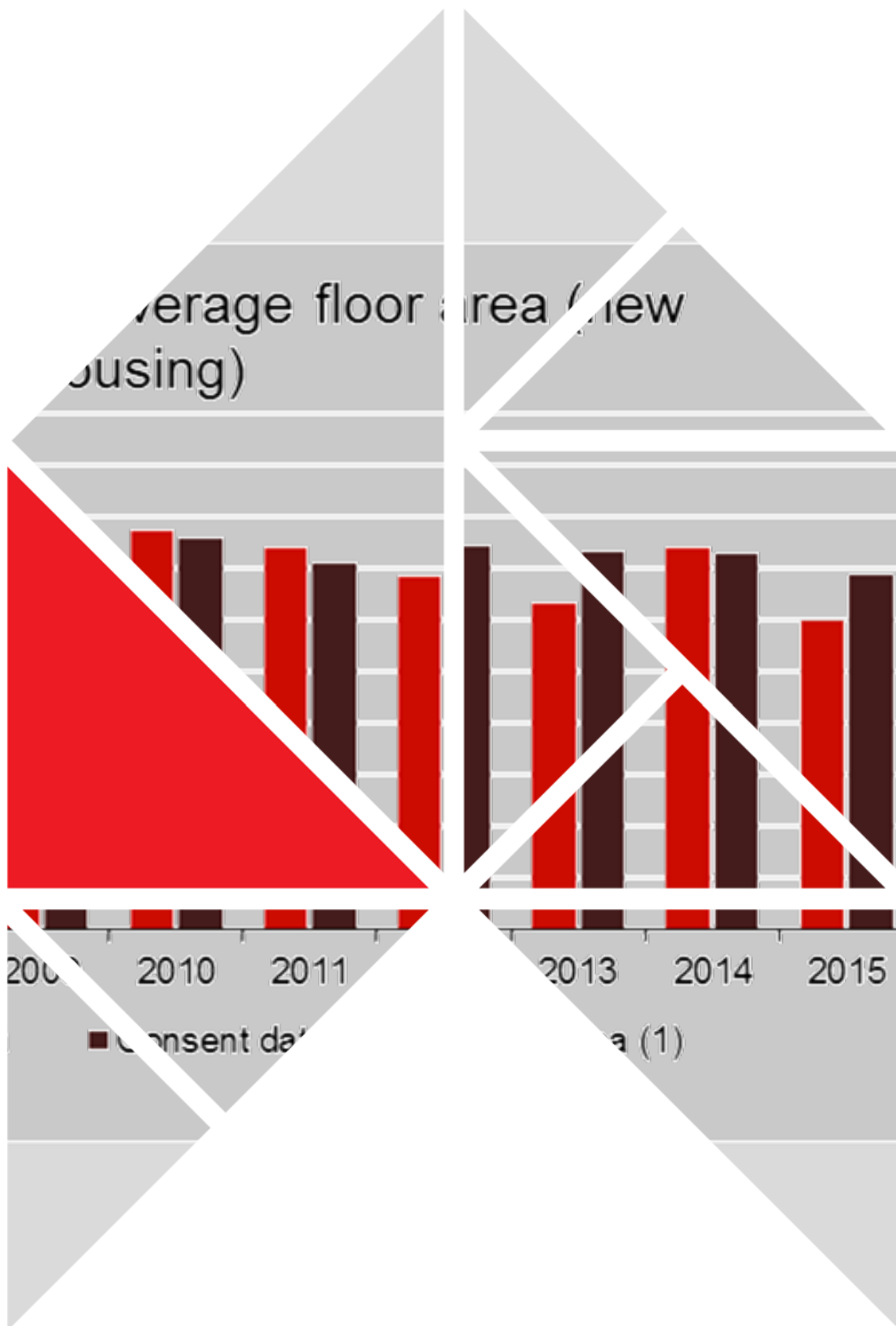


Physical characteristics of new houses 2015

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The work reported here was funded by BRANZ from the
Building Research Levy.

Preface

This is the fifth annual report providing the results of the BRANZ New Dwellings Survey. BRANZ surveys builders of new dwellings on the physical characteristics of their buildings. The purpose is to obtain data on new housing that is not available from official sources. This includes generic types of materials used by building component as well as design information such as number of floors, prefabrication and efficiency measures. The data is useful for studies in the fields of sustainability, energy efficiency, durability and engineering.

Acknowledgements

We would like to thank all of the builders and designers who filled in the survey form and returned it to BRANZ.

Physical characteristics of new houses 2015

BRANZ Study Report SR367

Author(s)

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Reference

Rosevear, M. & Curtis, M. (2017). *Physical characteristics of new houses 2015*. BRANZ Study Report SR367. Judgeford, New Zealand: BRANZ Ltd.

Abstract

Official data on the characteristics of new housing is very limited. Building consents data held by Statistics New Zealand gives numbers by building type, value and floor area, aggregated into territorial authorities. However, there is no data on materials used or housing characteristics beyond the floor area.

The BRANZ New Dwellings Survey dates back to 1998 and collects data on materials used in new housing. We have since compiled a database of approximately 1,200 new houses per year containing information on the materials used by building component and design arrangements.

This report contains the results of those surveys on the materials used in new housing. It updates previous data with the inclusion of the 2015 data set. The aim is to provide information useful to building material manufacturers, retailers/wholesalers, builders, designers, researchers and government officials.

Keywords

Materials, building envelope, claddings, floors, framing, insulation

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1. Introduction

BRANZ surveys 5,000 new residential buildings per year in the BRANZ New Dwellings Survey. This survey series started in 1998 and collects a variety of data on materials used in new housing.

The survey is a postal survey to the builder or designer identified on the building consent application form, and the questions relate to each individual consent. Generally, over 1,200 returns are received each year. An incentive is offered (a Lotto ticket, book voucher or reduced price on BRANZ publications) for the return of each survey form.

The consent information is obtained from the Whats On¹ building consent data. BRANZ uses this to determine a sample of new dwellings for each period from 31 territorial authorities:

Auckland	Christchurch	Dunedin	Franklin
Far North	Gisborne	Hutt City	Hamilton
Invercargill	Kapiti	Manukau	Marlborough
Napier	New Plymouth	North Shore	Porirua
Palmerston North	Queenstown	Rodney	Southland
Tauranga	Thames-Coromandel	Tasman	Waikato
Waipa	Wellington	Western Bay of Plenty	Whangarei
Waitakere			

The survey form is constantly evolving to include new questions as required. However, it is important for BRANZ to keep the survey form as simple, concise and clear as possible. Therefore, BRANZ keeps the survey form to a single page.

BRANZ weights the responses by the share of building activity in each territorial authority (as indicated by building consents) in the calculation of the national market share. This prevents some territorial authorities from having a disproportionate share of the total market share should BRANZ receive a larger number of survey returns from one particular area. The results presented are only for new houses (i.e. single detached units).

Using the data collected, representative estimates of the incidence and proportions of many different materials can be made. The components analysed are:

- claddings
- framing
- house storeys
- flooring
- floor joists
- insulation.

¹ *Whats On report (Monthly)*. TF Stevens & Co Ltd, Auckland, New Zealand.

A limitation of the survey is that it does not ask why certain materials are selected. This means that the report contains no commentary on why material trends might be changing. It is also subject to sampling noise, which can cause short-term fluctuations that are at variance to long-term trends.

The average floor areas since 2005 are presented in Figure 1 to illustrate any bias that may be present in the results. The sample average floor area for 2015 is slightly below the consent average floor area. This indicates that, for the 2015 year, there is not a significant bias towards larger or smaller houses.

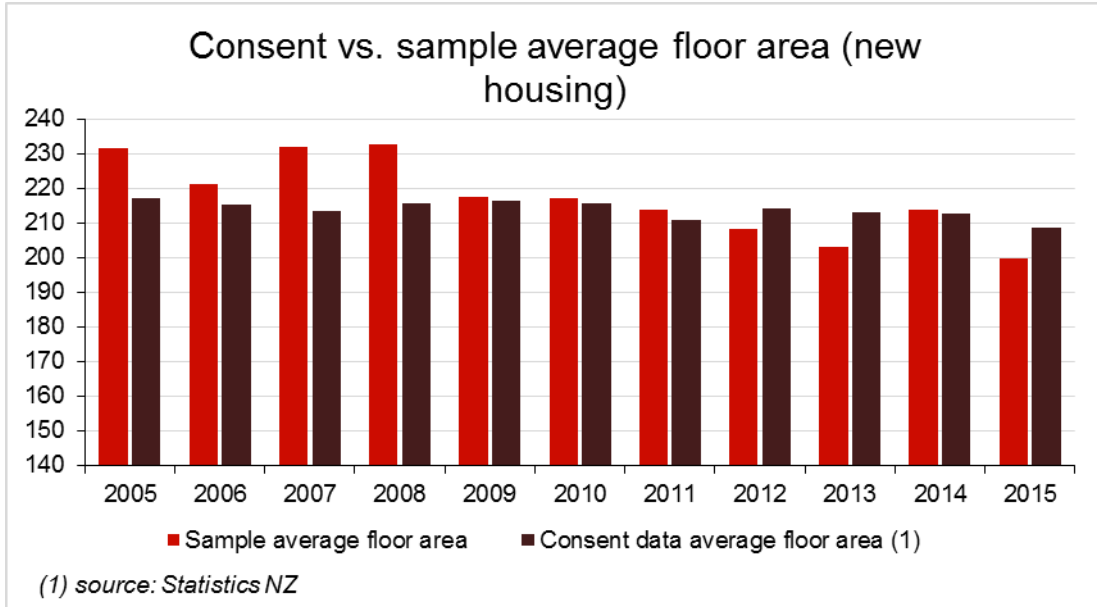


Figure 1. Consent versus sample average floor area.

Some questions change from survey to survey. However, most have remained the same since the start to ensure a consistent data set for comparative purposes.

2. Summary

In general, many of the market shares of materials have been relatively steady over the years surveyed. There are a few exceptions to this though:

- Weatherboard wall cladding continued to increase its share and has almost overtaken finish bricks as the dominant cladding material. Also of note is the growth of aerated concrete panels, which now have a 10% share of this market.
- Concrete floors continued to decrease in share compared to wooden floors, arguably due to the increase of multi-storey buildings.

3. Main results

Key results are shown in the following charts. The data for these charts are in the tables in Appendix B.

3.1 Roof claddings

Sheet metal is the dominant roof cladding material. Its share has been trending upwards over the last 3 years. Tiles' share (both metal and concrete) continued to recover from the dip sustained in 2013. 'Other' was mostly asphalt shingles in 2015 and continued its decline in share.

Nevertheless, these shares have been reasonably consistent over time.

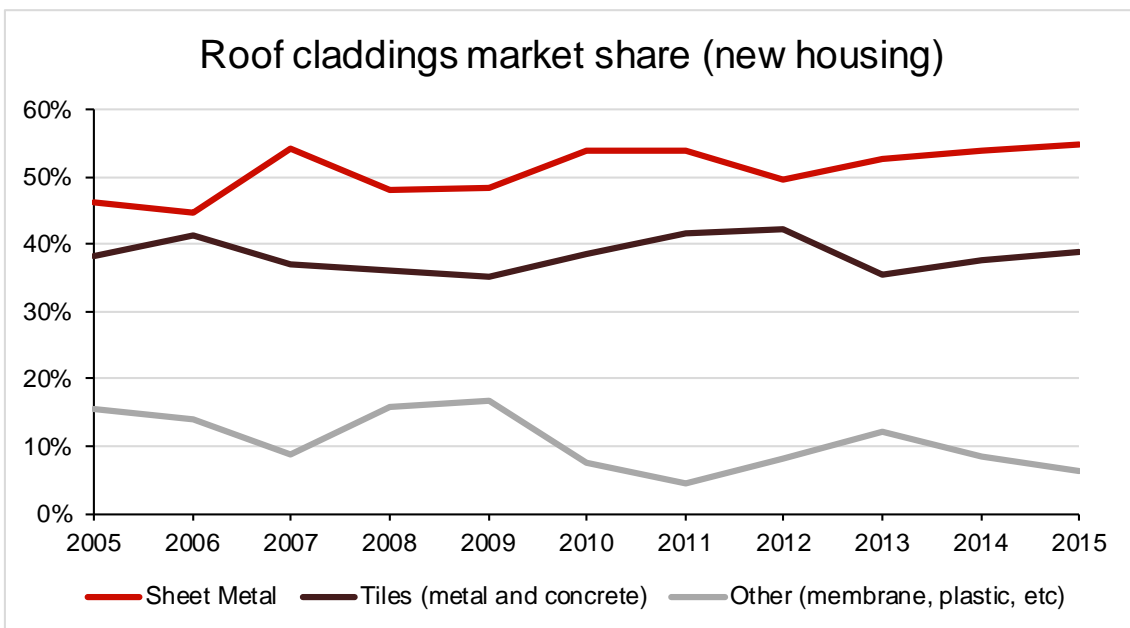


Figure 2. Roof claddings market share.

3.2 Wall claddings

Finish bricks (both clay and concrete) continued their decline in share. This was noticeable in 2014 due to the Canterbury rebuild where there is strong uptake of aerated concrete panel systems, which have a 10% share of the wall claddings market. Weatherboard continued its upward trend. 'Other' (mostly aerated concrete panel systems) has declined slightly from the gains it made in 2014 when the aerated concrete panel systems became prevalent.

Over the last 9 years, weatherboard has gained steadily and, by 2015, is nearly equal with brick as the dominant cladding type.

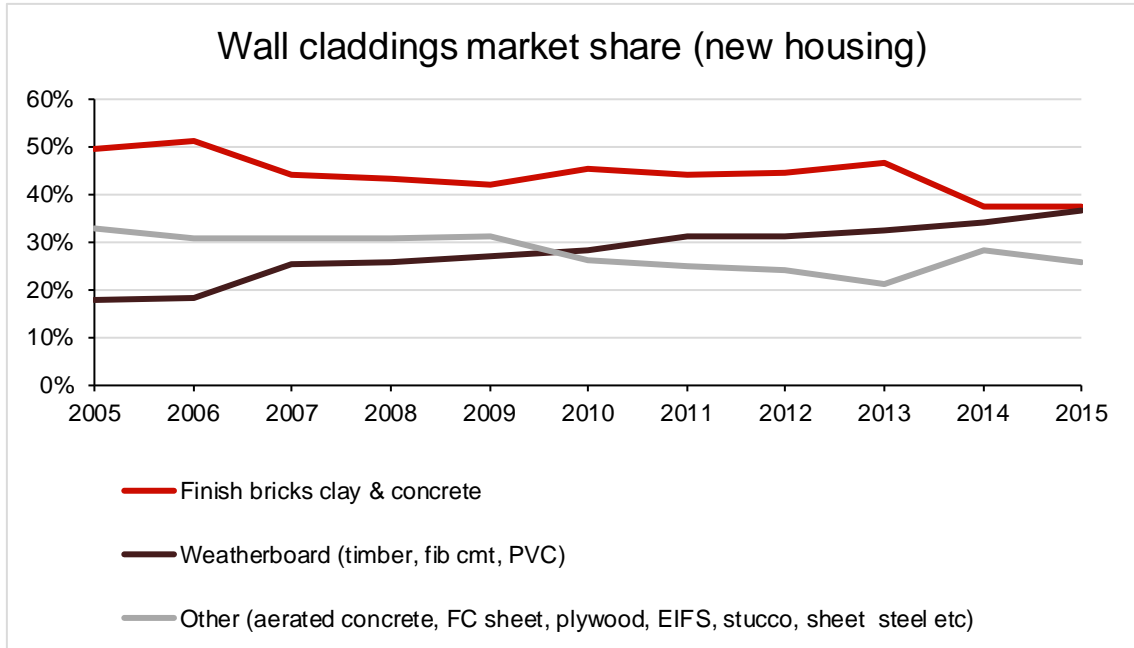


Figure 3. Wall claddings market share.

3.3 Wall framing

Timber framing remains the predominant structural material in new housing, with a historical share close to 90% of the market ($\pm 5\%$).

94% of respondents reported having precut or prenailed framing in 2015, which is relatively unchanged from 2013 and 2014.

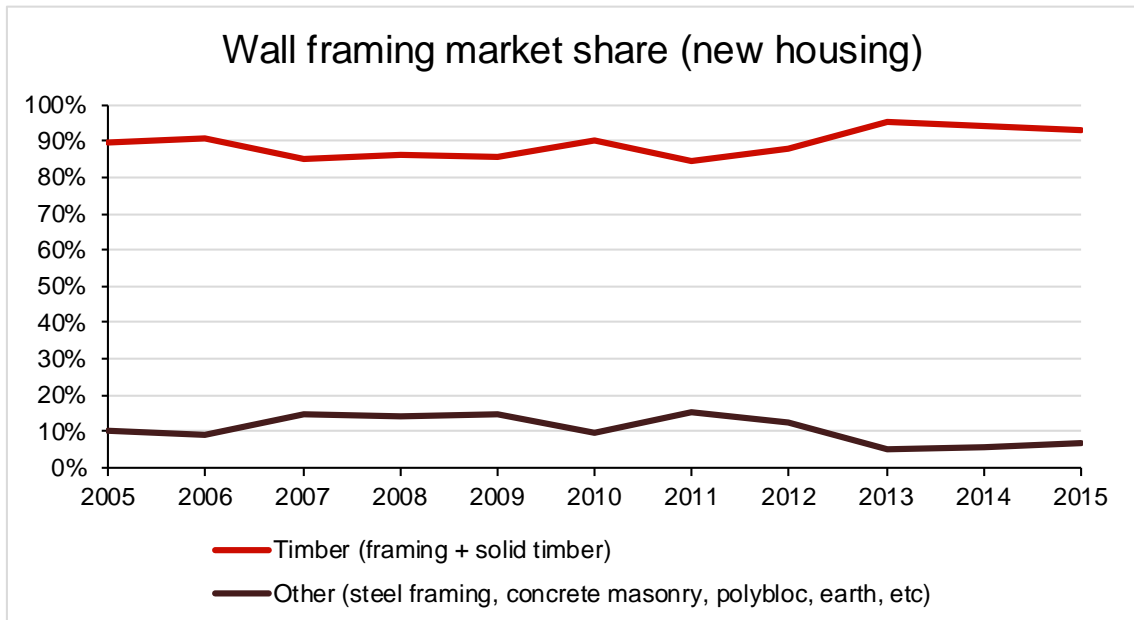


Figure 4. Wall framing market share.

3.4 Number of storeys

Figure 5 shows the proportion of new houses that were single storey, two storey or three or more storeys. 30 territorial authorities are shown where we received two or more responses. The number in brackets beside the name of the territorial authority is the number of responses received. The Auckland region, in particular Central Auckland and the North Shore, had a high proportion of new houses that were multi-storey. This was also the case in Wellington City where over 70% of new houses were multi-storey. In less urban areas such as Gisborne and Rotorua, none of our respondents built a multi-storey house. This trend towards multi-storey dwellings in the larger cities (as opposed to single-level dwellings in provincial cities) is arguably a function of high land prices in the large cities and less pressure on land prices elsewhere.

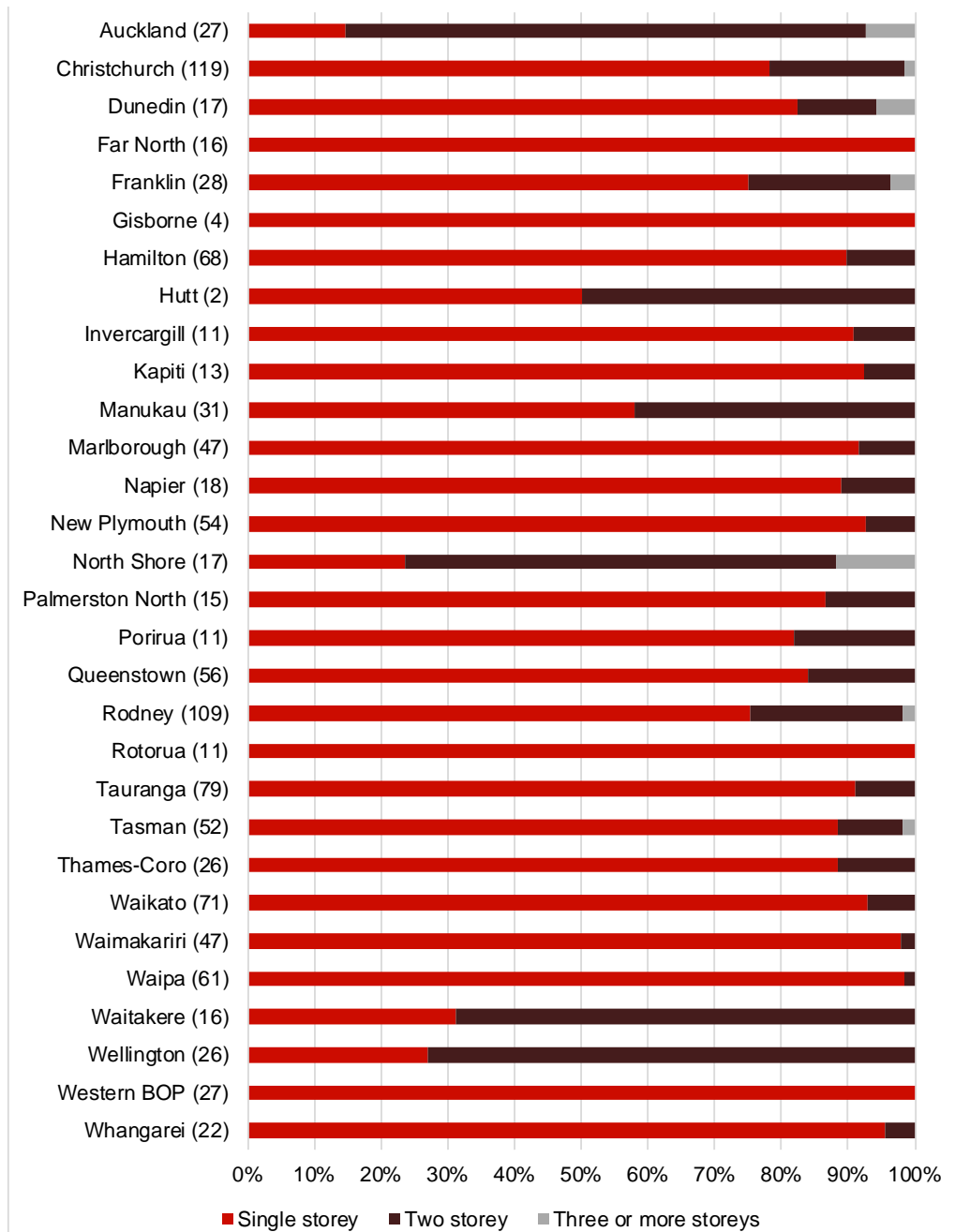


Figure 5. Number of storeys by territorial authority.

3.5 Flooring

Concrete flooring is the most common flooring type in new residential construction, but it has been trending downwards in share since 2012. 'All other flooring' is mostly particleboard and strandboard. The percentages include upper floors (which are usually wood based), so is impacted by the trend towards multi-storey buildings.

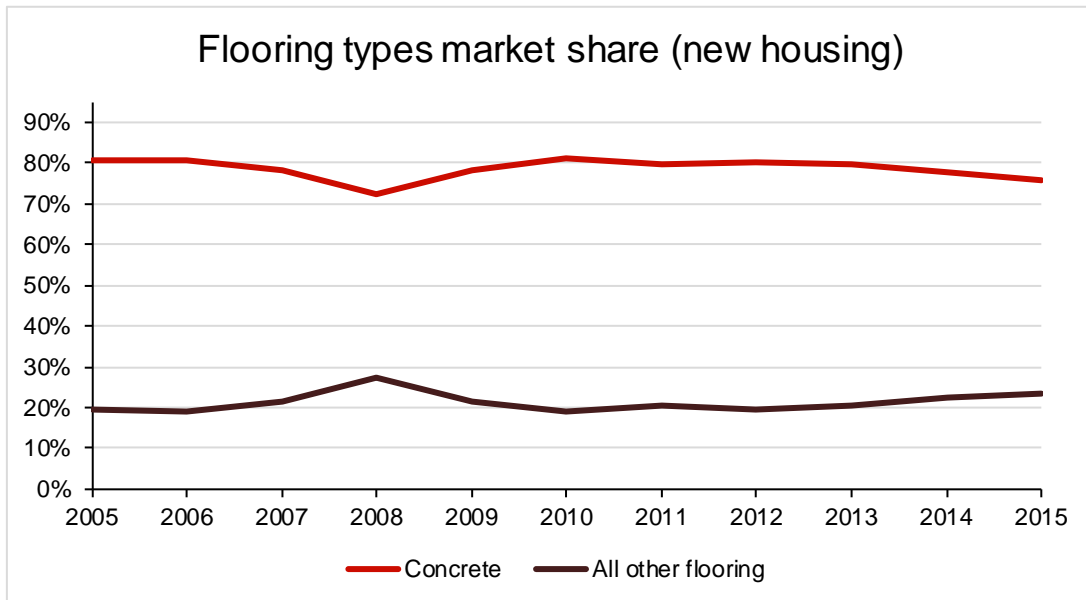


Figure 6. Flooring types market share.

3.6 Floor joists

Solid timber dominates the floor joists market. 2013 saw a closing of the gap between solid timber and engineered wood. However, that trend has since reversed, and solid timber has regained the dominant share it previously had.

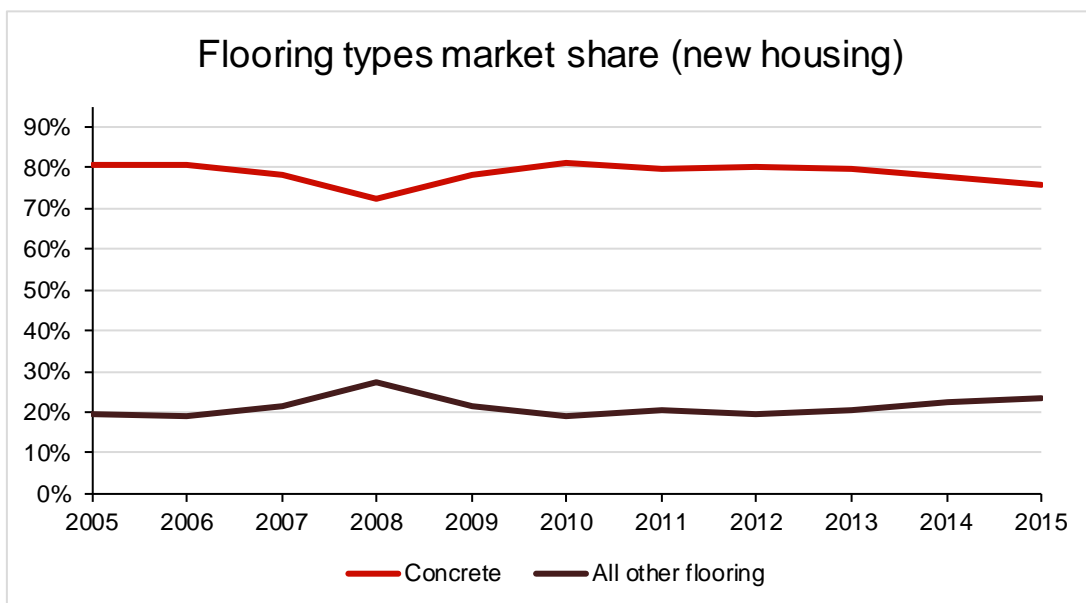


Figure 7. Floor joists market share.

3.7 Insulation

Wall insulation, ceiling insulation and floor insulation for both concrete slabs and timber floors are dealt with separately in this section.

3.7.1 Wall insulation

Fibreglass is the dominant wall insulation material. Its share was trending upwards until 2012 and now appears to be relatively stable, although it reduced slightly in 2015. The 'Other' category is mainly polystyrene, polyester and natural wool.

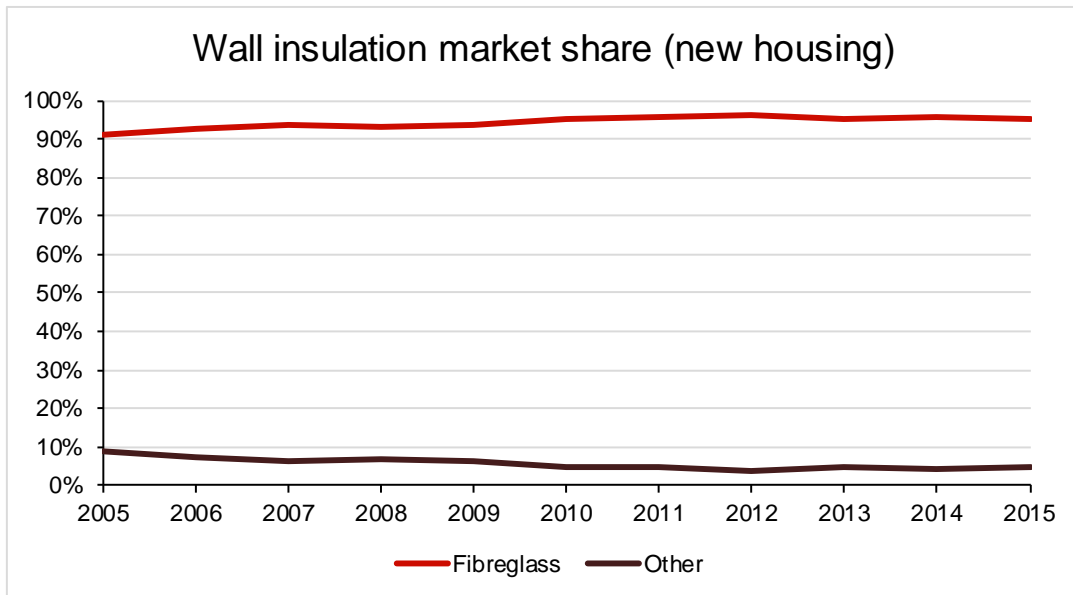


Figure 8. Wall insulation market share.

3.7.2 Ceiling insulation

Fibreglass is also the dominant ceiling insulation material. It is common for builders to use the same type of material (and often the same brand) for the wall and ceiling.

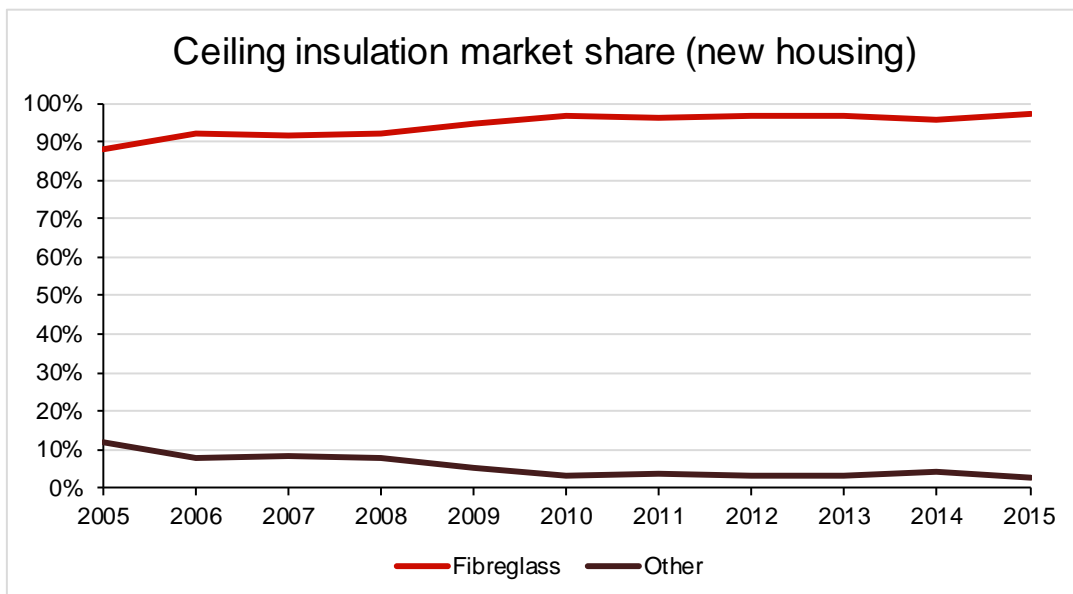


Figure 9. Ceiling insulation market share.

3.7.3 Floor insulation

In 2015, the question on insulation of concrete slabs was changed. We present the mix of insulation types used in 2015 against total insulation for the historical series. In 2015, the total percentage of floors insulated appears to be on a slight downward trend. It appears that 2014 was likely an outlier. Underslab full/partial insulation is the most common insulation for concrete slabs in new housing. Very few builders reported insulating the perimeter edge or under the slab footing.

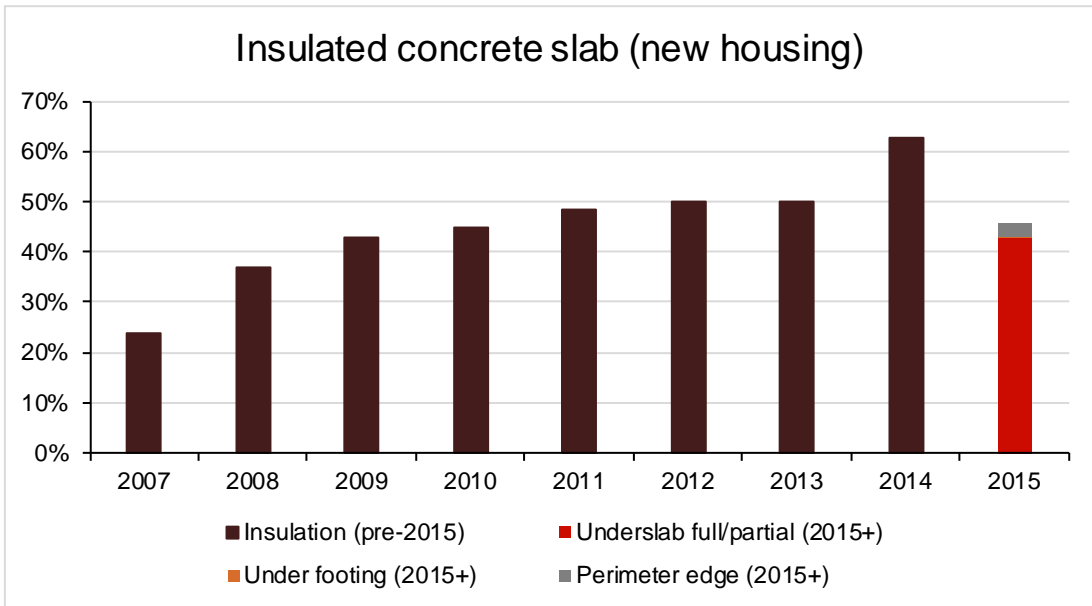


Figure 10. Concrete slab insulation.

Timber subfloors are much less common than concrete slabs in new housing. Therefore, the shares presented in Figure 11 are susceptible to large swings given the use of timber floor insulation in new houses being limited. Polystyrene in 2015 has a dominant share of the market (70%), which appears to reflect its long-term trend, where data from 2012 to 2014 may be subject to sampling bias.

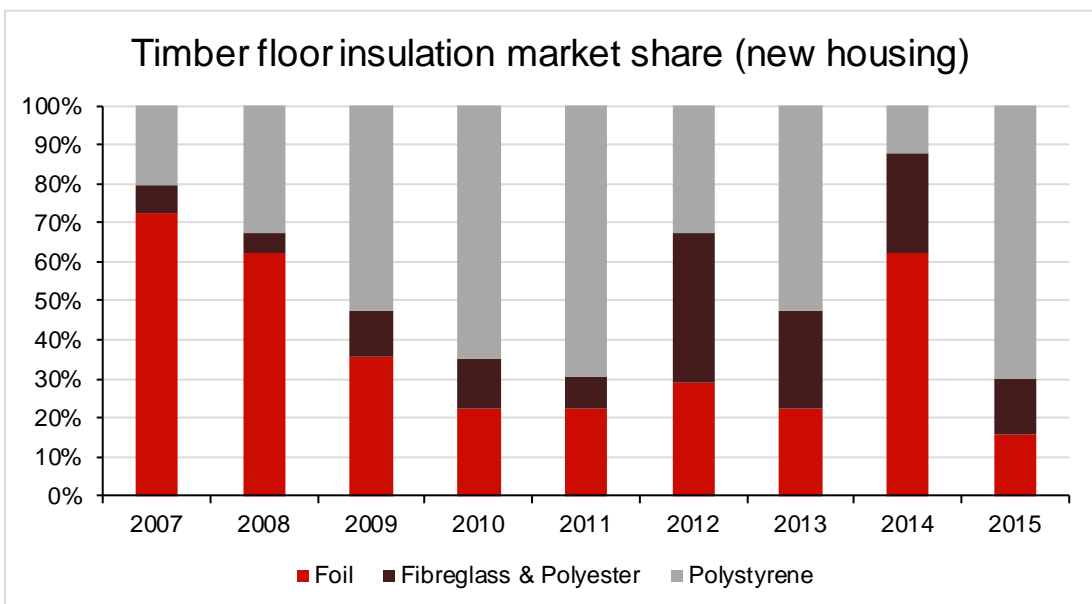


Figure 11. Timber floor insulation market share

Appendix A: Survey forms

Survey form October 2006

NEW DWELLING									
Please give this form to the builder or designer to fill out for the building consent listed over the page.									
Number of dwelling units <input type="text"/> in this consent.					Contract value of work (incl sub-trades) \$ ind GST.				
Floor areas Total floor area _____ Sq metres (include attached garage, exclude decks).									
Strip timber (not overlay, exclude decks).									
		Particleboard		Plywood				Concrete	
Ground level		_____ Sq metres		_____ Sq metres		_____ Sq metres		_____ Sq metres	
First level		_____ Sq metres		_____ Sq metres		_____ Sq metres		_____ Sq metres	
2nd or more levels		_____ Sq metres		_____ Sq metres		_____ Sq metres		_____ Sq metres	
Decks (above ground, not concrete patios) (circle one)									
Deck area _____ Sq metres					Includes a deck? Yes / No (circle one or more)				
Deck surface material = radiata/hardwood/butyl/tiles/other/ pour-on. Deck substrate = plywood sht/ fibre cement sht/ concrete/ timber joists.									
Wall Framing (tick appropriate box)									
Radiata <input type="checkbox"/>		Steel <input type="checkbox"/>		Douglas fir <input type="checkbox"/>		Concrete block <input type="checkbox"/>		Other <input type="checkbox"/> (state)	
Was the wall framing precut or prenailed? Yes / No (circle one)									
Framing timber treatment Untreated kiln dry Untreated wet H1.2 T1.2 (orange) H3.1									
Tick one or more <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>									
State where used (eg outer walls, sub floor, etc)									
Floor joists									
Tick one or more		None <input type="checkbox"/>		Solid timber <input type="checkbox"/>		Posistrut <input type="checkbox"/>		Hybeam (I beam) <input type="checkbox"/>	
		Steel <input type="checkbox"/>		Twinplate <input type="checkbox"/>		Origin (I beam) <input type="checkbox"/>		Other (state) <input type="checkbox"/>	
		Joist depth mm		mm		mm		mm	
Insulation (tick one or more)									
R value of insulation		Pink Batts <input type="checkbox"/>		Bradford Gold <input type="checkbox"/>		Premier Fibreglass <input type="checkbox"/>		Blown FG Roofwool <input type="checkbox"/>	
Wall insulation		R- <input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	
Ceiling insulation		R- <input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	
Floor insulation		R- <input type="checkbox"/>		Expol Warmflex <input type="checkbox"/>		Polystyrene panel <input type="checkbox"/>		Cosy Floor Foil <input type="checkbox"/>	
Installer (name)								
Noise Control (circle one)									
Have you installed noise control products? Yes / No What type?									
Building wraps									
Roof wrap		Flamestop <input type="checkbox"/>		Thermakraft <input type="checkbox"/>		Bitumac <input type="checkbox"/>		GIB underlay <input type="checkbox"/>	
		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	
Wall wrap		Flamestop <input type="checkbox"/>		Tyvek <input type="checkbox"/>		Thermakraft coverup <input type="checkbox"/>		Framegard II <input type="checkbox"/>	
		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	
Wall cladding State type (and approx % wall coverage)									
Type		% area		eg fibre cement sheet, 75%		also plywood, solid plaster (min 18mm),			
Type		% area		daybrick, 15%		plaster on polystyrene, concrete			
Type		% area		cedar 10%		block, PVC weatherboard, etc.			
If yes to Fibre Cement cladding what is the Manufacturer? (tick one or more) <input type="checkbox"/> Hardies <input type="checkbox"/> BGC <input type="checkbox"/> CSR <input type="checkbox"/> PRMA <input type="checkbox"/> Other <input type="checkbox"/>									
Fibre Cement Product used as (Circle one or more) Applied texture finish sheet Flat sheet FC plank FC weatherboard/Linea									
If solid plaster, what backing? (circle one if solid plaster) fibre cement, plywood, paper, Triple S, block/brick, metal lathe									
Roof cladding Type (or circle one)									
eg metal tiles, pre-painted corrugated, other steel profiles, concrete tiles, butyl asphalt shingles, fibreglass shingles, etc.									
Wet wall linings (Tick one or more in each row)									
Bathroom		Formica Aquapanel <input type="checkbox"/>		Seratone <input type="checkbox"/>		Villa board <input type="checkbox"/>		Hardiglaze <input type="checkbox"/>	
		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	
Laundry		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	
		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	
Is fibre cement sheet flooring underlay used in the bathroom or laundry? Yes/ No (circle one).									
Energy efficiency Tick if any of the following are being installed:									
Double glazing <input type="checkbox"/>		Solar water heaters <input type="checkbox"/>		Dual flush toilets <input type="checkbox"/>		efficient lights <input type="checkbox"/>		Energy Heat pump <input type="checkbox"/>	
		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	
		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		Low flow showers <input type="checkbox"/>	
		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		Built-in window vents <input type="checkbox"/>	
		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	
Type of Builder How many houses or dwelling units does your company build per year (approx)									
Construction Delays If you signed a contract with the owner now, how many weeks before on-site work would start? wks									

Survey form October 2010

NEW DWELLING																																																																
Please give this form to the builder or designer to fill out for the building consent listed over the page. Number of dwelling units <input type="checkbox"/> in this consent. Contract value of work (incl sub-trades) \$ incl GST.																																																																
Floor areas Total floor area _____ Sq metres (include attached garage, exclude decks). <table style="width: 100%; border: none;"> <tr> <td style="width: 25%;"></td> <td style="width: 25%; text-align: center;">Particleboard</td> <td style="width: 25%; text-align: center;">Plywood</td> <td style="width: 25%; text-align: center;">Strip timber (not overlay, exclude decks).</td> <td style="width: 25%; text-align: center;">Concrete</td> </tr> <tr> <td>Ground level</td> <td>_____ Sq metres</td> <td>_____ Sq metres</td> <td>_____ Sq metres</td> <td>_____ Sq metres</td> </tr> <tr> <td>First level</td> <td>_____ Sq metres</td> <td>_____ Sq metres</td> <td>_____ Sq metres</td> <td>_____ Sq metres</td> </tr> <tr> <td>2nd or more levels</td> <td>_____ Sq metres</td> <td>_____ Sq metres</td> <td>_____ Sq metres</td> <td>_____ Sq metres</td> </tr> </table>											Particleboard	Plywood	Strip timber (not overlay, exclude decks).	Concrete	Ground level	_____ Sq metres	_____ Sq metres	_____ Sq metres	_____ Sq metres	First level	_____ Sq metres	_____ Sq metres	_____ Sq metres	_____ Sq metres	2nd or more levels	_____ Sq metres	_____ Sq metres	_____ Sq metres	_____ Sq metres																																			
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Floor joists Tick one or more <table style="width: 100%; border: none;"> <tr> <td style="width: 12.5%;"></td> <td style="width: 12.5%; text-align: center;">None</td> <td style="width: 12.5%; text-align: center;">Solid timber</td> <td style="width: 12.5%; text-align: center;">Posistrut</td> <td style="width: 12.5%; text-align: center;">Hyjoist</td> <td style="width: 12.5%; text-align: center;">Steel</td> <td style="width: 12.5%; text-align: center;">Twinplate</td> <td style="width: 12.5%; text-align: center;">Hyme (I beam)</td> <td style="width: 12.5%; text-align: center;">lumberworX</td> <td style="width: 12.5%; text-align: center;">Other (state)</td> </tr> <tr> <td></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td></td> <td>Joist depth _____mm</td> <td>_____mm</td> <td>_____mm</td> <td>_____mm</td> <td>_____mm</td> <td>_____mm</td> <td>_____mm</td> <td>_____mm</td> <td>_____mm</td> </tr> </table>											None	Solid timber	Posistrut	Hyjoist	Steel	Twinplate	Hyme (I beam)	lumberworX	Other (state)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Joist depth _____mm	_____mm	_____mm	_____mm	_____mm	_____mm	_____mm	_____mm	_____mm																									
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Insulation (tick one or more) <table style="width: 100%; border: none;"> <tr> <td style="width: 10%;"></td> <td style="width: 10%; text-align: center;">Insulation R value</td> <td style="width: 10%; text-align: center;">Pink Batts</td> <td style="width: 10%; text-align: center;">Bradford Gold</td> <td style="width: 10%; text-align: center;">Premier Fibreglass</td> <td style="width: 10%; text-align: center;">Blown FG Rocwool</td> <td style="width: 10%; text-align: center;">Greenstuf (polyester)</td> <td style="width: 10%; text-align: center;">Other polyester</td> <td style="width: 10%; text-align: center;">Wool</td> <td style="width: 10%; text-align: center;">Polystyrene</td> <td style="width: 10%; text-align: center;">Other (state)</td> </tr> <tr> <td>Wall insulation</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>Ceiling insulation</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>Floor Insulation</td> <td><input type="checkbox"/></td> <td style="text-align: center;">Expol Warmfeet</td> <td style="text-align: center;">Polystyrene (NOT polythene) Under slab</td> <td style="text-align: center;">Snug Floor</td> <td style="text-align: center;">Sisalation Foil</td> <td style="text-align: center;">Ribraft Floor</td> <td style="text-align: center;">Cupolex</td> <td style="text-align: center;">Other (state)</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>Insulation Installer (name) Please tick</td> <td><input type="checkbox"/></td> <td>Builder <input type="checkbox"/></td> <td colspan="8">Other, please specify _____ <input type="checkbox"/></td> </tr> </table>											Insulation R value	Pink Batts	Bradford Gold	Premier Fibreglass	Blown FG Rocwool	Greenstuf (polyester)	Other polyester	Wool	Polystyrene	Other (state)	Wall insulation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Ceiling insulation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Floor Insulation	<input type="checkbox"/>	Expol Warmfeet	Polystyrene (NOT polythene) Under slab	Snug Floor	Sisalation Foil	Ribraft Floor	Cupolex	Other (state)	<input type="checkbox"/>	<input type="checkbox"/>	Insulation Installer (name) Please tick	<input type="checkbox"/>	Builder <input type="checkbox"/>	Other, please specify _____ <input type="checkbox"/>							
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Wall insulation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																																						
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Noise Control Have you installed noise control products? (circle one) Yes / No If so then what type? (Tick one or more boxes) <table style="width: 100%; border: none;"> <tr> <td style="width: 12.5%;"></td> <td style="width: 12.5%; text-align: center;">Pink Batts Silencer</td> <td style="width: 12.5%; text-align: center;">Gib Noiseline</td> <td style="width: 12.5%; text-align: center;">Other Gib Products</td> <td style="width: 12.5%; text-align: center;">Bradford Gold</td> <td style="width: 12.5%; text-align: center;">Pink Batts</td> <td style="width: 12.5%; text-align: center;">Polyester</td> <td style="width: 12.5%; text-align: center;">Other Specify</td> </tr> <tr> <td></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </table>											Pink Batts Silencer	Gib Noiseline	Other Gib Products	Bradford Gold	Pink Batts	Polyester	Other Specify		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																							
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Building wraps (tick one or more) <table style="width: 100%; border: none;"> <tr> <td style="width: 12.5%;"></td> <td style="width: 12.5%; text-align: center;">Flamestop</td> <td style="width: 12.5%; text-align: center;">Thermakraft</td> <td style="width: 12.5%; text-align: center;">Bitumac</td> <td style="width: 12.5%; text-align: center;">CoverTek</td> <td style="width: 12.5%; text-align: center;">Pauloid</td> <td style="width: 12.5%; text-align: center;">Black Paper</td> <td style="width: 12.5%; text-align: center;">Other (state)</td> <td style="width: 12.5%; text-align: center;">Diflex 130</td> <td style="width: 12.5%; text-align: center;">Tekton</td> </tr> <tr> <td>Roof wrap</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>Wall wrap</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </table>											Flamestop	Thermakraft	Bitumac	CoverTek	Pauloid	Black Paper	Other (state)	Diflex 130	Tekton	Roof wrap	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Wall wrap	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																									
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DPC What DPC products have you installed? <table style="width: 100%; border: none;"> <tr> <td style="width: 33.3%;"></td> <td style="width: 33.3%; text-align: center;">Damp-a-thene</td> <td style="width: 33.3%; text-align: center;">Mathiod</td> <td style="width: 33.3%; text-align: center;">Supercourse</td> <td style="width: 33.3%; text-align: center;">Other, specify _____</td> </tr> <tr> <td></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </table>											Damp-a-thene	Mathiod	Supercourse	Other, specify _____		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																													
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	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																																												
Flashing Tapes What flashing tapes are installed? <table style="width: 100%; border: none;"> <tr> <td style="width: 25%;"></td> <td style="width: 25%; text-align: center;">Weatherseal</td> <td style="width: 25%; text-align: center;">Aluband</td> <td style="width: 25%; text-align: center;">Tyvek Flexwrap</td> <td style="width: 25%; text-align: center;">Protectowrap</td> <td style="width: 25%; text-align: center;">Frameflash</td> <td style="width: 25%; text-align: center;">Other, specify _____</td> </tr> <tr> <td></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </table>											Weatherseal	Aluband	Tyvek Flexwrap	Protectowrap	Frameflash	Other, specify _____		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																									
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	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																																										
Wall cladding State type (and approx % wall coverage) <table style="width: 100%; border: none;"> <tr> <td style="width: 30%;">Type _____</td> <td style="width: 30%;">% area _____</td> <td style="width: 40%;">eg fibre cement sheet, 75%</td> </tr> <tr> <td>Type _____</td> <td>% area _____</td> <td>also plywood, solid plaster (min 18mm), clay brick, 15%</td> </tr> <tr> <td>Type _____</td> <td>% area _____</td> <td>cedar 10% plaster on polystyrene, concrete block, PVC weatherboard, etc.</td> </tr> </table>										Type _____	% area _____	eg fibre cement sheet, 75%	Type _____	% area _____	also plywood, solid plaster (min 18mm), clay brick, 15%	Type _____	% area _____	cedar 10% plaster on polystyrene, concrete block, PVC weatherboard, etc.																																														
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If Fibre Cement cladding is used, who is the Manufacturer? (tick one or more) <table style="width: 100%; border: none;"> <tr> <td style="width: 12.5%;"></td> <td style="width: 12.5%; text-align: center;">Hardies</td> <td style="width: 12.5%; text-align: center;">BGC</td> <td style="width: 12.5%; text-align: center;">CSR</td> <td style="width: 12.5%; text-align: center;">PRIMA</td> <td style="width: 12.5%; text-align: center;">Other</td> <td style="width: 12.5%; text-align: center;">Eterpan</td> </tr> <tr> <td></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </table>											Hardies	BGC	CSR	PRIMA	Other	Eterpan		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																									
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	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																																										
Fibre Cement Product used as (Circle one or more) Applied texture finish sheet, Flat sheet, Linea (16mm), FC plank (7.5mm)																																																																
If solid plaster, what backing? (circle one if solid plaster) fibre cement, plywood, paper, Triple S, block/brick, metal lathe																																																																
Roof cladding Type _____ (or circle one) eg metal tiles, prepainted corrugated, other steel profiles, concrete tiles, butyl, asphalt shingles, fibreglass shingles, etc. If roof is metal tiles, specify Manufacturer name: _____																																																																
Is the Majority of the roof slope: (tick one) <table style="width: 100%; border: none;"> <tr> <td style="width: 33.3%; text-align: center;">Greater/equal than 12 degrees</td> <td style="width: 33.3%; text-align: center;">less than 12 degrees</td> <td style="width: 33.3%; text-align: center;">Don't know</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </table>										Greater/equal than 12 degrees	less than 12 degrees	Don't know	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																																	
Greater/equal than 12 degrees	less than 12 degrees	Don't know																																																														
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																																														
Wet wall linings (Tick one or more in each row) <table style="width: 100%; border: none;"> <tr> <td style="width: 12.5%;"></td> <td style="width: 12.5%; text-align: center;">Formica Aquapanel</td> <td style="width: 12.5%; text-align: center;">Seratone</td> <td style="width: 12.5%; text-align: center;">Villaboard</td> <td style="width: 12.5%; text-align: center;">Hardiglaze</td> <td style="width: 12.5%; text-align: center;">Standard GIB</td> <td style="width: 12.5%; text-align: center;">GIB Aqualine</td> <td style="width: 12.5%; text-align: center;">Other, specify</td> <td style="width: 12.5%; text-align: center;">Timber</td> <td style="width: 12.5%; text-align: center;">Horizon</td> </tr> <tr> <td>Bathroom</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>Laundry</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </table>											Formica Aquapanel	Seratone	Villaboard	Hardiglaze	Standard GIB	GIB Aqualine	Other, specify	Timber	Horizon	Bathroom	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Laundry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																									
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Is fibre cement sheet flooring underlay used in the bathroom or laundry? Yes/ No (circle one)																																																																
Thank You. Please fold this form, and freepost it in the return envelope Oct-10																																																																

Survey form October 2015

NEW DWELLING																	
Please give this form to the builder or designer to fill out for the building consent listed over the page. Number of dwelling units in this consent <input type="text"/> Contract value of work (incl sub-trades) \$..... Incl GST.																	
Was this dwelling designed by a registered architect? Yes / No (circle one)																	
Floor Areas and Ceiling Height Total Floor Area <input type="text"/> Sq metres (include attached garage, exclude decks).																	
Strip timber (not overlay)																	
		Particleboard		Plywood		exclude decks		Strandboard		Concrete		Height of level to ceiling					
Ground level		<input type="text"/> Sq m		<input type="text"/> Sq m		<input type="text"/> Sq m		<input type="text"/> Sq m		<input type="text"/> Sq m		<input type="text"/> metres					
First level		<input type="text"/> Sq m		<input type="text"/> Sq m		<input type="text"/> Sq m		<input type="text"/> Sq m		<input type="text"/> Sq m		<input type="text"/> metres					
2nd or more levels		<input type="text"/> Sq m		<input type="text"/> Sq m		<input type="text"/> Sq m		<input type="text"/> Sq m		<input type="text"/> Sq m		<input type="text"/> metres					
Wall Framing (tick appropriate box) Radiata <input type="checkbox"/> Steel <input type="checkbox"/> Douglas Fir <input type="checkbox"/> Concrete Block <input type="checkbox"/> Solid Wood <input type="checkbox"/> Other <input type="checkbox"/> (state).....																	
Was the wall framing precut or prenailed? Yes / No (circle one)																	
How soon after being issued the consent will you have stood the house framing? 0-3 months <input type="checkbox"/> 4-6 months <input type="checkbox"/> 7-9 months <input type="checkbox"/> 10-12 months <input type="checkbox"/> Over 12 months <input type="checkbox"/>																	
Floor Joists (tick one or more) None <input type="checkbox"/> Solid Timber <input type="checkbox"/> Posistrut <input type="checkbox"/> Hyjoist <input type="checkbox"/> Steel <input type="checkbox"/> Twinaplate <input type="checkbox"/> Hyme (I beam) <input type="checkbox"/> LumberworX <input type="checkbox"/> Other state <input type="checkbox"/>																	
Joist depth: mm mm mm mm mm mm mm mm mm																	
Insulation (tick one or more) Insulation R Value <input type="text"/> Pink Batts <input type="checkbox"/> Bradford Gold <input type="checkbox"/> Premier <input type="checkbox"/> Knauf Earthwool <input type="checkbox"/> Autex Greenstuf <input type="checkbox"/> Other Polyester <input type="checkbox"/> Wool <input type="checkbox"/> Polystyrene <input type="checkbox"/> Other (state) <input type="checkbox"/>																	
Wall insulation <input checked="" type="checkbox"/> R-.....																	
Ceiling insulation <input checked="" type="checkbox"/> R-.....																	
Is the floor insulated? (circle one) Yes / No If yes, what floor insulation was used?																	
Concrete slab insulation																	
Timber sub-floor insulation																	
Floor insulation		<input checked="" type="checkbox"/> R-.....		Underslab full/partial <input type="checkbox"/>		Perimeter edge <input type="checkbox"/>		Under footing <input type="checkbox"/>		Polystyrene <input type="checkbox"/>		Polyester <input type="checkbox"/>		Glasswool <input type="checkbox"/>		Foil <input type="checkbox"/>	
Insulation Installer (name) Builder <input type="checkbox"/> Other (please specify) <input type="text"/>																	
Noise Control Have you installed noise control products? (circle one) Yes / No If so, then what type? (tick all that apply) Pink Batts <input type="checkbox"/> GIB Silencer <input type="checkbox"/> Other GIB Products <input type="checkbox"/> Bradford Gold <input type="checkbox"/> Pink Batts <input type="checkbox"/> Polyester <input type="checkbox"/> Other (please specify) <input type="text"/>																	
Building Wraps Flamestop <input type="checkbox"/> Bitumac <input type="checkbox"/> Tyvek Supro <input type="checkbox"/> CoverTek <input type="checkbox"/> Thermakraft <input type="checkbox"/> Fastwrap <input type="checkbox"/> Pauloid <input type="checkbox"/> Other (state) <input type="text"/>																	
Roof Wrap (tick one or more) Bitumac <input type="checkbox"/> Tyvek Homewra <input type="checkbox"/> Watergate <input type="checkbox"/> Covertek <input type="checkbox"/> Thermakraft <input type="checkbox"/> Tekton <input type="checkbox"/> Fastwrap <input type="checkbox"/> Pauloid <input type="checkbox"/> Ecoply Barrier <input type="checkbox"/> Other (state) <input type="text"/>																	
Wall Wrap <input type="checkbox"/>																	
DPC What DPC products have you installed? Damp-a-thene <input type="checkbox"/> Malthoid <input type="checkbox"/> Supercourse <input type="checkbox"/> Other, Specify: <input type="text"/>																	
Flashing Tapes What flashing tapes are installed? Bulldog <input type="checkbox"/> Aluband <input type="checkbox"/> Tyvek Flexwrap <input type="checkbox"/> Protectowrap <input type="checkbox"/> Frameflash <input type="checkbox"/> Other, Specify: <input type="text"/>																	
Wall Cladding State type and approximate % wall coverage e.g. Fibre cement sheet, 75% Other examples include: plywood sheet, plaster on claybrick, steel zincalum, fibre cement plank, Clay Brick, 15% glazing, EIFS, aerote concrete panel, radiata WB, linea WB etc. Cedar WB, 10% Type % area Type % area Type % area If Fibre Cement product, what is it used as? (circle one) Applied texture finish sheet, Flat sheet, Linea (16mm), FC plank (7.5mm)																	
Roof Cladding What roof cladding was used? (circle one or state below) metal tiles, corona shake, prepainted corrugated, trough zincalum, corrugated zincalum, other steel profiles, concrete tiles, asphalt shingles, butyl, other (state)																	
Spouting What profile is the SPOUTING? ¼ round/quad <input type="checkbox"/> ½ round <input type="checkbox"/> Old gothic <input type="checkbox"/> Box <input type="checkbox"/> Other (state) What material is the SPOUTING? PVC (White) <input type="checkbox"/> PVC (Colour) <input type="checkbox"/> Steel <input type="checkbox"/> Aluminium <input type="checkbox"/> Copper <input type="checkbox"/> Other (state) Who installed the SPOUTING? Roofer <input type="checkbox"/> Spouting installer <input type="checkbox"/> Builder <input type="checkbox"/> Plumber <input type="checkbox"/> Other (state)																	
Downpipes What profile are the DOWNPIPES? 65mm round <input type="checkbox"/> 80mm round <input type="checkbox"/> 100mm round <input type="checkbox"/> 65x50mm rectangular <input type="checkbox"/> 100x50mm rectangular <input type="checkbox"/> Other (state) What material are the DOWNPIPES? PVC (White) <input type="checkbox"/> PVC (Colour) <input type="checkbox"/> Steel <input type="checkbox"/> Aluminium <input type="checkbox"/> Copper <input type="checkbox"/> Other (state) Who installed the DOWNPIPES? Roofer <input type="checkbox"/> Spouting installer <input type="checkbox"/> Builder <input type="checkbox"/> Plumber <input type="checkbox"/> Other (state)																	
Wet Wall Linings (tick one or more in each row) Bathroom Formica Aquapanel <input type="checkbox"/> Seratone <input type="checkbox"/> Villaboard <input type="checkbox"/> Hardiglaze <input type="checkbox"/> Standard GIB <input type="checkbox"/> Aqualine <input type="checkbox"/> WaterShield <input type="checkbox"/> Other specify <input type="checkbox"/> Timber <input type="checkbox"/> Horizon <input type="checkbox"/> Laundry Formica Aquapanel <input type="checkbox"/> Seratone <input type="checkbox"/> Villaboard <input type="checkbox"/> Hardiglaze <input type="checkbox"/> Standard GIB <input type="checkbox"/> Aqualine <input type="checkbox"/> WaterShield <input type="checkbox"/> Other specify <input type="checkbox"/> Timber <input type="checkbox"/> Horizon <input type="checkbox"/>																	
Wall Linings (excluding wet walls) Elephant Plasterboard <input type="checkbox"/> GIB Plasterboard <input type="checkbox"/> Knauf Plasterboard <input type="checkbox"/> Other (state)																	
Ceiling Linings and Battens Ceiling Linings (tick one or more) 10mm plasterboard <input type="checkbox"/> 13mm plasterboard <input type="checkbox"/> Ultraline <input type="checkbox"/> Tiles <input type="checkbox"/> Other <input type="checkbox"/> Ceiling Battens (circle one): timber or metal Are there any downlights recessed in to ceiling? Yes / No (circle one) IF YES, how many?																	
Thank You. Please fold this form, and freepost it in the return envelope Oct-15																	

Appendix B: Tables of data for the charts

Table 1. Roof claddings market share.

Roof claddings market share in new housing											
Yearly Data 2005-2015											
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Sheet Metal	46.1%	44.7%	54.2%	48.0%	48.3%	53.8%	53.9%	49.6%	52.6%	54.0%	54.9%
Tiles (metal and concrete)	38.3%	41.3%	36.9%	36.2%	35.0%	38.6%	41.6%	42.1%	35.4%	37.6%	38.8%
Other (membrane, plastic, etc)	15.6%	14.0%	8.8%	15.8%	16.7%	7.6%	4.5%	8.3%	12.0%	8.4%	6.2%
TOTAL	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Note: percentage weighted to allow for the regional building activity.

Table 2. Wall claddings market share.

Wall claddings market share in new housing											
Yearly Data 2005-2015											
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Finish bricks clay & concrete	49.5%	51.0%	44.0%	43.5%	42.1%	45.5%	44.0%	44.5%	46.6%	37.6%	37.6%
Weatherboard (timber, fib cmt, PVC)	17.7%	18.2%	25.3%	25.7%	26.8%	28.3%	31.2%	31.3%	32.2%	34.3%	36.6%
Other (aerated concrete, FC sheet, plywood, EIFS, stucco, sheet steel etc)	32.8%	30.8%	30.7%	30.8%	31.1%	26.2%	24.8%	24.2%	21.2%	28.1%	25.8%
TOTAL	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Note: percentage weighted to allow for the regional building activity.

Table 3. Wall framing market share.

Wall framing market share in new housing											
Yearly Data 2005-2015											
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Timber (framing + solid timber)	89.8%	90.9%	85.1%	86.0%	85.4%	90.4%	84.7%	87.8%	95.0%	94.4%	93.1%
Other (steel framing, concrete masonry, polybloc, earth, etc))	10.2%	9.1%	14.9%	14.0%	14.6%	9.6%	15.3%	12.2%	5.0%	5.6%	6.9%
TOTAL	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Note: percentage weighted to allow for the regional building activity.

Table 4. Flooring types market share.

Flooring types market share in new housing											
Yearly Data 2005-2015											
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Concrete	80.6%	80.8%	78.4%	72.6%	78.4%	81.0%	79.7%	80.4%	79.6%	77.6%	76.0%
All other flooring	19.4%	19.2%	21.6%	27.4%	21.6%	19.0%	20.3%	19.6%	20.4%	22.4%	23.5%
TOTAL	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Note: percentage weighted to allow for the regional building activity.

Table 5. Floor joists market share.

Floor joists market share in new housing											
Yearly Data 2005-2015											
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Solid Timber	70.8%	63.8%	68.5%	69.2%	72.0%	68.4%	74.0%	79.0%	62.0%	71.2%	73.9%
Engineered Wood	29.2%	36.2%	31.5%	30.8%	28.0%	31.6%	26.0%	21.0%	38.0%	28.8%	26.1%
TOTAL	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Note: percentage weighted to allow for the regional building activity.

Table 6. Wall insulation market share.

Wall insulation market share in new housing											
Yearly Data 2005-2015											
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Fibreglass	91.3%	92.8%	93.5%	93.2%	93.7%	95.4%	95.5%	96.1%	95.0%	95.7%	95.1%
Other	8.7%	7.2%	6.5%	6.8%	6.3%	4.6%	4.5%	3.9%	5.0%	4.3%	4.9%
TOTAL	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Note: percentage weighted to allow for the regional building activity.

Table 7. Ceiling insulation market share.

Ceiling insulation market share in new housing											
Yearly Data 2005-2015											
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Fibreglass	88.3%	92.0%	91.9%	92.2%	94.6%	96.7%	96.2%	96.9%	97.0%	95.7%	97.5%
Other	11.7%	8.0%	8.1%	7.8%	5.4%	3.3%	3.8%	3.1%	3.0%	4.3%	2.5%
TOTAL	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Note: percentage weighted to allow for the regional building activity.

Table 8. Concrete slab waffle pod and sheet polystyrene use.

Concrete slab waffle pod and sheet polystyrene use in new housing										
Yearly Data 2007-2015										
	2007	2008	2009	2010	2011	2012	2013	2014	2015	
Insulation (pre-2015)	23.8%	36.9%	42.9%	45.0%	48.6%	49.8%	50.0%	62.8%		
Underslab full/partial (2015+)										42.7%
Under footing (2015+)										0.3%
Perimeter edge (2015+)										2.7%
TOTAL	23.8%	36.9%	42.9%	45.0%	48.6%	49.8%	50.0%	62.8%	45.7%	

Note: percentage weighted to allow for the regional building activity.

Table 9. Timber floor insulation market share.

Timber floor insulation market share in new housing									
Yearly Data 2007-2015									
	2007	2008	2009	2010	2011	2012	2013	2014	2015
Foil	72.3%	62.5%	35.5%	22.3%	22.6%	29.2%	22.5%	62.4%	15.7%
Fibreglass & Polyester	7.6%	4.6%	12.1%	13.1%	8.1%	38.1%	24.9%	25.1%	14.3%
Polystyrene	20.2%	32.9%	52.5%	64.6%	69.3%	32.7%	52.7%	12.4%	70.0%
TOTAL	100%	100%	100%	100%	100%	100%	100%	100%	100%

Note: percentage weighted to allow for the regional building activity.