



# Market Transformation to Achieve Large Scale Uptake of Sustainable Residential Renovation in New Zealand

**Kay Saville-Smith & Lois Easton**



Creating homes and neighbourhoods that work  
well into the future and don't cost the Earth

# NZ's Housing Stock is Poor

- Average winter bedroom temperature in pre-1979 houses is 13.2°C & in post-1979 houses 14.5°C.
- 45% of houses have visible mould
- 21% of homes use 36% of energy (not the warmest homes)
- Two thirds of energy is used to heat space and water
- Nearly one third of homes are in Auckland region
  - 7x more rain falls on it than is consumed...
- Poor Indoor Environment Quality is implicated in New Zealand's high rates of asthma & gastroenteritis – 1600 extra winter deaths/year



# Beacon's renovation research

- Consumer motivations and behaviours –energy
- Typology of housing for retrofit
- Cost benefits of housing retrofit
- Papakowhai Renovations – 9 home trial in Porirua
- Home*Smart* Renovations – national research project, all typologies, all income groups

# Renovation to What?

Beacon's HSS High Standard of Sustainability®  
is:

- A measure of home sustainability
- Based as far as possible on measurable performance indicators
- Defined within the confines of *what is reasonably achievable for the mass market today*
- Designed to reflect priority issues of energy, water, indoor environment quality, waste and materials

# Home*Smart* Renovation Project

- Based on research findings developed a range of tools, guidelines, procedures and training materials for sustainable home renovation
- Piloted these with key community retrofit partners in 630 homes across New Zealand
- Effectiveness of tools evaluated, home performance monitored

# HomeSmart Renovations

In Home Assessment tool

- Assessments undertaken by trained assessor partners

Eco Matters Environment Trust

Energy Options

Energy Smart

Community Energy Action



HOMESMARTS home assessment tool

Surveyor name	Date of Assessment	Unique ID	Batch No.

1.1 Name: \_\_\_\_\_  
1.2 Address: \_\_\_\_\_  
1.3 Local Authority: \_\_\_\_\_

**1. Homeowner Questions (to be asked of homeowner)**

1.4 Year house built : \_\_\_\_\_  Actual year  Estimate

1.5 How many people currently live in the house \_\_\_\_\_

1.6 Do you own or rent this house?  Own  Rent

1.7 Is anyone in the house a community services card holder?  Yes  No

1.8 Does anyone in the house have a health problem(s)?  Yes  No

1.9 Are there plans to renovate in the next 3 years (especially walls)?  
 Yes → If yes,  Whole house  Part house  
 No

1.10 Do you use electric blankets?  
 Yes → If yes, How many? \_\_\_\_\_  
 No

1.11 Do you ever use a dehumidifier?  
 Yes - in summer only  
 Yes - in winter only  
 Yes - in summer and winter  
 No not at all

1.12 Do you use composting facilities or a worm farm?  
 None  
 Compost  
 Worm farm

1.13 Do you need lights on during the day for activities like reading and sewing?  
 Always  Often  Sometimes  Seldom or never

1.14 Do you ever use so much hot water you run out?  
 Almost every day  Some days  Occasionally  Never

1.15 On winter mornings is there moisture on bedroom windows?  
 Always  Often  Sometimes  Seldom or never



# HomeSmart Renovations

Renovation Plan  
customised by assessor  
based on assessment using  
a Plan Builder tool





# Homeowner Kit

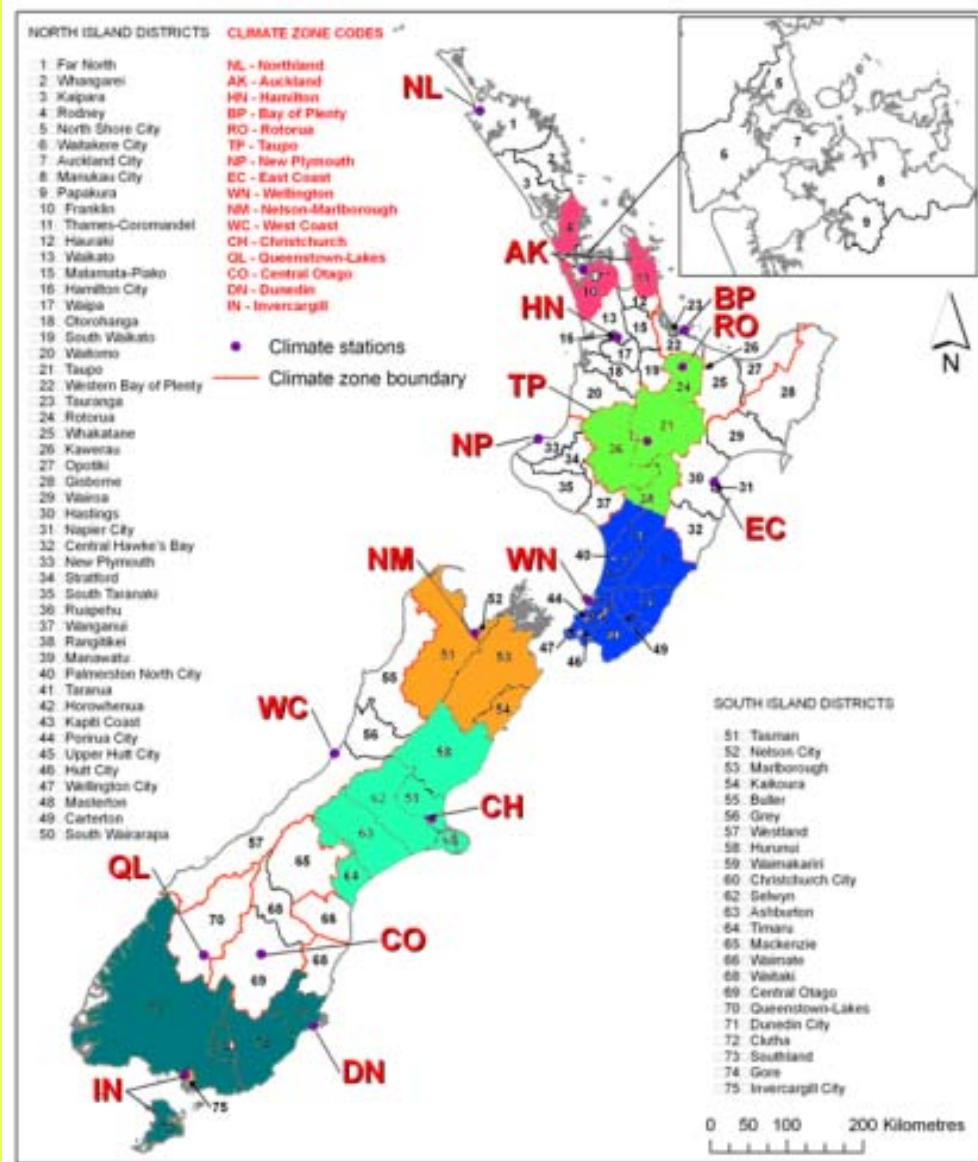
Renovation Plan part of wider Homeowner Kit

- Homeowner manual
- Project management guide
- Quarterly newsletters



# Pilot locations

Houses in six locations across New Zealand, based on EECA Home Energy Rating Scheme (HERS) climate zones



# Who Participated?

Requirement that people intend to renovate in the next year in order to participate – so interested *and* able to fund.

Household profiles:

- 2/3 aged 31-50 years
- 58% have household incomes >\$70,000;  
74% >\$50,000
- 62% households with 3 or more people
- 90% households with no-one older than 65
- 75% households with no pre-school children

# Dwelling Condition

- Homeowners had a lower perception of dwelling condition than other surveys have found
  - Perceptions of poor performance may have led to participation
  - Information provided may mean more realistic in assessment
- Are a range of fundamental deficiencies in the dwellings

# Dwelling Problems

Assessed Problem	Number of Dwellings	% Dwellings
No ceiling insulation	32	7.2%
<75% ceiling insulation or <76mm thick	216	50%
Roof leaks	27	6.3%
Damp under floor	99	22.9%
Ponding underfloor	25	5.8%
No underfloor insulation*	189	41.2%
Window frames need replacement	41	9.5%
Draught stopping of doors needed	234	54.2%
No cylinder wrap	228	52.8%
No fire alarms	138	32.1%
External maintenance	250	57.9%

\*where able to be retrofitted

# What they wanted to achieve

Outcome	Importance A lot	Importance A little bit	Importance Not at all	Don't know
Improved comfort/ warmth	67.6	24.3	3.2	4.9
House healthier	57.2	31.5	6.7	4.7
Environment	44.9	40.5	7.4	7.2
Power Savings	37.5	42.8	11.6	8.1
Easier to sell	30.8	44.4	13.2	11.6
Value to home	28.7	48.6	13.4	9.3

# Response to the Renovation Plan

47% changed their intentions as a result of their renovation plan

Well informed consumers wanted more specific information than provided

Ongoing engagement and advice sought

- Homeowner newsletter with personal examples
- Email contact and phone advice

Key gaps

- Desire for product recommendations
- Desire for more specific heating information



HomeSmart Renovations  
Homeowner Newsletter

December 2008 - January 2009

<b>In this issue</b>	What's underway? Assessments, renovation plans, temperature monitoring	Pages 2
	Your questions answered: subsidies, product information,	Page 3-5
	Top tips: Summer cooling in your home	Page 5
	From too hot to too cold: my own renovation (continued)	Page 6
	Who is involved? Contact details for renovation partners	Page 7

**Welcome and thank you**

For those of you who have only recently joined the project, welcome...  
... and to those of you who have been with us for a while, thanks for your commitment to the project.

Our partners are now well underway with the assessments and development of your Renovation Plans. They have been really engaging meeting you, our homeowner participants, and appreciate your enthusiasm and interest in sustainable building.

They have told us that some of you have already been making great efforts to make your homes more sustainable, and we look forward to hearing through the project about how you have found the information we are providing.

We are well aware that, for some people, getting the funding together to do anything on their home is hard. Throughout the project we will be continuing to try and find partners who can help people out with this side of things.

As part of your Renovation Plan we do provide some information about funding sources, and we will use this newsletter to keep you updated about any more.

You may have heard recently in the media that a quarter of all households have had their health affected by their poorly performing home. This ranges from colds and flu, to asthma and other respiratory illnesses. Our research is trying to find the best ways to address exactly this problem.

As someone who is in this group I also have been busy with my own home renovation. In our last newsletter I told you about the problems with my house, and I am pleased to say that already some of the actions I have taken have made a big difference to how my home is performing.

If you need to contact me, email me at: [loise@beaconpathway.co.nz](mailto:loise@beaconpathway.co.nz) or phone me at: (06) 867 4458

Kind regards,  
Loise

**Update on the HomeSmart Renovations project**

We have had a great response from people about being involved in the project, with around 300 people indicating they are interested in participating so far.

We are trying to recruit 750 people in total, so if you know someone who is planning to renovate their home in the first half of 2009, then feel free to spread the word - we'll be recruiting through to March 2009.

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# Advice vs Action

Recommendation	Acted on recommendation
Ceiling insulation (n=191)	65.4
Underfloor insulation (n=176)	56.3
Heating (n=226)	47.3
Wall insulation (n=214)	33.2
Double or secondary glazing (n=255)	24.3
Thermal curtains (n=156)	7.7
Bathroom extractor fan (n=111)	7.2
Rangehood kitchen extractor (n=104)	6.7
Pelmets (n=241)	0.8

# Monitoring Results

Like most NZ homes these were

- Cold
- Damp
- Worse in the bedrooms
- Inefficient energy and water users

# Cold Winter Temperatures

Location	Living Room Below 18°C	Bedroom Below 16°C
Auckland	87.5	90.6
Bay of Plenty	67.9	92.9
Wellington	88.0	100.0
Nelson/Marlborough	75.0	94.1
Christchurch	75.0	96.0
Dunedin/Southland	89.7	95.5

# Damp Homes

Research Area	Humidity Gauge Activated
Auckland	72.4%
Bay of Plenty	69.2%
Wellington	69.2%
Nelson/Marlborough	66.7%
Christchurch	38.7%
Dunedin/Southland	46.2%

# Water – Perception is Not Reality

- 65% had high flow water taps
- 68% had high flush toilets
- 38% used outdoor water at least once a week (for garden watering/boat washing etc)
- 70.9% believed they weren't high water users

But

- only 45.1% met the HSS benchmark for water use

# Conclusions

People attracted to participating in the research because of free, independent advice

Outcomes sought related to warmth, comfort and the environment more than economic returns

73.6% took action based on the advice given – insulation was prioritised, some cheap and effective improvements not taken up

Ongoing engagement increased educative value

Participant households were more realistic about their house condition - but no more resource efficient than the general population

# Thank you to:

**CRESA:** Ruth Fraser, Lorraine Leonard, Michael Webb, Joseph Cook and Lydia Fraser;

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**Eco Matters Trust:** Aaryn Barlow

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And the many hundreds of householders who participated in the project