Trial of Rental Housing Warrant of Fitness Scheme with Housing New Zealand

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Executive Summary

1 On 2 December 2013, the Hon Dr Nick Smith, Minister of Housing, presented a paper to the Cabinet Social Policy Committee informing Cabinet of his intention to trial a rental housing Warrant of Fitness scheme on Housing New Zealand properties. The Minister of Housing jointly tasked Housing New Zealand and the Ministry of Business, Innovation and Employment to develop, test and implement a rental housing Warrant of Fitness scheme.

2 The purpose of the Scheme is to improve the health and safety of tenants, particularly those on low incomes. 49 Warrant of Fitness criteria were used in the trial and were categorised into three major groupings, Insulated & Dry, Safe & Secure and Essential Amenities. The criteria are detailed in ***Appendix 1***

3 The Cabinet decision noted that:

a) Housing New Zealand will commence a trial of the Scheme from December 2013, within its existing three year asset management programme (the Trial);

b) the anticipated benefits of the Trial will be primarily in providing better information to Government about Housing New Zealand stock quality and the feasibility of a proposed Warrant of Fitness standard;

c) a Technical Advisory Group would be convened by officials to advise on detailed elements of the proposed Scheme.

4 In Cabinet minute CAB Min (13) 42/9, the Minister of Housing was invited to report back to the Cabinet Social Policy Committee by 31 July 2014:

a) reviewing the Housing New Zealand results on approximately 60,000 properties;

b) advising on indicative feasibility and cost findings;

c) advising on the likely cost range to ensure that all Housing New Zealand properties meet the proposed Warrant of Fitness standard;

d) assessing the applicability of the Warrant of Fitness to private sector rental properties, and potential costs and benefits; and

e) advising on regulatory options, should the government wish to apply a Warrant of Fitness to private sector properties in the future.

5 Between March and April 2014 Housing New Zealand carried out a trial of 500 properties to assess the viability and costs of a proposed Warrant of Fitness scheme. 100 properties were used for proof of concept purposes and 400 properties were assessed in the final trial. The properties selected were a representative sample that allows the trial results to be extrapolated to 60,000[1] Housing New Zealand properties within an error rate of +/-5% assuming a confidence interval of 95%

6 The Housing New Zealand trial of a rental housing Warrant of Fitness scheme has now been completed and this report outlines the findings from the trial.

7 The Warrant of Fitness surveys took between 45-65 minutes to complete and a further 15-20 minutes to upload data to Housing New Zealand. The cost to carry out a Warrant of Fitness survey is estimated between $110 and $150 per property.

[1] The Christchurch and Lease portfolio properties have been excluded from the extrapolated sample as these properties will have full Warrant of Fitness surveys in the next twelve months

8 The proposed Warrant of Fitness scheme has three risk categories that criteria are assessed against:

- **High Risk** – Affects the immediate and sustained safe and healthy use of the property
- **Moderate Risk** – Affects the daily function of the property
- **Low Risk** – Affects the overall functionality of the property

9 There are four categories of compliance proposed:

a) **Fully Compliant**: passes all Warrant of Fitness criteria
b) **Non-Compliant – Urgent repairs**: High risk criteria, remediation within 2 days or potential vacation of the house.
c) **Non-Compliant – High priority repairs**: High risk criteria, remediation within 10+ days
d) **Non-Compliant – Scheduled repairs**: Low or Moderate risk criteria, remediation within timeframes defined in the risk and remediation framework

10 Across the 400 properties surveyed, the average Housing New Zealand property will comply with around 95% of all the Warrant of Fitness criteria relevant to that property.

11 69% of Housing New Zealand properties had five or fewer non-compliant Warrant of Fitness criteria.

12 The compliance results were as follows:

a) Fully Compliant: 17 properties – 4%
b) Non-Compliant – remediation within 2 days: 193 properties – 48%
c) Non-Compliant – remediation within 10+ days: 127 properties – 32%
d) Non-Compliant – Low or Moderate risk criteria: 63 properties – 16%

13 The estimated costs to remediate non-compliant criteria are as follows:

a) Non-Compliant – remediation within 2 days: $ 22,033 – 9.6%
b) Non-Compliant – remediation within 10+ days: $ 98,354 – 42.7%
c) Non-Compliant – Low or Moderate risk criteria: $110,105 – 47.8%

14 The total estimated cost to remediate all non-compliant Warrant of Fitness criteria is $230,492, an average of $576 per property.

15 Extrapolated to 60,000 properties[2], the total estimated cost to remediate all non-compliant Warrant of Fitness criteria is $34,573,837. Note that this is an extrapolated cost only, the only properties with identifiable non-compliant Warrant of Fitness items are the 400 properties surveyed in the trial.

16 The estimated costs to remediate non-compliant criteria by Warrant of Fitness category are as follows:

a) Insulated and Dry: $67,254 – 29.2%
b) Safe and Secure: $65,362 – 28.3%
c) Essential Amenities: $97,876 – 42.5%

[2] Excludes the Christchurch and Lease portfolio properties which will have full Warrant of Fitness surveys in the next twelve months

17 The greatest numbers of non-compliant components were restrictor stays that are required to provide secure passive ventilation – 72.8% at an estimated cost of $33,405 to remediate.

18 The estimated cost to remediate non-compliant insulation is $45,438 – 20% of total estimated remediation costs. The majority of insulation failures related to existing insulation that no longer meets the Warrant of Fitness standard.

19 Remediation repairs would be undertaken through the following mechanisms:

a) Planned work programmes: $119,734 – 51.9%
b) Responsive maintenance: $110,758 – 48.1%

20 A number of improvements and refinements will be required to both the survey and reporting and remediation processes. Overall the Warrant of Fitness inspection scheme is feasible and can be achieved at a reasonable cost, with results that will lead to improved health and safety outcomes for tenants.

Trial Methodology

21 The Warrant of Fitness standard has been developed by Housing New Zealand and Ministry of Business, Innovation and Employment officials and agreed with the Minister of Housing.

22 A Technical Advisory Group was established to:

a) Provide technical advice on the draft Warrant of Fitness standard;
b) Make evidence-based arguments for inclusion or exclusion of particular criteria and elements in the draft standard;
c) The Technical Advisory Group was accountable to the Warrant of Fitness Steering Group which comprised Housing New Zealand and Ministry of Business, Innovation and Employment officials.

23 The Warrant of Fitness criteria used in the trial was approved by the Technical Advisory Group on 14 February 2014. The Warrant of Fitness criteria are grouped into three main categories:

a) Insulated and Dry;
b) Safe and Secure; and
c) Essential Amenities.

24 The trial incorporated two phases. Phase One involved inspecting 100 properties in Auckland to test and calibrate the survey form and Warrant of Fitness criteria and Phase Two involved trialling the updated Warrant of Fitness criteria on a further 400 properties, located around the country. The trial was completed on 17 April 2014.

25 In addition to the final Warrant of Fitness criteria, a Compliance Risk and Remediation Framework has also been developed to define criticality and remediation timeframes of non-compliant Warrant of Fitness elements. The framework is outlined later in the report.

26 Non-compliant Warrant of Fitness elements identified in the trial have been priced and then extrapolated to 60,000 properties, excluding Christchurch and lease properties, to estimate the likely cost range to ensure that all Housing New Zealand properties meet the proposed Warrant of Fitness standard.

27 The trial results that were presented to the Technical Advisory Group are detailed in ***Appendix 3***

28 Refer to ***Appendix 4*** for full details of the methodology adopted for the trial.

Feasibility of Doing Warrant of Fitness Assessments

29 The Warrant of Fitness field assessments were carried out by Project Quality Solutions (PQS).

30 Persons with a trade background or somebody with a good understanding of the performance of building components are ideally suited to carry out Warrant of Fitness assessments.

31 It took between 45-65 minutes to complete the actual Warrant of Fitness survey at the property once access was gained. A further 15-20 minutes was required for data uploading to an electronic format for Housing New Zealand.

32 PQS believe that the Warrant of Fitness survey inspection programme could be delivered in a range of **$110 - $150 per property** using electronic data collection technology and where a cost effective number of properties are surveyed each year.

33 For the trial, Housing New Zealand used a manual process to analyse and report the trial results. However, going forward the analysis and reporting process will be fully automated. Once this has happened, the cost to Housing New Zealand to process surveys and provide results will be negligible.

34 Refer to ***Appendix 5*** for full details of the feasibility of undertaking Warrant of Fitness assessments.

Warrant of Fitness Criteria

35 The final Warrant of Fitness criteria agreed at the Technical Advisory Group on 30 April 2014 are detailed in ***Appendix 1***

Compliance Risk and Remediation Framework

36 The primary purpose of building regulations is to ensure that people who use buildings can do so safely and without endangering their health. The Rental Housing Warrant of Fitness Scheme has identified 49 criteria that are considered the minimum standard necessary for a rental property to be fit for purpose and able to be used in a safe and healthy way, that is, that the building is able to be maintained in a warm, dry, safe and secure way (assuming appropriate measures are taken by the tenant, such as operating ventilation and not disabling safety features), and that it has those amenities that are reasonably considered to be necessary for daily life.

Some of the 49 criteria pose a potential immediate health and safety risk (for example falls from height), others are not immediately hazardous but the risk is cumulative over time (for example dampness).

37 The trial proposes that the Housing Warrant of Fitness scheme includes a:

a) Compliance Risk and Remediation Framework that allows a landlord to be able to address non-compliant items in a timely and reasonable manner. Refer to ***Appendix 2***.

b) A reporting template for Housing New Zealand to report results to the Minister of Housing, Cabinet and the public, which distinguishes appropriately between different levels of non-compliance, based on risk.

38 This framework applies only to Housing New Zealand. Should Government decide in future to extend the Warrant of Fitness beyond Housing New Zealand, the framework would need appropriate modification for smaller-scale landlords.

39 The key principles underpinning the Housing Warrant of Fitness compliance framework are:

a) The Housing Warrant of Fitness criteria are assessed in terms of Compliant and Non-Compliant;

b) Retrofitting of criteria items that do not meet current building code standards is not necessarily required, but alternative solutions to meet a minimum health and safety standard may be proposed. For example, currently the Building Code requires stair treads to be a minimum width of 220mm. However many pre-building code (pre-1991) buildings have stair treads of less than 220mm. It is not realistic, and may be physically impossible, to replace these stairways with 220mm wide treads. However, safety could be enhanced by adding handrails to each side of the stairway, by improving stairway lighting and so on;

c) All criteria have been included because they represent a minimum acceptable health and safety standard and/or essential amenity for rental properties;

d) A criticality risk rating to Housing Warrant of Fitness criteria is proposed. For example, a house that has a hole in the roof letting in water would be a High risk item that would require immediate repair. However, a house that does not have restrictor stays required for secure ventilation purposes, would be a Moderate or Low risk item that could go into a planned maintenance programme for remediation;

e) Three risk categories are proposed (Refer to ***Appendix 2***):
   - **High Risk** – Affects the immediate and sustained safe and healthy use of the property
   - **Moderate Risk** – Affects the daily function of the property
   - **Low Risk** – Affects the overall functionality of the property

f) Combinations of failures, that on their own might not represent High risk, could in combination, be elevated to a High Risk rating. For example, presence of mould, poorly performing ventilation and absence of insulation might elevate a house to a High risk rating in terms of the ability of the house to be maintained in a warm, dry and healthy condition;

g) Remediation timeframes have been assigned to each risk rating, for each criteria (Refer to ***Appendix 2***); and

h) Risk information also needs to be made available to tenants so that they are able to make informed choices when taking on a tenancy. For example, if a house has a deck balustrade that is below current building code height

standards, then this information could be valuable to tenants with young children.

40 Response timeframes recognise that a landlord may require time to procure a tradesman and/or finance to be able to remediate a non-compliant item, but also recognises the need for a non-compliant item to be closed out in a reasonable timeframe so that a tenant is able to use their property in a safe and healthy way.

41 In the case of urgent situations being identified, the assessor would be expected to contact both the owner and the tenant immediately, identifying the critical risk identified. In extreme situations, this may even require a building to be vacated.

42 In some cases more specialised assessment/investigation or testing may be required to determine cause and/or nature of the problem. For example, excessive ground water, asbestos testing and so on.

43 The time of year the non-compliance is identified, may impact on remediation timeframes. For example, a leaking roof that has been identified in July may have a temporary fix applied and full remediation may be deferred until the summer months.

Warrant of Fitness Reporting Dashboard

44 There will be strong public interest in Housing New Zealand Housing Warrant of Fitness results. When reporting the results to Ministers and the public, it is appropriate to distinguish between properties which require only minor maintenance on a small number of criteria, and properties which present a high health and safety risk.

45 The trial proposes a reporting dashboard with four categories:

a) **Fully Compliant**: passes all Warrant of Fitness criteria

b) **Non-Compliant – Urgent repairs**: High risk criteria, remediation within 2 days or potential vacation of the house. For example, the property has no functioning smoke alarms, no electrical supply, no potable water, no sewerage services, etc.

c) **Non-Compliant – High priority repairs**: High risk criteria, remediation within 10+ days

d) **Non-Compliant – Scheduled repairs**: Low or Moderate risk criteria

Key Trial Results

46 The full results from the Warrant of Fitness trial that were presented to the Technical Advisory Group on 30 April are detailed in ***Appendix 3***.

47 The following table calculates the percentage of relevant Warrant of Fitness criteria that the "average" space will comply with:

WoF Criteria Compliance by Space		
Space	**Compliant Criteria**	**Non-Compliant Criteria**
Bathrooms – 12 WoF criteria	94%	6%
Bedrooms – 13 WoF criteria	95%	5%
Building Envelope – 21 WoF criteria	94%	6%
Entry/Hallway – 6 WoF criteria	98%	2%
Kitchen – 16 WoF criteria	95%	5%
Laundry – 12 WoF criteria	94%	6%
Living Space – 12 WoF criteria	94%	6%
Toilets – 11 WoF criteria	94%	6%
TOTAL:	**95%**	**5%**

For example:

- Of the 49 Warrant of Fitness criteria, the bathroom has 12 relevant criteria and on average, will comply with around 94% (11) of these.
- Of the 49 Warrant of Fitness criteria, the kitchen has 16 relevant criteria and on average, will comply with around 95% (15.2) of those applicable criteria.
- Across the 400 properties surveyed, the average Housing New Zealand property will comply with around 95% of all the criteria relevant to that property.

48 The following table calculates the total number of criteria that were non-compliant at a property level.

Number of non-compliant criteria (out of 49)	Number of Properties	Percentage of Properties	Cumulative Failure Percentage of Properties
0	17	4%	
1	39	10%	10%
2	62	16%	25%
3	66	17%	42%
4	59	15%	57%
5	49	12%	69%
6	38	10%	78%
7	18	5%	83%
8	13	3%	86%
9	16	4%	90%
10	6	2%	92%
11	6	2%	93%
12	2	1%	94%
13	3	1%	94%
14	3	1%	95%
15	1	0%	95%
16	1	0%	96%
17	0	0%	96%
18	1	0%	96%
Total	400	100%	

For example:

- 17 properties complied with all 49 Warrant of Fitness criteria.
- 39 properties were non-compliant on just one criteria item.
- 1 property was non-compliant on 18 criteria, the highest number of non-compliance identified in the trial.
- 69% of our properties had five or fewer non-compliant criteria.

49 The following table ranks non-compliant criteria from highest percentage of failed items to lowest.

WoF Criteria Ranked by Fail Percentage

ID number	Criteria	Number of properties that failed criteria	Properties containing assessible space	Fail %
18b	Security/Restrictor stays - secure ventilation	291	400	72.8%
10a	Heating source (if no ceiling amd/or underfloor insulation)	23	70	32.9%
17	Windows sound and functional	110	400	27.5%
24	Stairs, ramps, decks & landings safe (Int & Ext)	110	400	27.5%
16	Hot water temperature safe	107	400	26.8%
27	Two fixed power points in bedrooms	86	400	21.5%
29	Bathroom and toilet doors functioning	86	400	21.5%
39b	Linings - wall - intact (excluding mould)	74	400	18.5%
37a	Spouting and downpipes functioning	69	400	17.3%
39a	Linings - ceiling - intact (excluding mould)	50	400	12.5%
48	Fixed power points in laundry	47	400	11.8%
47	Two fixed power points in kitchen	46	400	11.5%
25	Electrical services safe	43	400	10.8%
38	Linings - floor - intact (excluding mould)	43	400	10.8%
41	Property identification present	40	400	10.0%
13	No significant mould present	29	300	9.7%
49	Heat shield around gas stove	33	400	8.3%
28	Bedroom doors functioning	32	400	8.0%
11	Under-floor insulation	21	277	7.6%
9c	Windows weathertight	29	400	7.3%
34	Toilet services functioning	27	400	6.8%
45	Functioning stove	27	400	6.8%
23	Exterior doors secure and functioning	20	400	5.0%
12	Subfloor dry and well ventilated	15	314	4.8%
1	External ventilation in living room	17	400	4.3%
2	External ventilation in bedroom	17	400	4.3%
8	Roof weathertight	17	400	4.3%
31	Washing machine services functioning	17	400	4.3%
10	Ceiling insulation	13	314	4.1%
33	Bath or shower services functioning	16	400	4.0%
37b	Stormwater discharge functioning	16	400	4.0%
32	Bathroom basin services functioning	14	400	3.5%
19	Glazing visibilty strips	4	129	3.1%
3	External vntilation in bathroom	12	400	3.0%
18a	Security/Restrictor stays - protection from falling	11	400	2.8%
6	External ventilation in laundry	10	392	2.6%
9a	Building cladding weathertight	10	400	2.5%
9b	Verandas, porches & decks weathertight	10	400	2.5%
5	External ventilation in kitchen	9	400	2.3%
30	Kitchen sink functioning	9	400	2.3%
21	Front door security lighting	8	400	2.0%
35	Kitchen food storage	8	400	2.0%
20	Safe access to main entrance door	7	400	1.8%
43	Electrical lighting present and functioning	7	400	1.8%
46	Adequate food preparation facilities	7	400	1.8%
7	Two fixed power points in Living Room	5	400	1.3%
22	Safe/Secure storage (within property)	4	400	1.0%
42	Vermin free	4	400	1.0%
4	External ventilation in toilet	3	400	0.8%
36	Waste water and sewerage services functioning	3	400	0.8%
26	Smoke alarms present and working	1	400	0.3%
15	Building WoF current	0	27	0.0%
44	Adequate natural Light	0	400	0.0%
14	Landlord-provided driers vented to exterior	1	3	-

For example:

- The greatest numbers of non-compliant components were restrictor stays that were required for secure passive ventilation – 72.8%.
- Non-compliant hot water cylinder temperature (either too hot or too cold) had a 26.8% failure rate.

50 The trial reporting dashboard is as follows:

Compliance by Risk and Remediation Categories			
Compliance Reporting Categories	**Number of Trial Properties**	**Percentage**	**Extrapolated to 60,000 Properties**
Fully Compliant – all WoF criteria complied with	17	4%	2,550
Non-Compliant – Urgent repairs. High risk criteria, remediation within 2 days or potential vacation of the house	193	48%	28,950
Non-Compliant – High priority repairs. High risk criteria, remediation within 10+ days	127	32%	19,050
Non-Compliant – Scheduled repairs. Low or Moderate risk criteria	63	16%	9,450

Trial Results – Remediation Cost Estimates

51 Additional analysis has been completed since the results were presented to the Technical Advisory Group and costs to remediate non-compliant items have been estimated. The updated figures and high level results of that analysis are detailed in the tables below.

52 The cost estimates have been prepared by Rawlinsons Ltd, Quantity Surveyors.

53 The table below reports the estimated cost to remediate non-compliant items by Risk and Remediation category.

Estimated Cost of Compliance by Risk and Remediation Categories			
Remediation Timeframes	**Estimated Remediation Costs**	**% of Total Cost**	**Extrapolated to 60,000**
Non-Compliant – Urgent repairs. High risk criteria, remediation within 2 days or potential vacation of the house	$22,033	9.6%	$3,304,950
Non-Compliant – High priority repairs. High risk criteria, remediation within 10+ days	$98,354	42.7%	$14,753,137
Non-Compliant – Scheduled repairs. Low or Moderate risk criteria	$110,105	47.8%	$16,515,750
TOTAL:	**$230,492**	**100%**	**$34,573,837**

Average Remediation Cost per Property: $576

54 The non-compliant components and the estimated cost to remediate by Risk and Remediation category, are as follows:

Estimated Remediation Cost by Criteria ID and Non-Compliant Catergory

	ID number	Criteria	Estimated cost to remediate trial properties	% of total estimated cost
Urgent repairs within 2 days	45	Kitchen Means of Cooking	$4,412	1.9%
	32	Bathroom Basin Services	$3,474	1.5%
	33	Bathroom Bath or Shower Services	$3,203	1.4%
	16	Hot Water Temperature	$3,197	1.4%
	34	Toilet Services	$2,186	0.9%
	30	Kitchen Sink	$1,185	0.5%
	23	Exterior Doors	$1,071	0.5%
	25	Electrical Services (Safety)	$1,009	0.4%
	36	Waste water/sewerage reticulation	$743	0.3%
	20	Access to Main Entrance Door (safe access)	$535	0.2%
	18a	Security/Restrictor Stays - protection from falling	$520	0.2%
	43	Electrical Light Present	$484	0.2%
	26	Smoke alarms present and working	$14	0.0%
		Urgent repairs (Within 2 Days) Sub-Total:	**$22,033**	**9.6%**
High priority repairs within 10+ days	11	Under-floor insulation	$21,917	9.5%
	10	Ceiling Insulation	$19,984	8.7%
	24	External/internal Stairs, Ramps, Decks & Landings	$15,348	6.7%
	38	Linings (Floor, excluding mould)	$11,447	5.0%
	13	Presence of mould	$4,162	1.8%
	9a	Building Envelope (cladding)	$3,989	1.7%
	49	Cooking Heat shield Present	$3,689	1.6%
	29	Bathroom/Toilet Door	$3,666	1.6%
	10A	Heating Source	$3,537	1.5%
	9b	Building Envelope (Verandas/Porches/decks)	$2,462	1.1%
	9c	Building Envelope (Windows)	$1,730	0.8%
	5	Kitchen External Ventilation	$1,581	0.7%
	8	Roof - Intact and not leaking	$1,426	0.6%
	31	Washing Machine Services	$1,367	0.6%
	3	Bathroom External Ventilation	$778	0.3%
	6	Laundry External Ventilation	$701	0.3%
	22	Safe/Secure Storage (within property)	$268	0.1%
	14	Landlord-provided driers vented to building exterior	$180	0.1%
	7	Two Fixed Power Points Present (living room)	$121	0.1%
		High Priority repairs (10+ Days) Sub-Total:	**$98,354**	**42.7%**
Scheduled repairs (Low or Moderate priority)	18b	Security/Restrictor Stays - secure ventilation	$33,405	14.5%
	39b	Linings - wall (excluding mould)	$22,631	9.8%
	39a	Linings - ceiling (excluding mould)	$12,857	5.6%
	17	Windows	$9,322	4.0%
	37a	Storm water systems - Spouting & Downpipes	$5,600	2.4%
	47	Two Fixed Power Points Present (Kitchen)	$5,502	2.4%
	48	Fixed Power Points Present (laundry)	$5,172	2.2%
	27	Two Fixed Power Points Present (bedrooms)	$3,826	1.7%
	12	Subfloor - dry and well ventilated	$2,800	1.2%
	46	Food preparation facilities	$2,460	1.1%
	28	Bedroom Door	$1,448	0.6%
	2	Bedroom External Ventilation	$1,141	0.5%
	35	Kitchen Food Storage	$1,072	0.5%
	1	Living External Ventilation	$652	0.3%
	42	Vermin Proof	$602	0.3%
	41	Property Identification	$516	0.2%
	21	Access to Main Entrance Door (electrical light)	$396	0.2%
	37b	Storm water systems - Stormwater Discharge	$301	0.1%
	19	External Glass Doors & Low Level Glazing	$276	0.1%
	4	Toilet External Ventilation	$123	0.1%
	44	Natural Light	$0	0.0%
		Scheduled repairs (Low or Moderate) Sub-Total:	**$110,105**	**47.8%**
		Total:	**$230,492**	**100.0%**
		Average Remediation Cost per Property:	**$576**	

55 The following table shows estimated remediation costs by Warrant of Fitness categories, that is, Insulated & Dry, Safe & Secure and Essential Amenities.

Estimated Remediation Cost by WoF Criteria

	ID number	Criteria	Estimated cost to remediate trial properties	Percentage of total estimated cost
Insulated and Dry	1	External ventilation in living room	$652	0.3%
	2	External ventilation in bedroom	$1,141	0.5%
	3	External vntilation in bathroom	$778	0.3%
	4	External ventilation in toilet	$123	0.1%
	5	External ventilation in kitchen	$1,581	0.7%
	6	External ventilation in laundry	$701	0.3%
	7	Two fixed power points in Living Room	$121	0.1%
	8	Roof weathertight	$1,426	0.6%
	9a	Building cladding weathertight	$3,959	1.7%
	9b	Verandas, porches & decks weathertight	$2,462	1.1%
	9c	Windows weathertight	$1,730	0.8%
	10	Ceiling insulation	$19,984	8.7%
	10a	Heating source (if no ceiling amd/or underfloor insulation)	$3,537	1.5%
	11	Under-floor insulation	$21,917	9.5%
	12	Subfloor dry and well ventilated	$2,800	1.2%
	13	No significant mould present	$4,162	1.8%
	14	Landlord-provided driers vented to exterior	$180	0.1%
		Insulated and Dry Sub-Total:	**$67,254**	**29.2%**
Safe and Secure	15	Building WoF current	$0	0.0%
	16	Hot water temperature safe	$3,197	1.4%
	17	Windows sound and functional	$9,322	4.0%
	18a	Security/Restrictor stays - protection from falling	$520	0.2%
	18b	Security/Restrictor stays - secure ventilation	$33,405	14.5%
	19	Glazing visibilty strips	$276	0.1%
	20	Safe access to main entrance door	$535	0.2%
	21	Front door security lighting	$396	0.2%
	22	Safe/Secure storage (within property)	$268	0.1%
	23	Exterior doors secure and functioning	$1,071	0.5%
	24	Stairs, ramps, decks & landings safe (Int & Ext)	$15,348	6.7%
	25	Electrical services safe	$1,009	0.4%
	26	Smoke alarms present and working	$14	0.0%
		Safe and Secure Sub-Total:	**$65,361**	**28.4%**
Essential Amenities	27	Two fixed power points in bedrooms	$3,826	1.7%
	28	Bedroom doors functioning	$1,478	0.6%
	29	Bathroom and toilet doors functioning	$3,666	1.6%
	30	Kitchen sink functioning	$1,185	0.5%
	31	Washing machine services functioning	$1,367	0.6%
	32	Bathroom basin services functioning	$3,474	1.5%
	33	Bath or shower services functioning	$3,203	1.4%
	34	Toilet services functioning	$2,186	0.9%
	35	Kitchen food storage	$1,072	0.5%
	36	Waste water and sewerage services functioning	$743	0.3%
	37a	Spouting and downpipes functioning	$5,600	2.4%
	37b	Stormwater discharge functioning	$301	0.1%
	38	Linings - floor - intact (excluding mould)	$11,447	5.0%
	39a	Linings - ceiling - intact (excluding mould)	$12,857	5.6%
	39b	Linings - wall - intact (excluding mould)	$22,631	9.8%
	40	Stove anti-tip device - DELETED	$0	0.0%
	41	Property identification present	$516	0.2%
	42	Vermin free	$602	0.3%
	43	Electrical lighting present and functioning	$484	0.2%
	44	Adequate natural Light	$0	0.0%
	45	Functioning stove	$4,412	1.9%
	46	Adequate food preparation facilities	$2,460	1.1%
	47	Two fixed power points in kitchen	$5,502	2.4%
	48	Fixed power points in laundry	$5,172	2.2%
	49	Heat shield around gas stove	$3,689	1.6%
		Essential Amenities Sub-Total:	**$97,876**	**42.5%**
		Total:	**$230,492**	**100%**
		Average Remediation Cost per Property:	**$576**	

56 The following table ranks Warrant of Fitness criteria by remediation cost.

Estimated Remediation Cost by Criteria - Ranked by Percentage of Total Cost

ID number	Criteria	Number of fails by Space	Estimated cost to remediate trial properties	% of total estimated cost
18b	Security/Restrictor stays - secure ventilation	845	$33,405	14.5%
39b	Linings - wall - intact (excluding mould)	131	$22,631	9.8%
11	Under-floor insulation	21	$21,917	9.5%
10	Ceiling insulation	13	$19,984	8.7%
24	Stairs, ramps, decks & landings safe (Int & Ext)	121	$15,348	6.7%
39a	Linings - ceiling - intact (excluding mould)	72	$12,857	5.6%
38	Linings - floor - intact (excluding mould)	66	$11,447	5.0%
17	Windows sound and functional	214	$9,322	4.0%
37a	Spouting and downpipes functioning	69	$5,600	2.4%
47	Two fixed power points in kitchen	46	$5,502	2.4%
48	Fixed power points in laundry	47	$5,172	2.2%
45	Functioning stove	27	$4,412	1.9%
13	No significant mould present	36	$4,162	1.8%
9a	Building cladding weathertight	10	$3,959	1.7%
27	Two fixed power points in bedrooms	158	$3,826	1.7%
49	Heat shield around gas stove	33	$3,689	1.6%
29	Bathroom and toilet doors functioning	104	$3,666	1.6%
10a	Heating source (if no ceiling amd/or underfloor insulation)	23	$3,537	1.5%
32	Bathroom basin services functioning	14	$3,474	1.5%
33	Bath or shower services functioning	16	$3,203	1.4%
16	Hot water temperature safe	107	$3,197	1.4%
12	Subfloor dry and well ventilated	15	$2,800	1.2%
9b	Verandas, porches & decks weathertight	10	$2,462	1.1%
46	Adequate food preparation facilities	7	$2,460	1.1%
34	Toilet services functioning	27	$2,186	0.9%
9c	Windows weathertight	29	$1,730	0.8%
5	External ventilation in kitchen	10	$1,581	0.7%
28	Bedroom doors functioning	43	$1,478	0.6%
8	Roof weathertight	17	$1,426	0.6%
31	Washing machine services functioning	17	$1,367	0.6%
30	Kitchen sink functioning	12	$1,185	0.5%
2	External ventilation in bedroom	28	$1,141	0.5%
35	Kitchen food storage	8	$1,072	0.5%
23	Exterior doors secure and functioning	20	$1,071	0.5%
25	Electrical services safe	55	$1,009	0.4%
3	External vntilation in bathroom	12	$778	0.3%
36	Waste water and sewerage services functioning	3	$743	0.3%
6	External ventilation in laundry	10	$701	0.3%
1	External ventilation in living room	17	$652	0.3%
42	Vermin free	4	$602	0.3%
20	Safe access to main entrance door	7	$535	0.2%
18a	Security/Restrictor stays - protection from falling	13	$520	0.2%
41	Property identification present	40	$516	0.2%
43	Electrical lighting present and functioning	7	$484	0.2%
21	Front door security lighting	8	$396	0.2%
37b	Stormwater discharge functioning	16	$301	0.1%
19	Glazing visibilty strips	4	$276	0.1%
22	Safe/Secure storage (within property)	4	$268	0.1%
14	Landlord-provided driers vented to exterior	1	$180	0.1%
4	External ventilation in toilet	3	$123	0.1%
7	Two fixed power points in Living Room	5	$121	0.1%
26	Smoke alarms present and working	1	$14	0.0%
15	Building WoF current	0	$0	0.0%
40	Stove anti-tip device - DELETED	0	$0	0.0%
44	Adequate natural Light	0	$0	0.0%
		Total:	**$230,492**	**100%**
	Average Remediation Cost per Property:		**$576**	

57 Insulation, WoF criteria 10 and 11, is a critical item in the Warrant of Fitness scheme. The trial only looked for insulation in the ceilings and underfloor, not in the walls, and a concrete slab was considered to have the equivalent insulation value as underfloor insulation. A number of scenarios were assessed, namely:

a) Was insulation able to be installed in the ceiling and underfloor and if so, was it present and did it meet the WoF standard;

b) If insulation could not be installed, for example in a skillion ceiling or a subfloor with insufficient crawl space, did the property have an appropriate form of heating installed, relative to the climate zone.

58 The insulation results from the trial were as follows:

Insulation Results – Trial Properties	Number of Properties	Trial Remediation Costs
Ceilings – Accessible, but no insulation present	2	$3,075
Ceilings – Insulation present, but below WoF standard	11	$16,910
Underfloor – Accessible, but no insulation present	3	$3,131
Underfloor – Insulation present, but below WoF standard	18	$18,786
Heating intervention required – ceiling and/or underfloor is not able to be insulated	23	$3,537
	TOTAL:	$45,438

59 The majority of non-compliance observed related to insulation that was present, but no longer met the Warrant of Fitness standard. For example this could include ceiling insulation that was no longer of the required thickness or underfloor insulation that had been damaged.

The trial results have been extrapolated to 60,000 properties and are as follows:

Insulation Results – Extrapolated to 60,000 Properties	Estimated Numbers	Estimated Remediation Costs
Ceilings – Accessible, but no insulation present	300	$461,175
Ceilings – Insulation present, but below WoF standard	1650	$2,536,463
Underfloor – Accessible, but no insulation present	450	$469,656
Underfloor – Insulation present, but below WoF standard	2700	$2,817,936
Heating intervention required – ceiling and/or underfloor is not able to be insulated	3450	$530,541
	TOTAL:	$6,815,771

60 The final table identifies the mechanism through which Housing New Zealand would undertake remediation repairs to non-compliant items. The non-compliant items have been analysed in terms of those items that would be remediated through planned or scheduled programmes of work and those items that would be repaired through maintenance interventions. For example:

- Installing insulation or additional power points would be done under a planned work programme, for example, during a vacant upgrade.
- Replacing and/or repairing door locks or smoke detectors would be done through responsive maintenance.

Programme Remediation Repairs Delivered Through	Estimated Trial Costs	% of Total Cost	Extrapolated to 60,000
Planned work programmes - eg Void upgrades	$119,734	51.9%	$17,960,137
Maintenance - eg Responsive	$110,758	48.1%	$16,613,700
TOTAL:	**$230,492**	**100%**	**$34,573,837**
Average Remediation Cost per Property:	**$576**		

Marcus Bosch
General Manager, Property Services

Appendix 1 – Warrant of Fitness Criteria

Appendix 2 – Compliance Risk and Remediation Framework

Appendix 3 – Trial Results

Appendix 4 – Trial Methodology

Appendix 5 – Feasibility of Doing Housing Warrant of Fitness Assessments

Appendix 1: Warrant of Fitness Criteria

	Insulated & Dry
1	**Living Room can be ventilated by accessible opening window/s, door/s or mechanical ventilation** There is at least one form of ventilation present - an opening window, opening door and/or mechanical ventilation. Passive ventilation and/or security stays for secure passive ventilation. **Compliance** Opening window/s / Opening external door/s (e.g. ranch slider with secure mesh screen) / Mechanical Ventilation, door or mains powered mechanical ventilation present. Passive ventilation must be secure to protect from intruders Mechanical ventilation must provide fresh air from building exterior. In all situations fall from height requirements must be met. HNZ assessors are to mark all forms of complaint external ventilation. **Non - Compliance** Passive ventilation that is not intruder proof, mechanical ventilation that is not efficiently working. Note item 18 security/restrictor stays.
2	**Bedrooms can be ventilated by accessible opening window/s, door/s or mechanical ventilation** There is at least one form of ventilation present - an opening window, opening door and/or mechanical ventilation. Passive ventilation and/or security stays for secure passive ventilation. **Compliance** Opening window/s / Opening external door/s (e.g. (ranch slider with secure mesh screen) / Mechanical Ventilation, door or mains powered mechanical ventilation present. Passive ventilation must be secure to protect from intruders. Mechanical ventilation must provide fresh air from building exterior. In all situations fall from height requirements must be met. HNZ assessors are to mark all forms of complaint external ventilation. **Non - Compliance** Air movement from another enclosed space such as sub floor / roof cavity. Passive ventilation that is not intruder proof, mechanical ventilation that is not efficiently working. Note item 18 security/restrictor stays.
3	**Bathrooms can be ventilated by accessible external opening window/s or mechanical ventilation** There is at least one form of ventilation present - an opening window and/or mechanical ventilation. Passive ventilation and/or security stays for secure passive ventilation. **Compliance** Opening window/s / Mechanical Ventilation, door or mains powered mechanical ventilation present. Passive ventilation must be secure to protect from intruders. Mechanical ventilation must provide fresh air from building exterior. In all situations fall from height requirements must be met. HNZ assessors are to mark all forms of complaint external ventilation. **Non - Compliance** Air movement from another enclosed space such as sub floor / roof cavity. Passive ventilation that is not intruder proof, mechanical ventilation that is not efficiently working. Note item 18 security/restrictor stays.
4	**Toilets can be ventilated by accessible external opening window/s or mechanical ventilation** There is at least one form of ventilation present - an opening window (including louvre) and/or mechanical ventilation. Passive ventilation and/or security stays for secure passive ventilation. **Compliance** Opening window/s / Mechanical Ventilation - In toilet spaces there is at least one opening window sash, louver / passive vent or mains powered mechanical extract ventilation present. Passive ventilation must be secure to protect from intruders. Mechanical ventilation must extract externally. In all situations fall from height requirements must be met. HNZ assessors are to mark all forms of complaint external ventilation. **Non - Compliance** Air movement from another enclosed space such as sub floor / roof cavity. Passive ventilation that is not intruder proof, mechanical ventilation that is not efficiently working. Note item 18 security/restrictor stays.
5	**Kitchens can be ventilated by accessible opening window/s or mechanical ventilation** There is at least one form of ventilation present - an opening window and/or mechanical ventilation. Passive ventilation and/or security stays for secure passive ventilation. **Compliance** Opening window/s / Mechanical Ventilation - In kitchen spaces there is at least one opening window sash and/or mains powered mechanical extraction fan that removes cooking odours / vapours to the building exterior. If there is no mechanical ventilation then there must be an opening window within 2 metres of cooking facilities. Passive ventilation must be secure to protect from intruders. Mechanical ventilation must extract externally. In all situations fall from height requirements must be met. HNZ assessors are to mark all forms of complaint external ventilation. **Non - Compliance** Air movement from another enclosed space such as sub floor / roof cavity. Passive ventilation that is not intruder proof, mechanical ventilation that is not efficiently working. Note item 18 security/restrictor stays.
6	**Laundries can be ventilated by accessible opening window/s or mechanical ventilation** There is at least one form of ventilation present - an opening window and/or mechanical ventilation. Passive ventilation and/or security stays for secure passive ventilation. **Compliance** Opening window/s / Mechanical Ventilation - In laundry spaces there is at least one opening window sash and/or mains powered mechanical extract ventilation present. Passive ventilation must be secure to protect from intruders. Mechanical ventilation must extract externally. In all situations fall from height requirements must be met. HNZ assessors are to mark all forms of complaint external ventilation. **Non - Compliance** Air movement from another enclosed space such as sub floor / roof cavity. Passive ventilation that is not intruder proof, mechanical ventilation that is not efficiently working. Note item 18 security/restrictor stays.

Insulated & Dry (cont'd)	
7	**Lounges have minimum of two fixed wired power points present** One double or two single power points present and working. **Compliance** Two single or one double power outlet, less than1200 mm above floor level. HNZ assessors are asked to quantify and report on number of compliant outlets not present. **Non - Compliance** Power outlet 1200mm above floor level or an outlet that would create a trip hazard or obstruct the safe use of the appliance. Only one power point present.
8	**The roof is intact and not leaking - visual inspection only** Roof to be in functional condition and not leaking. **Compliance** Visual internal inspection shows no signs of water leaks associated with roof cladding, no visible evidence of degradation of roof materials. Note: This assessment will not involve going on the roof. **Non - Compliance** Visual internal inspection shows signs of water leaks associated with roof cladding, visible evidence of failure (e.g. holes) of roof materials. Note: This assessment will not involve going on the roof, internal visual inspection from within ceiling space only.
9	**The building exterior is intact and not leaking** Cladding, windows, doors, verandas and closed in decks to be in functional condition and not leaking. **Compliance** Visual inspection shows no signs of internal water leaks associated with windows, doors or cladding, no visible evidence of rotten timber or damaged cladding that would allow internal water leaks and affect the structural framing. Deck membranes, window / door junctions & seals in functional condition. Property must be in reasonable state of repair. Note: Visual inspection only external ground level and internal visual checks. HNZ assessors are asked to report and measure the non compliant component. **Non - Compliance** Evidence of internal leaks caused by rotten, damaged / faulty materials, scribers & flashings missing / need of repair.
10	**Ceiling insulation is present. Where not practicable to install e.g. no ceiling cavity, appropriate heating must be installed and room size measured.** Accessible ceiling spaces are observed or proven by certification to having insulation. **Compliance** Visual inspection, including checking for down lights. 90% of the ceiling area of habitable spaces needs to be covered, otherwise the appropriate heating requirement is triggered. If the hatch / ceiling space can't be accessed, the owner must provide evidence that the property has been insulated. Ceiling insulation must be at least 70 - 75 mm thick, and dry. Chimneys and flues must have at least 50mm of clearance. Down lights / transformers must not be covered unless the owner can produce documents showing the lights can be covered. Skillion or flat roofs are exempt, but must have an appropriate heating source installed. Should heating requirement be triggered then measurement of living area will be required to ascertain appropriate heating size. **Acceptable heat sources: NZBC Climate Zone 1:** If either the ceiling space or the underfloor space cannot have insulation installed, the living room requires one of the following heating sources to be present: (i) a fixed wired electric heater sized at 100 watts per square meter of floor area (ii) an energy efficient free-standing or insert wood, pellet or multi-fuel burner (iii) a heat pump (iv) a flued gas heater. Existing fixed unflued gas heaters can remain in accordance with installation standards but tenants must be given information about safe use (e.g. ventilation). **Acceptable heat sources: NZBC Climate Zone 2**: If either the ceiling space or the underfloor space cannot have insulation installed, the living room requires one of the following heating sources to be present: (i) a fixed wired electric heater sized at 150 watts per square meter of floor area (ii) an energy efficient free-standing or insert wood, pellet or multi-fuel burner (iii) a heat pump (iv) a flued gas heater. Existing fixed unflued gas heaters can remain in accordance with installation standards but tenants must be given information about safe use (e.g. ventilation). **Acceptable heat sources: NZBC Climate Zone 3**: If either the ceiling space or the underfloor space cannot have insulation installed, the living room requires one of the following heating sources to be present: (i) an energy efficient free-standing or insert wood, pellet or multi-fuel burner (ii) a heat pump (iii) a flued gas heater. Existing fixed unflued gas heaters can remain in accordance with installation standards but tenants must be given information about safe use (e.g. ventilation). **Non - Compliance** An accessible ceiling that is not insulated. Insulation that covers less than 90% of habitable spaces. Insulation less than 75mm deep. Insulation that covers electrical down lights / transformers that do not have correct certification. No appropriate heating source in properties that can not have insulation installed. Open fire places as the only heat source.

Insulated & Dry (cont'd)	
11	**Under-floor insulation is present where practicable. Where not practical to install e.g. No access, appropriate heating must be installed and room size measured.** Accessible under floor spaces have insulation; Concrete slab is considered acceptable. **Compliance** Visual inspection. 90% of floor area of habitable spaces must be covered, otherwise the appropriate heat source requirement is triggered. Acceptable solutions: bulk insulation, foil if in good condition and properly installed, polystyrene secured between joists . Concrete slab is equivalent to underfloor insulation, so meets the requirement. Should heating requirement be triggered then measurement of living area will be required to ascertain appropriate heating size. **Acceptable heat sources: NZBC Climate Zone 1:** If either the ceiling space or the underfloor space cannot have insulation installed, the living room requires one of the following heating sources to be present: (i) a fixed wired electric heater sized at 100 watts per square meter of floor area (ii) an energy efficient free-standing or insert wood, pellet or multi-fuel burner (iii) a heat pump (iv) a flued gas heater. Existing fixed unflued gas heaters can remain in accordance with installation standards but tenants must be given information about safe use (e.g. ventilation). **Acceptable heat sources: NZBC Climate Zone 2**: If either the ceiling space or the underfloor space cannot have insulation installed, the living room requires one of the following heating sources to be present: (i) a fixed wired electric heater sized at 150 watts per square meter of floor area (ii) an energy efficient free-standing or insert wood, pellet or multi-fuel burner (iii) a heat pump (iv) a flued gas heater. Existing fixed unflued gas heaters can remain in accordance with installation standards but tenants must be given information about safe use (e.g. ventilation). **Acceptable heat sources: NZBC Climate Zone 3**: If either the ceiling space or the underfloor space cannot have insulation installed, the living room requires one of the following heating sources to be present: (i) an energy efficient free-standing or insert wood, pellet or multi-fuel burner (ii) a heat pump (iii) a flued gas heater. Existing fixed unflued gas heaters can remain in accordance with installation standards but tenants must be given information about safe use (e.g. ventilation). **Non - Compliance** Insulation that covers less than 90% of habitable spaces; If insulation cannot be installed under the floor and appropriate heat source requirement not met.
12	**Accessible subfloor spaces are dry and have adequate air vents** Sub floor is dry and well ventilated. **Compliance** Visual inspection of sub floor area from access hatch shows it to be dry with no evidence of dampness or musty smells. Fixed ventilation grills or air gapped cladding present. Use of correctly installed plastic ground sheeting is an acceptable solution to eliminate sub floor moisture. Surrounding ground levels are graded away to avoid surface water from entering sub floor area. **Non - Compliance** Ponding / dampness or musty smells. Surrounding ground levels that guide water to sub floor area.
13	**Property has no or limited mould** Internal surfaces are free of "uncontrollable" mould and property is free of dampness. **Compliance** All internal surfaces are free of "uncontrollable" mould, this includes internal walls, ceilings, floors, floor coverings, inside wardrobes and cupboards, tiled surfaces, curtains, blinds and window furnishings. Mould can be cleaned off easily. HNZ assessors are asked to mark attribute as compliant if no visual sign of mould is identified or other evidence such as musty smells. HNZ assessors are asked to report and measure the area of mould if identified. **Non - Compliance** Severe mould on any internal surface. Mould cannot be removed with cleaning, or re-occurs within four weeks after cleaning despite appropriate ventilation. Evidence of a physical defect creating mould.
14	**Landlord-provided driers are vented to the building exterior** Proprietary vent / Custom ducted vent or mechanical extract. **Compliance** If landlord-provided dryer is present then it must be ducted to the exterior. HNZ assessors are asked to mark attribute as NA if no landlord dryer is present. **Non - Compliance** Landlord supplied dryer that is non ducted.

Safe & Secure	
15	**The BWoF is current, where required.** **Compliance** BWOF certificate visually present on site and up to date. Note link to smoke alarms (#26) HNZ assessors are asked to mark attribute as compliant and HNZ compliance team will cross reference. **Non - Compliance** BWOF certificate not visually present on site and up to date. Assessors will mark as compliant and HNZ to confirm up to date status.
16	**Hot water temperature controls are present and working** Water temperature to be delivered to taps at a maximum temperature of 55 degrees. **Compliance** Measure at the closest tap to the hot water cylinder. Water temperature at tap must be delivered at a maximum of 55 degrees. Ensure that the HWC has a cover to both element and thermostat controls. Inspectors are not asked to adjust hot water cylinder settings and to record existing setting only if safely visible. **Non - Compliance** Closest tap to the hot water cylinder delivers water temperature at a maximum temperature of 55 degrees. No cover to both element and thermostat controls.
17	**Windows** Windows to be structurally sound & functional and not internally leak or allow significant draughts. **Compliance** Windows are able to be opened and closed with ease. Awning / sash windows are able to be securely kept open and closed by means of quadrant & casement stays, wedge fasteners and catches. Opening sashes can be fixed in an open and closed position and when closed provide an acceptable seal from draft. Minimum acceptable standard requires at least one opening & functional window sash / awning per space. HNZ assessors are asked to report and count how many non functional windows are identified. **Non - Compliance** Windows that internally leak or allow significant draughts, are not functioning and of sound construction. Opening window sash will not sufficiently seal around the window frame. Draft strips may be utilised to achieve compliance.
18	**Security/restrictor stays.** **Compliance Fall From Height** Any opening window where the bottom of the window is less than 760 mm from the floor level, and there is an external fall height from that window of 1m or greater below the interior floor level the window must have a security or restrictor stay which restricts the window opening more than 100mm, or a barrier 760 mm high which cannot be climbed. HNZ assessors are asked to pass security / restrictor stays that are present and functional. However if the opening gap is greater than 100mm assessors are asked to report on the amount of security / restrictor stays that are not complaint. **Compliance Secure Ventilation** Security / Restrictor stays are required to be provided if only form of ventilation is an opening window. A minimum of one in each habitable space on the ground floor or where an intruder may gain entry with an opening gap that does not exceed 100mm. If passive ventilation is complaint then assessors are asked to mark security / restrictor stays as NA. HNZ assessors are asked to pass security / restrictor stays that are present and functional however if the opening gap is greater than 100mm, Assessors are asked to report on the amount of security / restrictor stays that are not compliant. **Non - Compliance** Any window opening that does not comply with the above compliance requirements or any fixed item e.g. bathroom vanity which could be climbed on to reach a window opening. HNZ assessors are asked to report any fall from height hazards as an urgent H&S requirement.
19	**External glass doors and low level glazing has safety visibility strip** Visibility strips installed on glazing where there is a risk of harm. **Compliance** All transparent clear glazed panels with a height greater than 1000mm and a width greater than 500mm and down to floor level, has a safety visibility strip fitted. Visibility strips are at least 20mm wide, opaque and located within a height range of 700 - 1000mm above floor level. Tinted panels are acceptable. Inspectors are asked to record how many glazing panels require safety strips and try to identify safety glazing where possible and easily ascertained. HNZ assessors are asked to mark this attribute as NA if no glazing that meets this criteria exists at the property. **Non - Compliance** Visibility strip missing where hazard exists.
20	**Access to the entrance door is safe.** Access to the entrance door needs to be free of trip hazards; steps and ramps to meet acceptable standards. **Compliance** Access to entrance door is free of trip and slip hazards (only applies to 2 meters within property). Paths, balustrades, ramps, stairs and handrails to meet acceptable standards as per section 24. The entrance door may not be the street facing front door but needs to be the entrance frequently used. **Non - Compliance** Trip and slip hazards. Paths, balustrades, ramps, stairs and handrails that do not meet acceptable standards as per section 24.
21	**Access to the entrance door is well lit** The immediate area outside the entrance door is to be lit by electrical lighting. **Compliance** Electrical lighting to adequately provide illumination to immediate area outside main / frequently used entranceway. **Non - Compliance** Missing or inadequate lighting that will restrict visibility to entranceway.

Safe & Secure (cont'd)	
22	**Secure Storage for hazardous / toxic substances out of children's reach.** Property to provide a source of secure / lockable storage or storage at least 1500mm above floor level. **Compliance** A lockable shelving cabinet, a closed shelving cabinet 1200mm above floor level or an open shelf 1500mm above floor level. **Non - Compliance** No suitable storage provided.
23	**Exterior doors** Exterior doors are functional and fit for purpose. **Compliance** Exterior door is strong enough to provide a secure interior, has functioning hardware, can be easily opened and closed and is able to be securely locked. **Non - Compliance** Door is damaged, unsecure or non-weather tight.
24	**Internal / External stairs, ramps, landings & decks have balustrades and handrails** All stairs, ramps, landings, decks meet minimum fall from height standards as per NZAS F4/AS1 Third Edition. HNZ assessors are asked to mark this attribute as NA should no stairs, ramps, landings, decks, balustrades or handrails be required at the property. **Compliance (the feasibility of applying this draft standard will be tested during POC and may be redrafted after the trial)** Handrails: Stairs of three steps or more shall have at least one handrail at a height of 900 mm and a barrier opening of no more than 100mm. The handrail must be able to be grasped by hand. The handrail shall have rounded edges. The handrail shall be Treads: Treads shall be intact and securely fixed. Treads shall be free of slip hazards such as worn, loose or lifting carpet or presence of moss. Treads shall be a minimum of 210 mm. Risers shall be >= 100 and <= 220 mm. **Balustrades and Barriers:** Where there is a fall of more than one metre, stairs and rams and their landings shall have a securely fixed barrier of 900mm in height. For Balconies and Desks and edges of internal floors or mezzanine floors the barrier shall be at least 1000 mm high. The barrier must prevent a 100 mm sphere passing through it. The barrier shall not present a climbing hazard for children. All compliant measurements are based on NZAS F4/AS1 Third Edition. HNZ / MBIE wish to obtain data from the first 500 properties inspected so that we can discuss findings with the TAG Group. Inspectors are asked to collect the following data on all internal and external stairs, ramps, landings and decks. Inspectors are asked to measure / record stair treads and risers for any stair treads found less than 210mm. Inspectors are asked to measure / record the height of balustrades and hand rails as well as the non compliant balustrade gaps that do not meet the fall from height standards. **Non - Compliance** The compliance criteria above is not fulfilled. Should pre building code construction not provide a minimum of 210mm stair tread then additional safety precautions can be considered such as hand rails / stair nosing's.
25	**Electrical services / no visible electrical hazards** Electrical services to be functional, with no visible electrical hazards. **Compliance** Electrical services / fittings that are safe to operate. Non-RCD sockets/switches not to be within 300mm of the floor of a bathroom or laundry. Non-RCD sockets/switches not to be within 400mm above or 150mm lateral distance from the rim of a sink. HNZ assessors are asked to report and count the amount of non compliant fittings identified. **Non - Compliance** Cracked or damaged fittings / Loose fittings / Exposed wires. Outlets close to water hazard.
26	**Smoke alarms are present and working - Excludes BWOF properties.** Smoke alarms present and in working condition. **Compliance** Smoke alarms to be installed no less than 3m away from the bedroom door (minimum requirement). For greater protection a fire alarm should be fitted in each bedroom as well as hallways. Smoke alarm should ideally be secured to the ceiling. Smoke alarms to be tested during inspection (both battery operated and hard wired, excludes BWOF properties). HNZ assessors are asked to mark any smoke detectors that are installed within BWOF properties as compliant and HNZ will cross reference this data with our compliance team. **Non - Compliance** Smoke alarms that do not meet acceptable installation standards or are not working.

Essential Amenities	
27	**Bedrooms to have at least two functional and safe fixed power points.** **Compliance** Outlets positioned and installed as per acceptable standards. HNZ are asked to report and count the amount of non compliant outlets not present. **Non - Compliance** Outlets positioned in such a way that create trip hazards or require the use of extension cords. Unsafe electrical installations.
28	**Bedroom doors (excludes wardrobes).** Bedroom doors are present and functioning. **Compliance** Doors can be easily opened & closed and latched from both sides. Hardware to be functional. Does not include wardrobe doors. HNZ assessors are asked to report and count how many non functional doors are identified. **Non - Compliance** Doors missing or are damaged, will not open and close. Hardware not functioning or installed to acceptable standards. Door has hole or non-opaque glass of a size that affects the occupant's privacy, clear glass covered with a curtain is acceptable.
29	**Bathroom / Toilet doors are present, secure, and functioning.** Bathroom & Toilet doors are present and functioning. **Compliance** Doors can be easily opened & closed and latched from both sides. Privacy latch to be functional, tower bolts and cabin hooks acceptable. Sliding doors require some form of privacy latch unless installed to accommodate special circumstances (aged / disabled tenants). HNZ assessors are asked to count and report how many non complaint doors are identified. **Non - Compliance** Doors missing or are damaged, will not open and close. Hardware not functioning or installed to acceptable standards. Door has hole or non-opaque glass of a size that affects the occupant's privacy, clear glass covered with a curtain is acceptable. Privacy latch missing.
30	**Kitchen sink.** Property must have a functioning kitchen sink and taps. **Compliance** Kitchen sink is functional and has potable hot and cold water services. Waste to be connected to drain system. **Non - Compliance** Hot / cold water & taps not functioning or missing, water leaks, damaged drain.
31	**Washing machine services** Waste services for a washing machine. **Compliance** Properties to have cold water services with appropriate tap / hose connection for a washing machine. Washing machine pipe to discharge into either a dedicated waste pipe or directly into a tub. The presence of a wash tub is not mandatory. **Non - Compliance** Cold water & taps not functioning or missing, water leaks, damaged drain.
32	**Bathroom basin services** Bathroom to have functioning basin or vanity. **Compliance** Bathroom to have functioning basin or vanity with potable hot and cold water supply. Waste to be connected to drain system. **Non - Compliance** Taps or waste missing / cracked or damaged basin. Unhygienic surfaces. Water leaks.
33	**Bathroom bath or shower services** Bathroom to have functioning body wash facilities. **Compliance** Bathroom to have functioning body wash facilities comprising of a bath, shower above bath or shower cubicle with potable hot and cold water supply. Waste to be connected to drain system. Minimum acceptable standard is for one form of body washing facility to be provided. HNZ assessors are asked to report on any body wash facilities that are not functional. **Non - Compliance** Bath, shower, taps, waste missing or not functional, cracked or damaged. Water leaks.
34	**WC services** Property to provide functioning toilet facilities. **Compliance** Functioning toilet and cistern with cold water supply, no visible signs of cracking or broken seats. Cistern to have functioning cold water feed isolation valve. Minimum acceptable standard is for one WC to be functional per property. HNZ assessors are asked to count and report any non compliant WC facilities identified. **Non - Compliance** Leaking / cracked toilet pan / cistern. Broken toilet seat. Cistern isolation valve not functional. Pan or cistern not stable. Cistern runs consistently. Broken seal.

Essential Amenities (cont'd)	
35	**Kitchen food storage** Kitchens must provide food storage facility. **Compliance** Properties provide a permanently fixed enclosed storage cupboard and / or shelving. Storage should be below 2100mm above floor level. Food storage capacity applicable to number of bedrooms. **Non - Compliance** Damaged or unhygienic shelving.
36	**Waste water / sewerage reticulation.** Waste water and sewerage services to be present & functional. **Compliance** All sinks, basins, baths, showers and other similar gravity draining amenities connected to waste lines drain quickly and without resurge or leaks. Pipes need to feed directly into gully traps. All WCs and other similar charge-drained amenities connected to sewer lines, drain quickly and without resurge or leaks. There is no evidence of ground seepage from the drain lines. **Non - Compliance** Resurge to any amenity, smell or sight of leakage or ground seepage. Pipes that do not feed directly into gully traps, gully traps that are not covered.
37	**Storm water systems** Storm water services to be present & functional. **Compliance** Visually inspect that all spouting and downpipes are functioning and intact. Visually inspect that waste water pipes are functioning and intact (where possible) Visually inspect that downpipes are connected to storm water system (where the council provides a storm water system) and not discharging onto ground area. There is no visual evidence of ground seepage from the drain lines. There is no visual evidence of excessive ponding. **Non - Compliance** Holes in spouting / downpipes, gutters not discharging into a downpipe, downpipes not discharging directly into a ground drain (where the council provides a storm water system).
38	**Floor linings.** Floor linings are safe and hygienic. **Compliance** Floor linings are intact and can be kept hygienic and free of trips. Linings in wet areas are to prevent water damaging building integrity. Concrete floors in laundries are an acceptable floor finish. HNZ assessors are asked to provide a measure of the non **Non - Compliance** Trip hazards, excessive holes or missing linings allowing water to damage timber works.
39	**Ceiling / Wall linings** Ceiling wall linings are intact and can be kept hygienic. **Compliance** There are no holes in wall or ceiling linings that would create issues in terms of health and safety, degredation of the thermal envelope, exposing electrical services, exposing plumbing services. Linings are structurally sound with no: caving; sagging; looseness; excessive springiness; wet areas; or spongy area. Linings are continuous over the entire surface they should cover. Linings that can easily be cleaned. HNZ assessors are asked to provide a measure of the non compliant ceiling and/or wall lining area. **Non - Compliance** There are no holes in wall or ceiling linings that would create issues in terms of health and safety, degredation of the thermal envelope, exposing electrical services, exposing plumbing services. Linings sagging, loose, missing, damp and water damaged or inappropriate for use. Deteriorating asbestos ceilings, flaky (potentially lead) paint.
40	**Property identification.** The property identification is visible from street for emergency / postal services. **Compliance** The property number can be clearly seen from the street. For properties / units that are separated by distance from the street facing identification number then additional identification is required to clearly highlight the property id. **Non - Compliance** Compliance conditions are not met.
41	**Vermin.** No obvious signs of vermin infestation at the time of letting **Compliance** No obvious signs of vermin infestation at the time of letting, HNZ assessors are asked to mark this attribute as compliant if there is no visual sign of vermin infestation. **Non - Compliance** Compliance conditions are not met.

Essential Amenities (cont'd)	
42	**Liveable spaces have electrical lighting present** All liveable spaces (bedroom, hall, living room, bathroom, WC, laundry, kitchen & dining room) to have at least one electrical light. **Compliance** All liveable spaces to have at least one electrical light sufficient to illuminate the space with a dedicated light switch at entry door. Confirm that a light switch is fitted to the top and bottom of internal stairs. HNZ assessors are asked to count and report how many non complaint attributes are identified. **Non - Compliance** Compliance conditions are not met.
43	**Habitable spaces have natural light** All habitable spaces (bedroom, living area, kitchen, dining room) to have natural lighting. **Compliance** The natural light received within the habitable space during daylight hours is sufficient that the space can be navigated without turning on the electricity lighting. Natural light can be achieved via glazed window/s), Door/s) or Roof light/s), space can receive light indirectly from another interior space. HNZ assessors are asked to count and report how many non complaint attributes are identified. **Non - Compliance** Compliance conditions are not met.
44	**Kitchen means of cooking** Properties to provide a means of hot cooking **Compliance** Properties to have a minimum of two working cook-top elements / hobs, and any means of cooking which is supplied must be fully functional (e.g. all oven elements must work). Test by turning on. HNZ assessors are asked to count and report how many non complaint attributes are identified. **Non - Compliance** Compliance conditions are not met. Oven door that does not close. Elements that do not function.
45	**Food preparation facilities.** Properties to provide means of food preparation. **Compliance** Properties provide a permanently fixed stable bench top with hygienic impervious surface and minimum depth of 500mm. Clear food preparation area of at least 500x500mm. **Non - Compliance** Compliance conditions are not met. Bench tops where the varnish, paint / laminate has failed.
46	**Kitchen power services present.** **Compliance** Kitchens to have at least 2 fixed power points positioned by food preparation area. This can be either two single outlets or one double. A power outlet is also required for the fridge / freezer. HNZ assessors are asked to count and report how many non complaint attributes are identified. **Non - Compliance** Compliance conditions are not met. Fridge / Freezer utilises one of the food preparation outlets.
47	**Laundry power services present.** **Compliance** Laundries to have at least one fixed double power point located close to washing machine. HNZ assessors are asked to count and report how many non complaint attributes are identified. **Non - Compliance** Compliance conditions are not met.
48	**Cooking Heat Shield Present** **Compliance** A heat protective shield must be fitted for any gas cooking appliance (either bench mounted or part of free standing stoves) that are positioned less than 200mm to wall linings. Heat protective shields must be at least 150mm above bench height. **Non - Compliance** Compliance conditions are not met.

Appendix 2: Compliance Risk and Remediation Framework

Housing Warrant of Fitness: Compliance Risk and Remediation Framework

	Property Space							Remediation timeframe (days)		
	Bedrooms	Kitchen	Living room	Laundry	Toilet	Bathroom	Entry/Hallway	High Risk	Moderate Risk	Low Risk
Insulated and Dry										
External ventilation	M	H	M	H	M	H		30	90	
Power points in lounge			H					30		
Laundry external ventilation for dryer				H				30		
Mould	H	H	H	H	H	H	H	10		
Safe and Secure										
Windows / Glazing	M	M	M	M	M	M			30	
Restrictor stays - protection from falling	H	H	H	H	H	H		2		
Restrictor stays - secure ventilation	M	M	M	M	M	M			90	
Electrical services (safety)	H	H	H	H	H	H	H	2		
Smoke alarms	M		M				H	2	2	
Essential Amenities										
Power points (present)	L	L		L						6-12 mths
Doors	L				H	H		10		90
Basin and sink		H				H		2		
Washing machine services				H				10		
Bathroom bath or shower						H		2		
Toilet services					H			2		
Kitchen food storage		M							90	
Linings - Floor	H	H	H	H	H	H	H	10		
Linings - Ceiling	M	M	M	M	M	M	M		90	
Linings - Wall	M	M	M	M	M	M	M		90	
Electical lighting	H	H	H	H	H	H		2		
Functioning stove		H						2		
Adequate food preparation facilitities		M							30	
Heat shield around gas stove		H						10		

Property Space		Remediation timeframe (days)	
Building Exterior		High Risk	Moderate / Low Risk
Insulated and Dry			
Roof weathertight	H	10	
Building cladding weathertight	H	10	
Windows weathertight	H	10	
Veranda, Porch, decks weathertight	H	10	
Ceiling insulation	H	10	
Under-floor insulation	H	10	
Heating source (no ceiling/underfloor insulation)	H	10	
Subfloor dry and ventilated	M		90
Safe and Secure			
Hot water temperature	H	2	
Glazing visibility strips	M		90
Front door safe access	H	2	
Front door security lighting	M		90
Safe / Secure storage	M		10
Exterior doors functioning	H	2	
Stairs, Ramps, Decks & Landings safe	H	10	
Electrical services safe	H	2	
Essential Amenities			
Waste water / Sewerage services functioning	H	2	
Spouting and downpipes functioning	M		60
Stormwater discharge functioning	M		60
Property identification present	M		60
Vermin free	M		30

BWoF current	N/A	Different regime

Appendix 3: Trial Results

HNZ WoF Trial Results

30 April 2014

Contents:

- Trial Process
- HNZ WoF Trail Results
- Additional information

Trial Process

- Contract Project Quality Solutions Ltd to carry out the WoF assessments.
  - create a survey form based on the WoF criteria
  - receive a list of 500 HNZ properties being a representative sample of HNZ's portfolio excluding Christchurch and leased properties
  - train assessors
- Complete the first 100 property assessments:
  - amend the WoF criteria and survey form where appropriate to clarify any ambiguities
- Complete the second 400 assessments:
  - on the representative national sample of HNZ properties
  - collect and analyse the detailed data (74,000 lines of data collected)
- Produce the WoF trial results which you will now be shown covering:
  - Property typology, region, city, size and age assessed.
  - Pass/fail rates by property space.
  - Pass fail rates by individual WoF criteria.
  - Pass/fail ranking by highest to lowest.

1) Typology of Properties in National Survey

Property Type	Number of Properties in Survey	Percentage of Properties in Survey	Percentage of Properties in HNZ Portfolio
DUPLEX	6	2%	0.4%
FLAT DOUBLE STOREY	26	7%	5%
FLAT MULTI STOREY	28	7%	4%
FLAT SINGLE STOREY	56	14%	6%
HOUSE MULTI STOREY	45	11%	4%
HOUSE SINGLE STOREY	123	31%	61%
TWIN UNIT DOUBLE STOREY	35	9%	4%
TWIN UNIT SINGLE STOREY	81	20%	16%
Total	400	100%	100%

The sample was selected to ensure that an adequate number of properties of each type was surveyed. However, the final number of properties surveyed by typology was dependent on the assessor's ability to access and survey each original and backup property.

2) Surveyed Properties by Dwelling Size (number of bedrooms)

Number of Bedrooms	Number of Properties	Percentage of Properties in Survey	Percentage of Properties in HNZ Portfolio
0-1 Bedroom	51	13%	9%
2 Bedrooms	176	44%	37%
3 Bedrooms	146	37%	42%
4 Bedrooms	15	4%	9%
5 Bedrooms	8	2%	2%
6 Bedrooms	2	1%	1%
7+ Bedrooms	2	1%	0.2%
Total	400	100%	100%

The dwelling size of properties in the survey was largely consistent with Housing New Zealand's overall portfolio. Two 7-bedroom properties were surveyed.

3) Surveyed Properties by Region

Town/City	Number of Properties	Percentage of Properties	Percentage of Properties in HNZ Portfolio
Northland	23	6%	4%
Auckland	102	26%	49%
Waikato	25	6%	7%
Bay of Plenty	23	6%	5%
Gisborne	23	6%	2%
Hawkes Bay	25	6%	5%
Taranaki	23	6%	2%
Manawatu-Wanganui	23	6%	5%
Wellington	40	10%	16%
Nelson/Marlborough/Tasman	24	6%	1%
West Coast	23	6%	1%
Otago	23	6%	3%
Southland	23	6%	1%
Total	400	100%	100%

a) Excludes leased properties and properties in Canterbury.

A minimum of twenty properties per region was specified as a survey goal in order to create a representative national sample, although there are not enough properties in the survey to make regional comparisons.

4) Surveyed Properties by Space

Property Space	Number of Spaces in Survey	Number of *Accessible* Spaces in Survey
Bathroom	419	418
Bedroom	967	938
Building/Exterior	400	400
Entry/Hallway	364	364
Kitchen	400	400
Laundry	400	392
Living	405	405
Toilet	460	456
Total	3815	3773

The 400 properties in the survey contained nearly 4000 individual 'spaces' or rooms, although not all of these spaces could be assessed due to a lack of access. For example, the 400 properties in the survey required assessment of 967 separate bedroom spaces. Only 938 bedroom spaces however could be accessed due to lack of access at some properties.

5) Age of Properties Surveyed

The oldest property in the survey was built in 1920 (94 years old)

The newest property in the survey was built in 2013 (1 year old)

The median age of properties in the survey is 44 years old (build year 1970)

Minimum age	1 year
1st Quartile age	26 years
Median Age	44 years
3rd Quartile age	61 years
Maximum age	94 years

6) Property Space Criteria by Pass/Fail Outcome

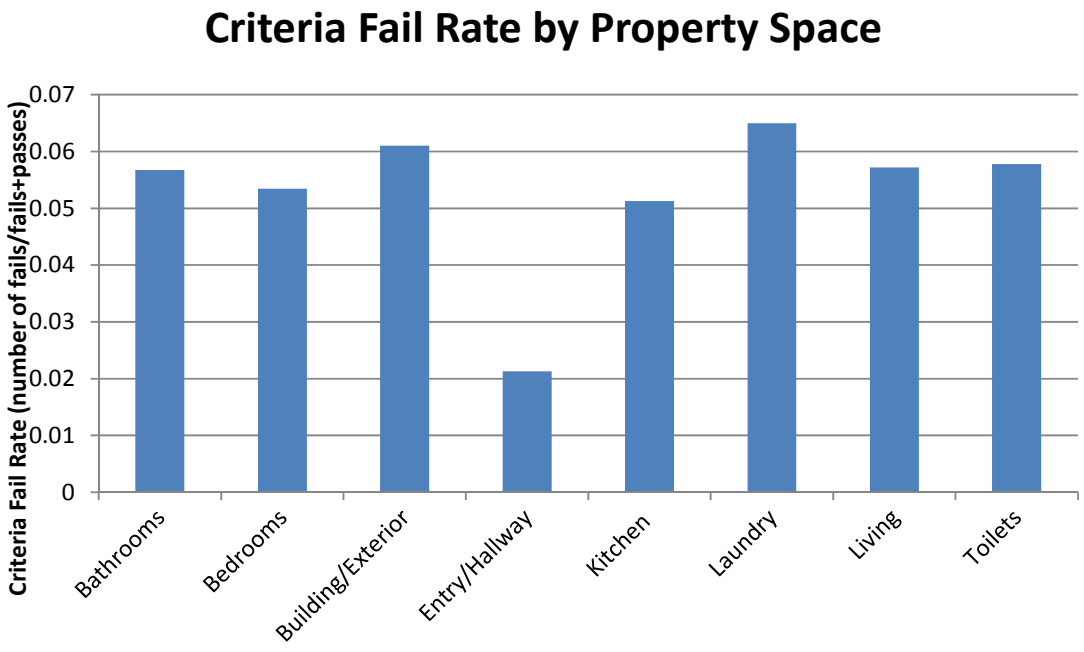
Note: Fail rate calculated as: number of fails/ number of passes and fails

Property Space	Pass Rate	Fail Rate
Bathrooms	94%	6%
Bedrooms	95%	5%
Building/Exterior	94%	6%
Entry/Hallway	98%	2%
Kitchen	95%	5%
Laundry	94%	6%
Living	94%	6%
Toilets	94%	6%
Total	95%	5%

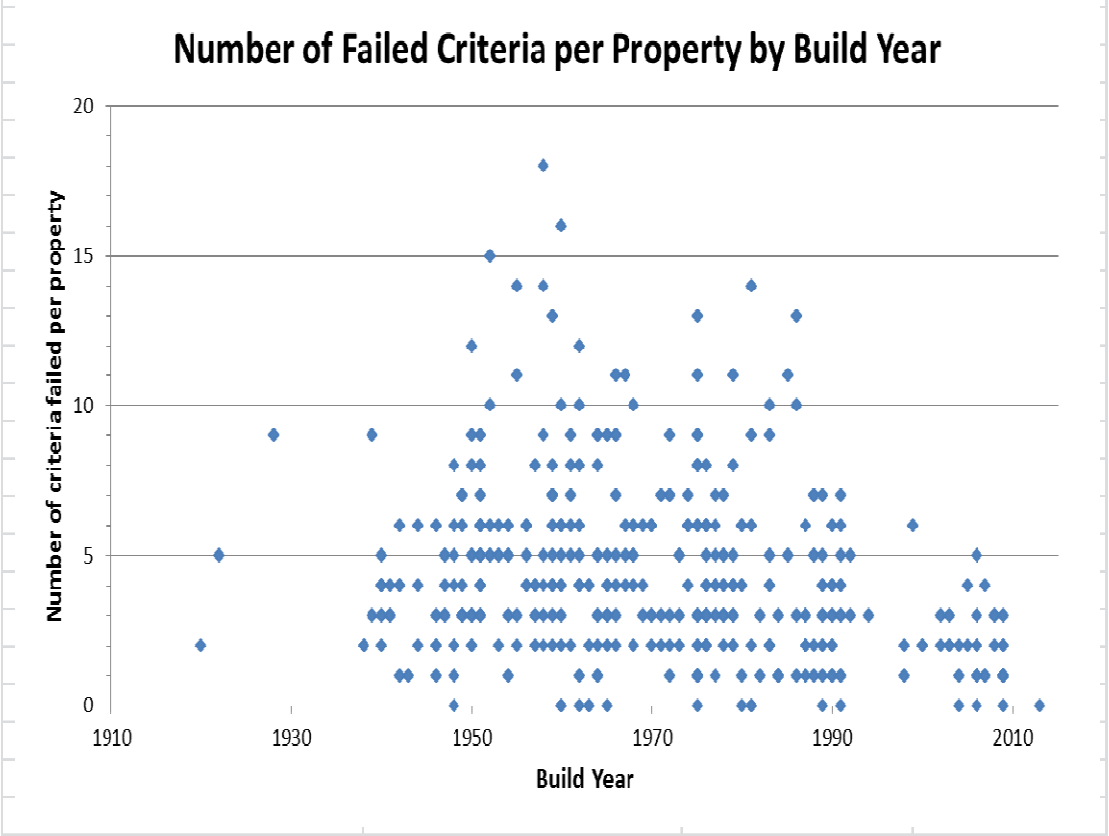
This table calculates the percentage of relevant criteria the average property space will pass. For example, the average kitchen has 16 applicable criteria and will pass around 95% (15.2) of the applicable criteria in the WoF survey.

The average entry/Hallway space has a lower criteria failure rate. This is because the entry/hallway space does not have requirements around windows and ventilation, which are generally high-failure-rate items.

The hot water cylinder criteria (16) has been included in the bathroom space. If HWC is excluded from the bathroom space, the average bathroom would pass around 95.7% of the applicable criteria in the WoF survey (compared to 94.3%)



7) Number of Failed Criteria per Surveyed Property by Build Year



No convincing trend between property age and HWoF performance can be identified, although it appears that older properties tend to have a greater variablitity in terms of the number of failed criteria per property.

8) Pass/Fail Percentage by Space and Individual WoF Criteria (Including requested splits)

Note: Fail rate calculated as: number of fails/ number of applicable spaces

	ID number	Criteria	Number of fails	Number of accessible spaces	Fail percentage	Pass percentage
Insulated and Dry	1	Living External Ventilation	17	405	4%	96%
	2	Bedroom External Ventilation	28	938	3%	97%
	3	Bathroom External Ventilation	12	418	3%	97%
	4	Toilet External Ventilation	3	456	1%	99%
	5	Kitchen External Ventilation	10	400	3%	98%
	6	Laundry External Ventilation	10	392	3%	97%
	7	Two Fixed Power Points Present (living room)	5	405	1%	99%
	8	Roof - Intact and not leaking	17	400	4%	96%
	9a	Building Envelope (cladding)	10	400	3%	98%
	9b	Building Envelope (Verandas/Porches/decks)	10	400	3%	98%
	9c	Building Envelope (Windows)	29	400	7%	93%
	10	Ceiling Insulation	16	314	5%	95%
	10A	Heating Source	11	70	16%	84%
	11	Under-floor insulation	33	277	12%	88%
	12	Subfloor - dry and well ventilated	15	314	5%	95%
	13	Presence of mould	36	3373	1%	99%
	14	*Landlord-provided driers vented to the building exterior*	*1*	*3*	-	-
Safe and Secure	*15*	*BWOF*		*27*	*0%*	*100%*
	16	Hot Water Temperature	107	400	27%	73%
	17	Windows	214	3009	7%	93%
	18a	Security/Restrictor Stays - protection from falling	13	3009	0%	100%
	18b	Security/Restrictor Stays - required if only form of ventilation	845	3009	28%	72%
	19	External Glass Doors & Low Level Glazing	4	129	3%	97%
	20	Access to Main Entrance Door (safe access)	7	400	2%	98%
	21	Access to Main Entrance Door (electrical light)	8	400	2%	98%
	22	Safe/Secure Storage (within property)	4	400	1%	99%
	23	Exterior Doors	20	400	5%	95%
	24	External/internal Stairs, Ramps, Decks & Landings	121	400	30%	70%
	25	Electrical Services (Safety)	55	3773	1%	99%
	26	Smoke alarms present and working	1	1707	0%	100%
Essential Amenities	27	Two Fixed Power Points Present (bedrooms)	158	938	17%	83%
	28	Bedroom Door	43	938	5%	95%
	29	Bathroom/Toilet Door	104	874	12%	88%
	30	Kitchen Sink	12	400	3%	97%
	31	Washing Machine Services	17	400	4%	96%
	32	Bathroom Basin Services	14	418	3%	97%
	33	Bathroom Bath or Shower Services	16	418	4%	96%
	34	Toilet Services	27	456	6%	94%
	35	Kitchen Food Storage	8	400	2%	98%
	36	Waste water/sewerage reticulation	3	400	1%	99%
	37a	Storm water systems - Spouting & Downpipes	69	400	17%	83%
	37b	Storm water systems - Stormwater Discharge	16	400	4%	96%
	38	Linings (Floor, excluding mould)	66	3373	2%	98%
	39a	Linings - ceiling (excluding mould)	72	3373	2%	98%
	39b	Linings - wall (excluding mould)	131	3373	4%	96%
	40	Free-standing stoves - Anti-tip device	46	371	12%	88%
	41	Property Identification	40	400	10%	90%
	42	Vermin Proof	4	400	1%	99%
	43	Electrical Light Present	7	3409	0%	100%
	44	Natural Light		1743	0%	100%
	45	Kitchen Means of Cooking	27	400	7%	93%
	46	Food preparation facilities	7	400	2%	98%
	47	Two Fixed Power Points Present (Kitchen)	46	400	12%	89%
	48	Fixed Power Points Present (laundry)	47	400	12%	88%
	49	Cooking Heat shield Present	33	149	22%	78%
	Total		2675	48444	5.52%	94.5%

Additional Information:

9) Criteria #16, Hot Water Temperature: Detail

Hot water temperature	Number of Properties	Percentage	Percentage of Failures
Between 50°-60° (Pass)	293	73%	
Greater than 60°	64	16%	60%
Less than 50°	38	10%	36%
HWC not set at 60°	5	1%	5%
Total	400	100%	
Lowest recorded temperature		35 Degrees	
Highest recorded temperature		85 Degrees	

Almost two-thirds of the failures for criteria #16 were due to the hot water temperature at the tap nearest to the HWC being above 60 degrees.

10) Criteria #24, External/Internal Stairs: Detail

Note: an individual set of stairs can have multiple failure reasons

Internal Stairs

Reason for Failure	Number of fails by space
Balustrade	
Below required height	11
Not functioning/damaged	0
Climbing hazard	0
100mm Sphere through Barrier	2
Tread	
Slip hazard	1
Not securely fixed	1
Handrail	
Below required height	6
Not functioning/damaged	3
Not present	9
Risers	0

External Stairs

Reason for Failure	Number of fails by space
Balustrade	
Below required height	15
Not functioning/damaged	14
Climbing hazard	23
100mm Sphere through Barrier	29
Tread	
Slip hazard	2
Not securely fixed	2
Handrail	
Below required height	14
Not functioning/damaged	2
Not present	43
Risers	1

Information on Property Failures

11) Properties by Number of Distinct Failed WoF Criteria

Number of Failed criteria per property	Number of Properties	Percentage of Properties	Cumulative Failure Percentage of Properties
0	17	4%	
1	39	10%	10%
2	62	16%	25%
3	66	17%	42%
4	59	15%	57%
5	49	12%	69%
6	38	10%	78%
7	18	5%	83%
8	13	3%	86%
9	16	4%	90%
10	6	2%	92%
11	6	2%	93%
12	2	1%	94%
13	3	1%	94%
14	3	1%	95%
15	1	0%	95%
16	1	0%	96%
17	0	0%	96%
18	1	0%	96%
Total	400	100%	

12) Ranked Pass/Fail Percentage by Property and Individual WoF Criteria (inc. splits)

Note: Fail rate calculated as: number of fails/ number of applicable properties

Note: A fail for a particular critera is only counted once per property, even if failures are recorded for the same criteria and property in multiple spaces

ID number	Criteria	Number of properties that failed criteria	Number of properties containing accessible space	Fail percentage	Pass percentage
18b	Security/Restrictor Stays - required if only form of ventilation	291	400	73%	27%
17	Windows	110	400	28%	73%
24	External/internal Stairs, Ramps, Decks & Landings	110	400	28%	73%
16	Hot Water Temperature	107	400	27%	73%
27	Two Fixed Power Points Present (bedrooms)	86	400	22%	79%
29	Bathroom/Toilet Door	86	400	22%	79%
39b	Linings - wall (excluding mould)	74	400	19%	82%
37a	Storm water systems - Spouting & Downpipes	69	400	17%	83%
10A	Heating Source	11	70	16%	84%
39a	Linings - ceiling (excluding mould)	50	400	13%	88%
11	Under-floor insulation	33	277	12%	88%
48	Fixed Power Points Present (laundry)	47	400	12%	88%
40	Free-standing stoves - Anti-tip device	46	400	12%	89%
47	Two Fixed Power Points Present (Kitchen)	46	400	12%	89%
25	Electrical Services (Safety)	43	400	11%	89%
38	Linings (Floor, excluding mould)	43	400	11%	89%
41	Property Identification	40	400	10%	90%
49	Cooking Heat shield Present	33	400	8%	92%
28	Bedroom Door	32	400	8%	92%
13	Presence of mould	29	400	7%	93%
9c	Building Envelope (Windows)	29	400	7%	93%
34	Toilet Services	27	400	7%	93%
45	Kitchen Means of Cooking	27	400	7%	93%
10	Ceiling Insulation	16	314	5%	95%
23	Exterior Doors	20	400	5%	95%
12	Subfloor - dry and well ventilated	15	314	5%	95%
1	Living External Ventilation	17	400	4%	96%
2	Bedroom External Ventilation	17	400	4%	96%
8	Roof - Intact and not leaking	17	400	4%	96%
31	Washing Machine Services	17	400	4%	96%
33	Bathroom Bath or Shower Services	16	400	4%	96%
37b	Storm water systems - Stormwater Discharge	16	400	4%	96%
32	Bathroom Basin Services	14	400	4%	97%
19	External Glass Doors & Low Level Glazing	4	129	3%	97%
3	Bathroom External Ventilation	12	400	3%	97%
18a	Security/Restrictor Stays - protection from falling	11	400	3%	97%
6	Laundry External Ventilation	10	392	3%	97%
9a	Building Envelope (cladding)	10	400	3%	98%
9b	Building Envelope (Verandas/Porches/decks)	10	400	3%	98%
5	Kitchen External Ventilation	9	400	2%	98%
30	Kitchen Sink	9	400	2%	98%
21	Access to Main Entrance Door (electrical light)	8	400	2%	98%
35	Kitchen Food Storage	8	400	2%	98%
20	Access to Main Entrance Door (safe access)	7	400	2%	98%
43	Electrical Light Present	7	400	2%	98%
46	Food preparation facilities	7	400	2%	98%
7	Two Fixed Power Points Present (living room)	5	400	1%	99%
22	Safe/Secure Storage (within property)	4	400	1%	99%
42	Vermin Proof	4	400	1%	99%
4	Toilet External Ventilation	3	400	1%	99%
36	Waste water/sewerage reticulation	3	400	1%	99%
26	Smoke alarms present and working	1	400	0%	100%
15	*BWOF*	*0*	*27*	*0%*	*100%*
44	Natural Light	0	400	0%	100%
14	*Landlord-provided driers vented to the building exterior*	*1*	*3*	-	-

Data in *italics* highlight criteria that were only relevant in less than 50 properties

Only three properties required assessment for criteria #14 (landlord provided dryer)

Pass - fail rates for criteria #14 ommitted dus to a lack of observations

How to interpret (examples)

In the survey, there were 56 properties that failed criteria #39a (ceiling linings)

In the survey, there were eleven properties that failed criteria #18a (Security/Restrictor stays - protection from falling) at least once

In the survey, there were 291 properties that failed criteria #18b (Security/Restrictor Stays - required if only form of ventilation) at least once

What constitutes a failure.			
Passing 100% of the WoF criteria ?			
Passing key WoF criteria for health and safe and having time to comply with the remainder ?			
Other industry approaches that could be relevant like BWOF or vehicle/driving tests.			

Appendix 4: Trial Methodology

61 The Warrant of Fitness standard has been developed by Housing New Zealand and Ministry of Business, Innovation and Employment officials and agreed with the Minister of Housing.

62 Warrant of Fitness content, documents and business processes that were used in the trial were developed by Housing New Zealand and Ministry of Business, Innovation and Employment officials.

63 A Technical Advisory Group was established to:

a) provide technical advice on the draft Warrant of Fitness standard;
b) make evidence-based arguments for inclusion or exclusion of particular criteria and elements in the draft standard;
c) the Technical Advisory Group was accountable to the Warrant of Fitness Steering Group which comprised Housing New Zealand and Ministry of Business, Innovation and Employment officials.

64 The Technical Advisory Group was chaired by the Housing New Zealand General Manager, Property Services and attended by BRANZ, Beacon Pathway, NZ Property Investors Federation, ACC, the Energy Efficiency and Conservation Authority, Ministry of Business, Innovation and Employment and Housing New Zealand officials.

65 An external supplier, Project Quality Solutions Ltd (PQS), was contracted to carry out the Warrant of Fitness field assessments. PQS have considerable experience in carrying out similar property assessments for Housing New Zealand.

66 The Warrant of Fitness criteria used in the trial was approved by the Technical Advisory Group on 14 February 2014. The Warrant of Fitness criteria are grouped into three main categories:

a) Insulated and Dry;
b) Safe and Secure; and
c) Essential Amenities.

67 The Warrant of Fitness trial was carried out on 500 Housing New Zealand properties. The 500 properties selected were a representative sample that allows the trial results to be extrapolated to 60,000 Housing New Zealand properties, excluding Christchurch and lease properties, within an error rate of +/-5% assuming a confidence interval of 95%.

68 The trial incorporated two phases. Phase One involved inspecting 100 properties in Auckland to test and calibrate the survey form and Warrant of Fitness criteria. This sample was not representative of the Housing New Zealand portfolio and was primarily used for proof of concept purposes. Phase One was completed on 21 March 2014.

69 Phase Two involved trialling the updated Warrant of Fitness criteria on a further 400 properties, located around the country. This sample was representative of the Housing New Zealand portfolio. Phase Two started on 31 March 2014 and was completed on 17 April 2014.

70 The trial results were presented to the Technical Advisory Group on 30 April 2014 for consideration. Apart from some minor changes the final Warrant of Fitness criteria were agreed and are detailed in ***Appendix 1***

71 In addition to the final Warrant of Fitness criteria, a Compliance Risk and Remediation Framework has also been developed to define criticality and remediation timeframes of non-compliant Warrant of Fitness elements. Refer to ***Appendix 2.*** The framework is outlined later in the report.

72 Non-compliant Warrant of Fitness elements identified in the trial have been priced and then extrapolated to 60,000 properties, excluding Christchurch and lease properties, to estimate the likely cost range to ensure that all Housing New Zealand properties meet the proposed Warrant of Fitness standard.

73 The trial results that were presented to the Technical Advisory Group are detailed in ***Appendix 3***

Appendix 5: Feasibility of Doing Warrant of Fitness Assessments

74 The Warrant of Fitness field assessments were carried out by Project Quality Solutions (PQS). Below is a summary of their findings:

a) The concept for developing a survey form to complete Warrant of Fitness assessments was straightforward and easy to understand.

b) Assessor skills: Persons with a trade background or somebody with a good understanding of the performance of building components are ideally suited to this role.

c) Training: The Warrant of Fitness criteria formed part of the training documentation, but this on its own did not provide the logic on how to assess the functional performance of all items. For example, open and close all windows, test that mechanical ventilation is working, when is a visual observation of the item sufficient. The survey form aimed to provide the information defined in the Warrant of Fitness criteria, but in addition, clear survey guidelines were required for training and clarity of intent by the Assessors.

d) Time to complete: It took between 45-65 minutes to complete the actual Warrant of Fitness survey at the property once access was gained. A further 15-20 minutes was required for data uploading to an electronic format for Housing New Zealand.

e) Practicality: Apartment blocks, some with shared amenities raised a number of issues. These include:

i. Mechanical ventilation that may or may not feed into a stack and therefore cannot be assessed.

ii. The affect the Building Warrant of Fitness (BWoF) has on the internal amenities of an apartment, for example, hard wired smoke alarms.

iii. The affect the BWoF has on access into and exit from the apartment and the building, for example, stairs, ramps, elevators, fire exits.

iv. Shared spaces – in particular laundries in bathrooms or kitchens, the minimum requirement for amenities in a space such as power points, electrical lighting, etc.

v. Shared amenities for large buildings that were difficult to assess, for example, roof is too high to assess, ability to access and therefore assess exterior cladding and windows is sometimes not possible.

f) Hindrances: Access to properties, rooms where tenants are sleeping and power points behind furniture. Ceiling and sub-floors were the most common areas where access could not be gained to assess insulation.

g) Criteria affected by tenant behavior: These included:

i. External Ventilation

ii. Mould

iii. Smoke Alarms
iv. Anti – Tip Devices
v. Linings – severely smoked stained
vi. Security/Restrictor stays disengaged by tenants

h) Cost to do an individual WoF assessments:
i. PQS believe that the Warrant of Fitness survey inspection programme could be delivered in a range of **$110 - $150 per property** using electronic data collection technology and where a cost effective number of properties are surveyed each year.

75 For the trial, Housing New Zealand used a manual process to analyse and report the trial results. However, going forward the analysis and reporting process will be fully automated. Once this has happened, the cost of this process surveys will be negligible.