing register, used to manage applications for social housing.
SH	Social Housing – clients are considered in social housing if they reside in a property managed by Housing New Zealand or a Community Housing Provider, they may be paying income- related rent or market rent.
SLP	Supported Living Payment – a new benefit type introduced July 2013 (replaced Invalid's Benefit and Domestic Purposes Benefit – Care of the Sick and Infirm).
SPS	Sole Parent Support – a new benefit type introduced July 2013 (partially replaced Domestic Purposes benefit). We sometimes refer to people receiving SPS as Sole Parents, or SP.
Work obligated	Clients are assumed to be work obligated if they are in receipt of a JS-work ready benefit (including EB) or in receipt of SPS and their youngest child is at least 3 years old.

Term	Definition
Basis of segment definitions	
Not work-obligated	Clients are assumed to not have work obligations if they are in receipt of a JS-HCD benefit, in receipt of SPS and their youngest child is under 3 years old or in receipt of a SLP benefit.
YP/YPP	Youth Payment/Young Parent Payment.

Table 10.2 Further acronyms for benefit types and benefit system segments

Term	Definition
Tier 1 benefits (main benefits); and basis of segment definitions	
EB	Emergency benefit (included in Jobseeker Support benefit).
HCD	Health condition, disability (sub-set of both Jobseeker Support and Supported Living Payment beneficiaries with reduced work obligations).
NOB	Not on benefits (in a given calendar quarter).
SUP	Clients receiving supplementary benefits (Tier 2 or 3), but no main benefit.
WR	Work-ready (sub-set of Jobseeker Support beneficiaries with work obligations).

Table 10.3 Other common terms and acronyms used in the report

Term	Definition
Average household liability	The inflated and discounted total lifetime future housing cost of each household.
ABP	Average benefit paid per quarter to clients in receipt of a benefit that quarter.
Average lifetime cost	Refers to the expected future welfare payments to a client up to age 65, including inflation and discounting.
Board	Community Board or Local Board – geographical sub-grouping of Territorial Local Authorities.
CHP	Community Housing Provider – a housing provider (other than Housing New Zealand) that provides social rental housing and/or affordable rental housing.
CYF	Child Youth and Family.
CP	Child protection.
Future lifetime housing cost	The inflated and discounted total future cost projected for an individual or a household.
HH	Household – grouping of people who either share a tenancy or an application to the register.
HNZ	Housing New Zealand – the Crown agent that provides housing services for people in need.
Housing state	Current social housing status of a client. This is determined by whether a client is in social housing place, on the register for a social housing place and/or receiving Accommodation Supplement.
Market Rent	The average level of rent being paid for similar properties in the same area. Market Rent = IRR + IRRS.
Primary	A primary householder is the key contact for a social housing tenancy or register application. They are always considered a signatory.
Qtr	Quarter of the year – unit of measurement of time.
Region	A geographical grouping by MSD of New Zealand into 11 regions.
Register dynamics	Refers to the way a client moves through the register system. It includes the application, needs assessment outcome, time spent on the register and register exit to housing or otherwise.
Relative exposure	This term is used on figures throughout the report. It is generally used to mean the number of clients in a given group compared to the total.
Signatory	A signatory in in a household is a person whose income is included in the household income calculation but is not a nominated primary householder. The IRR is often set at 25% of the combined income of signatories.
System/benefit system	Refers to the NZ benefit system as administered by MSD. Implicitly applied only to those benefits within scope of the liability – i.e. the main benefits and supplementary/hardship assistance listed above.
TAS	Temporary Additional Support – a payment to help clients meet essential living costs.
Tenant	Clients are sometimes referred to as tenants where they reside a property managed by Housing New Zealand or a Community Housing Provider, they may be paying income-related rent or market rent.
Territorial authority	Territorial authority, a geographical grouping of New Zealand into 68 territorial authorities each with a local government.
YJ	Youth justice.