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Home*Smart* Renovations Phase Two Report: Progress of Pilot

Final

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About This Report

Title

HomeSmart Renovations Phase Two Report: Progress of Pilot

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Abstract

The purpose of this report is to document Phase Two of the HomeSmart Renovation project. Phase One of the project was similarly documented (Easton et al, 2008). This phase covers all activities from the launch of the Pilot to the completion of the Renovation Plans for participants. It also includes feedback from the partners involved in the project on the use of the Procedures and Tools developed by Beacon for the pilot.

Reference

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1 Executive Summary

The purpose of this report is to document Phase Two of the HomeSmart Renovation project. Phase One of the project was similarly documented (Easton et al, 2008). This phase covers all activities from the launch of the Pilot to the completion of the Renovation Plans for participants. It also includes feedback from the partners involved in the project on the use of the Procedures and Tools developed by Beacon for the pilot.

The intended audience is Beacon shareholders and researchers although it is envisaged that selected parts of the report may be extracted for use in communicating our approach to partners and other stakeholders. This report is intended to sit as a companion report to the report by Saville Smith (2009) into the interim findings of the homeowner research.

The Scope of Phase Two

Considerable effort and resources have been spent in Phase Two of the project in recruiting homeowners, assessing homes and developing renovation plans. In documenting the experience of this phase of the renovation programme, this report will act as an anchor against which we can review and evaluate the outcomes of the pilot and project as a whole.

Phase Two of the HomeSmart Renovations project falls into four broad sets of activities. Those are:

- 1) Finalising the pilot project and recruitment of participant homeowners
- 2) Working with homeowner participants in the project
- 3) Undertaking homeowner assessments and development of renovation plans
- 4) Evaluating the usefulness of the Procedures and Tools and setting out key aspects for inclusion in the v2 Procedures for commercial piloting

Finalising the Pilot Project and Recruitment of Participant Homeowners. Homeowners were recruited for the pilot project primarily through word of mouth, media articles and weblinks. Recruitment was via a homeowner registration webpage on the Beacon Pathway website with homeowners answering a small number of basic questions to determine eligibility and preliminary intentions. Following this homeowners were asked to participate in a pre-assessment questionnaire about the performance of their home. Eligible homeowners' details were forwarded to CRESA who have then managed the allocation of homes out to the assessors and have also been responsible for collection and analysis of research data.

Working with homeowners in the project. While it was intended that the time between recruitment and assessment would be short, in actuality for the majority of homeowner participants it has been many months between recruitment to the project and contact to organize the in-home assessment. Maintaining homeowner interest and participation in the project has involved the development of quarterly newsletters to all homeowners, and by ongoing contact via email and, to a lesser extent phone, with homeowners over their individual issues. Despite this there have been a number of participants who have not actively participated through the full

sequence of stages and/or have not or will not undertake renovations. An analysis of participant levels of engagement across phase and consideration of the determinants of engagement will be undertaken in the research analysis. Reductions in the numbers of participants actively engaging are expected to continue through to the end of the project.

Undertaking homeowner assessments and development of renovation plans. Homeowner details were sent to project partners in “batches” and then project partners contacted homeowners to book assessments. Project partners then entered the data from the assessment into the Renovation Plan Builder and generated a Renovation Plan which they sent out to homeowners. While it was intended that homeowners query the assessor in relation to any aspects of the plan, in practice again Beacon involvement has been required, and this has identified both technical and partner capacity issues in relation to in-house assessment and production of an accurate renovation plan.

Evaluating the usefulness of the Procedures and Tools and setting out key aspects for inclusion in the v2 Procedures for commercial piloting. Interviews with all of the assessors and partner staff involved in the application of the assessment tool and renovation plan builder were undertaken to gain an understanding of the usefulness of these tools. While feedback was very positive, there is a long list of improvements which need to be made in developing the v2 Procedures. The results of the homeowner interviews (as reported in Saville Smith, 2009) and feedback from the CRESA interviewers have also informed the list of improvements needed to the other components of the Procedures.

2 Introduction

The 2007 Homes Strategy (Easton and Cowan, 2007) envisaged a *HomeSmart* Renovations project that would take the learnings from the Papakowhai retrofit project, to develop a set of tools and guidelines (the Procedures) to assist the home renovation industry, and homeowners to retrofit and operate their homes to achieve a HSS High Standard of Sustainability® (HSS®). The project, however, has been designed to not only develop those Procedures but test them in real, live situations.

The *HomeSmart* Renovations project has a variety of foci but in relation to the Procedures it is particularly concerned with whether:

- The *HomeSmart* Renovations Procedures when used by stakeholders in the existing homes value chain enable the retrofitting of existing homes to meet Beacon's HSS High Standard of Sustainability®.
- The development of the *HomeSmart* Renovations Procedures and their piloting will act as a key market transformation method in the wide uptake of retrofitting of existing homes to achieve the HSS High Standard of Sustainability®.

The Phase One report of the *HomeSmart* Renovations project (Easton et al, 2008) provides an overview of the whole project including the development and implementation of the procedures and the recruitment of householders into the programme to test the project's transformational propositions at the household level. That report presented material around:

- Project scope
- Establishment of partnerships for the project
- Development of the *HomeSmart* Renovations Procedures v1 for piloting
- Development of the monitoring and evaluation framework for the pilot project
- Commencing to establish the pilot project and recruiting participant homeowners

In addition to the Phase One report, there has been a brief report on the data emerging from interviews with homeowners (Saville Smith, 2009).

This report deals with Phase Two of the project and reflects on four sets of activities. Those are:

- Finalising the pilot project and recruitment of participant homeowners
- Maintaining homeowner interest and participation in the project
- Undertaking homeowner assessments and development of renovation plans
- Evaluating the usefulness of the Procedures and Tools and setting out key aspects for inclusion in the v2 Procedures for commercial piloting

3 Recruiting Homeowners for Piloting Procedures

The project has been concerned to pilot the Procedures developed to assist and guide the industry and to assist homeowners to improve their outcomes of renovations and retrofits. Critical to the piloting of the procedures was recruiting homeowners that had a desire to renovate their homes and were seeking support through needs assessment and planning. Homeowners were recruited for the pilot primarily through word of mouth, media articles and weblinks. This section describes the approach to recruiting homeowners and the participant yield.

3.1 Recruitment Activity

3.1.1 *Registration of Interest*

Recruitment to the project was primarily via registration of interest on the Beacon website. Information about the project was posted in July 2008, with a registration of interest form included. While most participants signed up to the project via the website registration of interest, a small number (12) were generated via direct signup with EcoMatters Environment Trust.

At the time of registration of interest, participants were asked:

- Name
- Address
- Email and telephone contact details
- Whether they owned or rented the house
- Whether they lived in the house
- Household income
- Type of intended renovation
- Value of intended renovation
- Their expected timeframe for renovation

From April 09 an additional question was added to the registration of interest asking:

- How did you hear about the project?

The website information was regularly updated, with an emphasis being placed on seeking registrations of interest from people who were: living in the target localities; and, intending to renovate within the next 6-12 months.

3.1.2 *Methods to attract participants*

After registration began, a small group of people who had heard about the project through various Beacon presentations and information (e.g. Facing) newsletter) immediately signed up to the project. In August 2009 significant efforts to recruit participants meeting the target criteria were undertaken. Of those registering from April 2009, there is information about

where participants heard about the project for 145 homeowners. Prior to that date this question had not been asked of participants. Table 1 shows that despite popular belief that the web is a major source of information, less than a quarter found out about the project through the web compared to 59 percent who found out about the project by way of newspapers.

Table 1: HomeSmart Renovations Participants – Method of Hearing About the Project

Method of Hearing About the Project	Percentage of Participants (n=145)
Searching the Web	22%
PlaceMakers “Know How” Promotion	2%
Newspaper	59%
Local Council	8%
Friends	15%

Media information about the project was provided to a wide range of local community and regional newspapers. Media activity commenced in Christchurch, with further press releases throughout the project areas resulting in good November/December 2008 coverage (Table 2). [Appendix D](#) gives examples of the press releases used to generate this media coverage.

Table 2: Published HomeSmart Renovations Media Articles

Date	Newspaper	Article Title
27-Aug-08	Star Midweek (Christchurch)	Homeowners needed for renovation project
1-Sep-08	Build (September)	Home renovators wanted for large scale project
3-Nov-08	Southland Times	Homes wanted for research project
5-Nov-08	The Ensign (Gore)	Energy project aims to retrofit 1000 NZ homes
8-Nov-08	Dominion Post	Chill out, warm up
18-Nov-08	Rotorua Review	Researchers looking for homes to make healthy
27-Nov-08	Nelson Mail	Renovators wanted for project
28-Nov-08	Taupo Times	Make your home warm
3-Dec-08	Upper Hutt Leader	Sustainable renovations project seeks homeowners
11-Dec-08	Kapiti Observer	Healthier home help
11-Dec-08	Horowhenua Mail	Healthier home help
20-Jan-09	Kapi Mana News	Get a warmer, drier, cheaper home
1-Feb-09	Titirangi Tatler	Sustainable renovations project seeks homeowners
4-Feb-09	Wairarapa News	Poor home heating costing plenty
7-Feb-09	Weekend Herald	Autumn preparation
22-Mar-09	Star Midweek	First things first

Date	Newspaper	Article Title
24-Mar-09	Rotorua Daily Post	Hot water trial for Rotorua
26-Mar-09	Christchurch Mail	New study gets into hot water
26-Mar-09	Dunedin Star	Dunedin homes in winter to be studied
28-Mar-09	Dominion Post	Probe into water study
31-Mar-09	Rotorua Review	Water study
31-Mar-09	Taupo Times	Hot water heating under the spotlight
2-Apr-09	Taupo Weekender	Hot water systems under a microscope
15-Apr-09	Otago Daily Times	Colder in Dunedin? You're getting warm
26-Apr-09	Dominion Post	Study to gauge if sun shines on water heating
1-May-09	Electrical and Automation Technology	Home <i>Smart</i> Renovations project
6-May-09	The Press	Water heating help

The recruitment undertaken prior to this, and outside of the engagement through newspaper media, appears to have largely been as a result of word of mouth or internet searching.

While a range of information provided in [Appendix A](#) was developed to allow the assessor partners to assist in attracting participants to the project, in practice only Community Energy Action and EcoMatters Environment Trust actively engaged in trying to recruit people into the project.

In the case of Community Energy Action, this recruitment was primarily through targeting existing email contact lists, undertaking presentations to interest groups such as Transition Towns Otuatahi and the Christchurch Greens, and through providing information about the project at their offices.

In the case of EcoMatters Environment Trust, their assessors actively promoted participation in the project to their existing customer base. Similar activities to that of Community Energy Action were undertaken, but EcoMatters also collected paper based registrations of interest from people who engaged with them over some of their other services. As a result, most of the early registrations of interest (July 08 – Jan 09) in the Auckland area were generated as a result of word of mouth/internet searches and promotion activity from EcoMatters, and to some extent Beacon.

When recruitment numbers still seemed very low, and seemed likely that the desired 1000 (then 750 post budget review) participants may not be able to be found in the necessary timeframe Winstone Wallboards offered their assistance via their email contacts from the Gib Living Solutions infoline. In February 2009 an email promoting the project was sent out to all Gib Living Solutions contacts from July 2008 by Winstone Wallboards. The email (refer [Appendix B](#)) had a direct link to the website, and given the timing of the flood of registrations which followed, it has been estimated that it resulted in approximately 70-80 registrations of interest.

Unfortunately some of these were for homeowners outside of the pilot areas; however, approximately 60 new participants were gained to the project. The email was sent out to approximately 1500 people.

In addition to the relatively successful Winstone Wallboards initiative, a very unsuccessful promotion of the project was run with PlaceMakers, New Lynn. Beacon had been talking with PlaceMakers for some time about ways to engage with the project (Easton et al, 2008) and this culminated with a trial relationship with New Lynn “Know How” customers. Training was provided to New Lynn store staff, which summarised how the project would run as well as providing background on what a HomeSmart Renovation entailed. This was undertaken with enthusiastic interest from the local store manager. The and key staff – who all saw the project as being a great way to engage customers in the topic as well as increasing spend on appropriate items (such as low flow devices and insulation etc). Specific PlaceMakers costs for certain items in the Plan Builder plan were provided by store staff with the intention that these would be used for customers who accessed HomeSmart Renovations through this route. This would ensure that the customer coming into the store with the completed plan had appropriate information to discuss with staff. PlaceMakers Head Office viewed and commented on the training and assisted in setting up the email to selected Know How customers.

PlaceMakers New Lynn management and staff were also keen to dedicate a section of the store to sustainable retrofit and promote the project and sustainable renovation; however, the next stage of the engagement was handled by the PlaceMakers Head Office.

PlaceMakers Head Office (and the Know How marketing team) developed the email to customers based on the information Beacon provided (this is included in [Appendix C](#)). This was the only method of recruitment followed by the marketing team – with a pilot email going out to 500 Know How cardholders selected from their New Lynn database in April 2009.

Unlike the Gib Living Solutions email, however, no direct link to the website was provided. Instead interested homeowners were asked to contact the PlaceMakers Marketing Manager, who would then supply them with the information about how to register their interest. The downside of this was that it involved a three step process and a request for further information from the customer instead of them being able to instantly access the Beacon website for sign up and to seek further information. The email generated only four direct registrations of interest from the 500 Know How card holders contacted and Beacon followed these up to encourage recruitment to the HomeSmart Renovations project. PlaceMakers Head Office decided that due to the low level response, and the cost of generating the contact list and email, they were no longer interested in pursuing a further email to new customers.

3.2 Recruitment Yield

Table 3 sets out the recruitment yield on a monthly basis by location. The pattern of recruitment largely follows the pattern and timing of media based promotion of the project.

Table 3: Monthly Recruitment by Locality

Month Recruited	Number and Location					
	Auckland	Rotorua/ Taupo	Wellington	Nelson/ Marlborough	Christchurch	Dunedin/ Southland
Jun 08	25	1	16	3	2	2
July 08	3	0	4	0	0	0
Aug 08	25	1	10	1	43 ¹	1
Sep 08	9	8	5	6	31 ¹	13
Oct 08	4	1	5	3	11	2
Nov 08	3	13	17	0	3	8
Dec 08	8	3	9	7	7	0
Jan 09	10	1	7	2	4	4
Feb 09	35 ²	2	14	3	13	10
March 09	9	33 ³	3	5	5	5
April 09	13	21 ³	22	1	1	28 ⁴
May 09	21	0	19	17	4	3

¹ *This recruitment appears to have been a direct response to the Christchurch Star article*

² *This recruitment appears to have been a direct response to the NZ Herald article*

³ *This recruitment appears to have been a direct response to the Rotorua Review and Taupo Times articles*

⁴ *This recruitment appears to have been a direct response to the Otago Daily Times article*

4 Working with Homeowners in the Project

While it was intended that the time between recruitment and assessment would be short, in actuality for the majority of homeowner participants it has been many months between recruitment to the project and contact to organize the in home assessment. The reasons for this are set out in Section 5. This section is concerned with the activities undertaken in relation to registered homeowners.

An analysis of participant levels of engagement across phase 2 and what impacted on this engagement will be undertaken in the research analysis. Reductions in the numbers of participants actively engaging are expected to continue through to the end of the project.

4.1 Initial Homeowner Intentions

At the time of registration homeowners were asked to outline their planned renovations, timeframe for these and expected costs. An initial analysis, which may be subject to change in the final analysis of data, suggests that solar hot water systems, double glazing and insulation were the most popular intentions, in line with the focus identified by Saville Smith (2009) on improving comfort within the home (Figure 1). At the point of registration, an initial analysis presented in Figure 2 suggests that some participants were expecting to spend in excess of \$20,000. However, what is most notable is that the majority of participants at registration did not know or chose not to disclose their spending expectations.

Figure 1; Intended Interventions Likely to Result in Improved House Performance at Registration ⁵

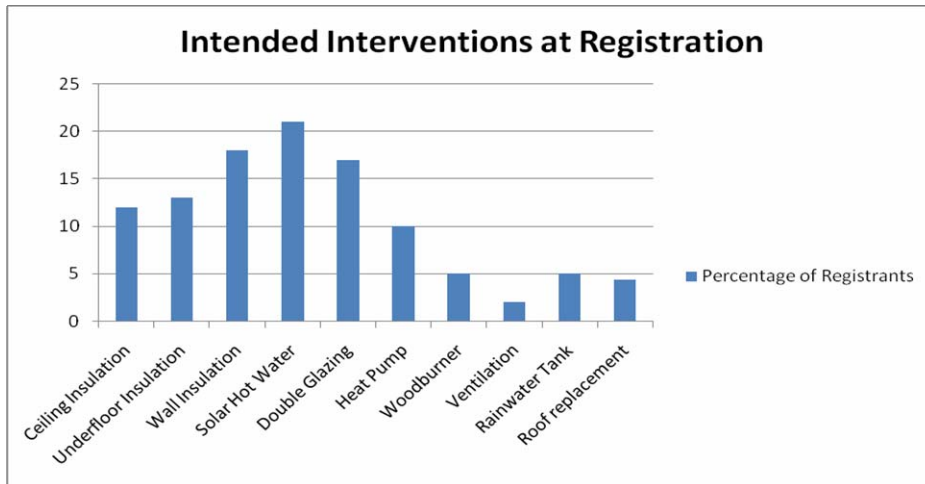
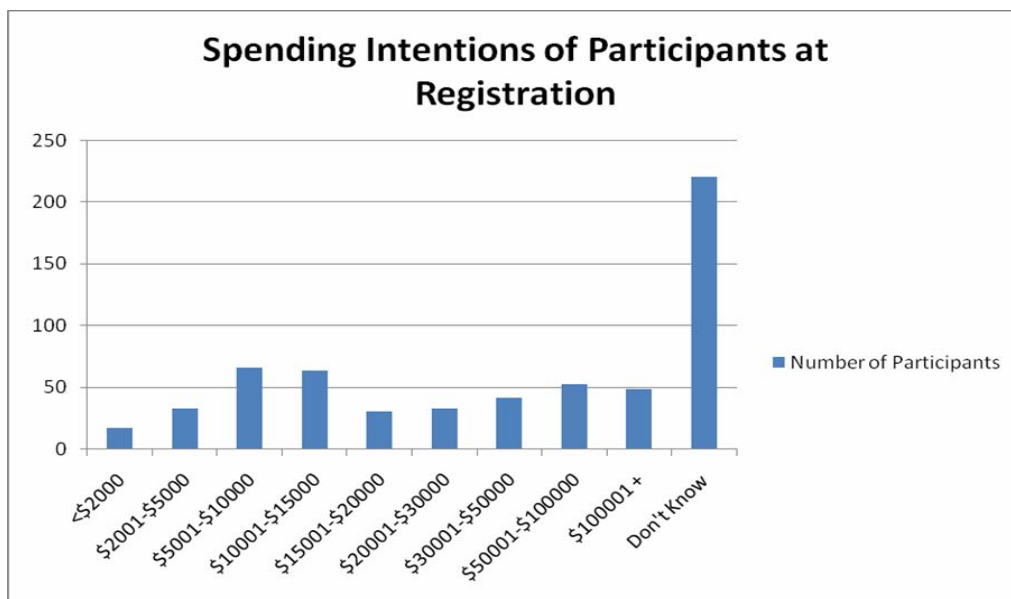


Figure 2; Spending Intentions of Participants at Registration



⁵ Multiple answer question

4.2 Registration to Assessment: The Gap Challenge

Because recruitment for the project started in August 2008, and assessments did not commence until the end of October 2009 (in Auckland – later in all other localities) there was an inevitable lag time between recruitment and assessment. There was a gap between registration and assessors receiving notification to assess. The most extensive delays appear to have been associated with assessor’s capacity and capability. This consisted of two types of delay. First, assessors were forwarded successive batches of registered participants. Succeeding batches were not forwarded to the assessment organisation if that organisation had no assessors in place or were unable to cope with the numbers of registrations forwarded to them to date. Second, some assessor organisations appeared to have difficulties making contact with participants. Delays were particularly prominent in Dunedin, Invercargill, Nelson and Marlborough, where there were problems of capacity and, in some cases, capability. Table 4 below indicates the provider partners and the geographic areas they were responsible for.

Table 4: Provider partners and geographic areas where they undertook assessments

Provider Partner	Geographic Area
Eco Matters Environment Trust	Auckland Region
Energy Options	Rotorua/Taupo
	Marlborough
Energy Smart	Wellington
	Nelson
	Dunedin/Southland
Community Energy Action	Christchurch

Some people had undertaken their renovation – or at least started it by the time of assessment. Due to delays in some assessments getting underway, some homeowners had significant email interaction with the project director, Lois Easton, prior to their assessment.

The analysis of the data to be undertaken in the final report will establish the extent to which the attenuation of the period between registration, assessment and plan receipt impacted on homeowner participation, retention and action.

4.3 Homeowner Newsletters

It had always been intended that a Homeowner Newsletter be provided on a quarterly basis to participants in the project, mainly as a way of providing ongoing communication about the project, and as an additional “benefit” to participants. Market research panels and other long-term research projects frequently use participant newsletters as a way of reducing loss of participants from their projects.

In addition to providing ongoing updates and communication about the project the homeowner newsletter also provided answers to commonly asked questions (as a result of emails and phone calls from participants), and then increasingly a supplement to the advice and information provided in the Renovation Plan and Homeowner Manual where this was found to be inadequate to some homeowner needs. The Homeowner Newsletters developed for the project to date are attached at [Appendix E](#), and Table 4 outlines the key topics covered within the newsletters.

Table 4: Homeowner Newsletters – Key Topics Covered

Newsletter	Topic	Content
Sep 08	Cleaning Off Mould	Easy ways using vinegar and oil of cloves
Dec 08	Subsidies and Assistance	Update on EECA programme
	Environmentally Friendly Products and Materials	Referral to Enviro Choice and Energy Star and independent assessments not relying on self claims
	Summer Cooling in the Home	Shading, ventilation, fans and heat pumps
March 09	Assessors View	Mould in the home, bangs for bucks, getting good info
	Papakowhai Renovations	Key learnings from the project
March 09	Weatherising for Winter	Draught stopping, maintenance, curtains, windows
June 09	Home Ventilations Systems	Paraphrase of key points of EECA report
	Efficient heating	Radiant vs convective heat, main heaters, heating bedrooms, secondary heating, combined water and space heating, unflued gas heaters
Sep 09	Subsidies and Assistance	Update on new EECA programme
	Choosing a Space Heater	Pros and cons of different heating types
	Solar hot water systems	Key points from recent research

Newsletter	Topic	Content
Dec 09	Doing your own home monitoring	Easy options
	Subsidies and Assistance	Accessing the EECA programme
	Double glazing vs secondary glazing	Pros and cons
	Easy DIY tasks	Hot water cylinder wrap, rainwater tank, polyethylene vapour barrier, draught stopping, checking your ceiling cavity.

5 Working with Retrofit Providers to Deliver Home Assessments and Renovation Plans

The providers engaged to provide house assessment and renovation plans to homeowners have been described in the Phase One report (Easton et al, 2008). In summary, however, four providers were selected. All those providers had track records in the provision of EECA funded retrofits. This section is concerned with three aspects of the project in relation to providers. Firstly, it describes the tools with which they were provided and the training associated with those tools. Second, this section comments on the capacity of providers to deliver home assessments and plans and the quality of those plans. Finally, the section presents providers' views about how their performance and the outcomes of retrofit programmes might be optimised.

5.1 Assessor Tools and Training

5.1.1 Procedures to Raise Assessor Capacity and Capability

Due to the early recognition that capacity and capability were going to be issues with the project (Easton et al, 2008), four Procedures were specifically developed to assist in developing capability within the Provider organisations. These were

- Principles and Process Procedure
- Marketing Procedure
- Best Practice Guide
- Project Management for Partners

The purpose and full description of these Procedures is contained in other reports (Easton et al, 2008; Easton et al, 2009); however, Table 5 provides of summary of this.

Table 5: Purpose and summary of Procedures aimed at building capacity within partner organisations

Procedure	Purpose	Summary of Content
Principles and Process	To introduce the project and clarify its scope and requirements.	<ol style="list-style-type: none"> 1. Background information document outlining the rationale for sustainable renovation, the High Standard of Sustainability, key findings from the Papakowhai renovations. 2. Powerpoint presentation summarising the information in the background document.

Procedure	Purpose	Summary of Content
Marketing Procedure	<p>To generate a consistent message around possible benefits and likely costs of sustainable renovation.</p> <p>To provide advice and support to people generating promotion around <i>HomeSmart Renovations</i> with view of unifying and clarifying external messages.</p>	<ol style="list-style-type: none"> 1. Core document of information to provide basis of partner text in media releases, brochures and emails about the benefits and reasons to undertake sustainable renovation, and to participate in <i>HomeSmart Renovations</i>. 2. An outline of the types of consumer audiences, motivations and key messages and ways to target them with information about sustainable renovation. 3. Sample letters, an e-letter and a powerpoint presentation for partners to use.
Best Practice Guide	To guide hints and tips for installers and project management on best practice implementation to ensure quality.	Document outlining the key sustainable retrofit technologies and activities, the statutory requirements at local and national government level, requirements for accreditation and expertise of installers, tips for best practice, and where to find more information.
Project Management for Partners	To provide training and tips on project management and common errors during the renovation	Document which takes the reader through the key steps in preparing a quote, consenting, managing client expectations, quality control and dealing with scope changes in a physical implementation project.

All of these Procedures were developed with input from the provider partners, and on the understanding that they were both useful and filled a gap in the knowledge and information that the partners currently had. However with the exception of the Marketing Procedure it appears that none of the providers actually used this information – or at least not in the format provided by Beacon. This seems to be for a range of reasons, most notably:

- The value and usefulness of the documents to the providers in a specific (rather than general) sense was not seen – i.e. they all thought they would be useful, but failed to specifically use them in their own circumstances;
- Providers already had developed their own documentation, and for EECA work are required to follow the best practice guide, requirements and standards set out by EECA (which is around the NZS4246 insulation standard, as well as the standards set out by the Solar

Industries Association) and didn't want to expose their installers to two sets of standards – even though in relation to insulation and solar hot water they are similar.

- Specific information about the documents and their application was not included in the Training package provided to the provider partners
- Knowledge of the existence of these Procedures was limited to 1 or 2 personnel within the partner organisations. Generally this knowledge was not shared with other staff members, and physical copies of the document were not made available for sharing with other staff.

In the case of the Marketing Procedure, this was developed in close consultation with CEA, and used by them, in an effort to attract new participants to the project. Aspects of the Marketing Procedure were also used by EcoMatters to assist in direct recruitment also. Energy Options and Energy Smart did not use the material.

5.1.2 In Home Assessment Tool and Plan Builder

The In- Home Assessment Tool and the Plan Builder were the core tools provided to the provider partners, and were the main focus of the training programme developed. The two tools combined were developed with the intent of ensuring consistency and robustness in both the information collected and the Renovation Plan developed, across assessments and assessor organisations.

The Assessment Tool was used printed out in hard copy, and then data from the assessment was entered into the Plan Builder – an Excel spreadsheet. The Plan Builder output was then converted into a Renovation Plan via a Word mail merge template. The Word template contained most of the information which could be regarded as generic, while the Plan Builder output provided the specific recommendations for the dwelling.

As is discussed further in 5.1.3 below, the short period of time over which the Plan Builder was developed led to an untested and somewhat unstable tool being developed. There were ongoing problems with glitches in the Plan Builder, and also inaccuracies in some of the recommendations. This was recognised, and attempts were made to correct errors, with two amended versions provided to the partners as errors were identified and corrected.

At the start of the process it was intended that the assessor also use the Renovation Plan and a checking process of the final plan was expected to be undertaken also. When the glitches and errors started to be identified, it was stressed to assessors and partner organisations that the checking process was critical to ensure that a high standard of Renovation Plan was provided to the homeowner.

A random audit of 5 of the first batches of assessments and Renovation Plans from each provider was undertaken to ensure that this checking process was being effective. This identified a number of issues with the quality of the Renovation Plans coming from all the assessors. Specific problems were identified to each assessor, as well as a discussion about common issues via a conference call with participant assessors. Problems arose, however, in

particular when a different person undertook the assessment from the person who entered the data in the Plan Builder – particularly where (as in Dunedin, Invercargill and Marlborough these were geographically separated and frequently very temporally separated). Generally it was observed that more consistent results were achieved when the person providing the plan had also undertaken the assessment – and particularly where the plan was produced within a short timeframe of the assessment. This is likely to be because the individual circumstances of the dwelling and homeowner were fresher in the assessor’s mind.

5.1.3 Assessor Training

Assessor training was undertaken by a combined BRANZ/Beacon team in October:

- Auckland 8 October (EcoMatters Environment Trust and Energy Options assessors)
- Wellington 9 October (EnergySmart assessors)
- Christchurch 13 October (Community Energy Action and EnergySmart assessors)

The training took a full day and a written Manual and support material was provided to each trainee. The sessions were well attended by a range of personnel across each of the organisations – these included assessment, support and management staff, as well as people likely to be involved in training any other assessors who came on board during the project.

The training covered the following key aspects:

- An introduction to Beacon, the High Standard of Sustainability and the *HomeSmart* Renovations project
- Water efficiency – the whys and hows
- Hot water efficiency
- Indoor environment quality
- Moisture management
- The thermal envelope
- House typologies
- Drawing up plans
- Space heating
- Assessment protocols
- An overview of the assessment tool

At the time the training days were held, the Plan Builder was still being finalised, so separate training in the use of the Plan Builder was undertaken with the users a week later. This training was attended by fewer personnel – only those who would be directly involved in doing assessments and using the Plan Builder. Notes on its use, and ongoing support via telephone (and in Wellington in person) were provided by both BRANZ and Beacon.

5.1.3.1 Ongoing support

Immediate feedback from the training sessions from some attendees was that they were excellent – but very much a “crash course” for some of the attendees who knew very little about any aspect of the content. An assumption had been made in developing the training material that the attendees would have some basic knowledge on energy efficiency (CEA, EnergySmart, Energy Options) or water efficiency (EcoMatters Environment Trust). In practice however the knowledge was very variable, with some attendees being skilled and very competent assessors in their field and others having been very recently hired with no relevant skills to the assessment process. In the case of EnergySmart, assessors from all of the pilot areas were not available to be trained as part of the training (because they hadn’t yet been hired) and so the project relied on EnergySmart’s own internal trainer (Graeme Baker) to train those assessors. Graeme is an experienced and capable assessor and has wide experience in the energy efficiency field, and undertook this training, using the course notes and training materials provided by Beacon to do so.

In recognition of this, and also that the assessment covered a much greater range of factors than any of the partner organisations were normally involved in assessing, quality checking and feedback was undertaken. Five random plans from the first batch of each provider were audited against the assessment. Errors and problems identified were then fed back to the organisation involved. In addition there were a range of early complaints from homeowners about the poor quality of their assessment (and in at least one case questioning whether it was for the right house). CRESA also undertook a range of checks against the quality of data collection and provided feedback on common problems.

Issues and ways to fix them were discussed in a series of conference calls with all assessors, and feedback from them to each other about ways to ensure consistency and accuracy in evaluation also occurred in these sessions. As a result of assessor and partner feedback some of the most significant errors and glitches in the Plan Builder were removed and a v1.1 (November 08) and then v1.2 (January 09) were issued to partner organisations. While these two updated versions eliminated a number of common errors, and in the case of the first revision, improved the layout and content of the output Renovation Plans, there was still considerable reliance on the assessors and people preparing the Renovation Plans to check that outputs and recommendations were correct and consistent for the house assessed. In particular ongoing problems were identified – and assessors and partner organisations were continually reminded about these by email and phone:

- Not recording answers to assessment questions accurately
- Not recording answers to some questions
- Inaccuracy in entering data from the in home assessment into the Plan Builder
- Not clearing cells between assessments meaning data from a previous house was used in the next home’s Renovation Plan

In the case of Energy Options, particular problems arose because they operated a version of Microsoft Office which was incompatible with the version that the Plan Builder was developed in. This led to delays in implementation of their assessments and Renovation Plan development until compatibility issues were sorted out.

5.2 Delivery of Home Assessments and Plans: Quality and Capacity of Assessors

Delivery of the home assessments started in late October 2008, when the first batches of households were sent out to the assessors. EcoMatters Environment Trust in Auckland was the first organisation to get up and running, and EnergySmart in Wellington were the next underway. Community Energy Action assessments did not commence until November 2008 and the first Renovation Plans issued by these three organisations were delivered shortly after the first assessments were completed. Because there were so few registered participants in their areas (and due to the software issues discussed in 5.1.3.1 above), Energy Options did not commence assessments until December 2008. Ongoing problems with the incompatibility of the Energy Options IT system and the Plan Builder, meant that early Renovation Plans for Energy Options assessments were not completed until several months after the assessments.

5.2.1 Performance of the Providers

5.2.1.1 General Comment

Assessors from each of the four partner organisations were interviewed, as well as key participants in terms of the training and administration of the programme within their organisation. These interviews identified that there were two main approaches taken to the implementation of the project by the partner organisations as follows:

- 1) Assessor undertook most or all aspects of the engagement with the homeowner – undertaking the assessment, entering data in the Plan Builder, producing and checking the Renovation Plan and sending this out to the homeowner. In some instances the assessor also booked the assessment with the homeowner.
- 2) Assessor undertook assessment only. Entering data in the Plan Builder, producing and checking the Renovation Plan and sending these out to homeowners. A separate administrator was often involved in booking the assessment.

Where the first approach was undertaken, the assessors exhibited a significantly greater degree of engagement with the project, the assessment and the homeowner. In these instances the assessors generally acknowledged that their assessments improved over time, and that they became better at providing specific advice to homeowners during the extent of the project.

Where the second approach was taken, the assessor appeared to take significantly less interest in the project, the assessment and the homeowner. These assessors were generally based in satellite offices from the main organisation (e.g. Dunedin, Southland and Nelson for Energy Smart and Marlborough for Energy Options) and were applying a similar approach to that used for EECA assessments. Time in the home was minimised – generally with many aspects of the assessment undertaken by asking the homeowner, rather than physically inspecting all aspects of the home.

It is interesting to note however that when a comparison is made between the quality of the assessments and renovation plans across all the assessors, that regardless of the assessor involved, many assessments and renovation plans were quite poor. Even those “engaged” assessors were still taking shortcuts and making repeated errors. The assessors themselves however believed that they had developed a high degree of skill in the assessments, and that they were undertaking the assessments accurately and well – particularly once they had become familiar with the tools.

5.2.1.2 Community Energy Action

Community Energy Action had, at the beginning of the project, indicated their inability to undertake assessments after May 2009, due to the large demand for their services for the winter season. This meant that they finished their involvement in the project much earlier than the other partners in the project. As it transpired, though several people were trained at CEA, only 1 assessor was involved in the project – undertaking both all assessments and preparation of all Renovation Plans. Comparatively few complaints were made by homeowners about the quality of CEA assessments, which appeared to be well edited and not contain significant typographic errors, however an audit by Beacon after all the assessments and plans were completed indicated the following issues:

- The question with regard to heat transfer/home ventilation systems was consistently answered incorrectly. The assessor did not seem to be able to tell the difference between the different types of systems, and when the IEQ team reviewed the houses where home ventilation systems were identified, all of them were incorrectly identified.
- The packages component of the Plan Builder was not used well. Packages varied in size and didn't relate to the ideal sizes identified by Beacon.

5.2.1.3 EnergySmart

The initial Wellington assessor for EnergySmart did a very poor job, and there were numerous complaints about the quality of the Assessments undertaken by this assessor. This was compounded by the Renovation Plans being prepared by an administration staff member, and poor checking by the assessor. Following his departure from the organisation in December 2008 a new assessor was taken on. This assessor appeared to be reasonably competent and undertook both assessment and preparation of the Renovation Plans to a reasonable standard. The Nelson assessments were also undertaken by this assessor. An audit by Beacon after all the assessments and plans were completed indicated that editing of Renovation Plans was initially

poor, but improved over time, though there were usually minor editorial issues with even later plans.

Dunedin and Invercargill assessments for EnergySmart were not started until May 2009, with many dissatisfied homeowners as a result of the long delay. The assessors did not prepare the Renovation Plans, and these were developed in Wellington, with little reference back to the assessor for checking.

Frequent complaints by homeowners about the quality of the Renovation Plans from Dunedin in particular were registered, with heating recommendations in particular considered to be very poor. An audit by Beacon after all the assessments and plans identified however that the assessor was doing a good job capturing the information, and that in many instances the problem really arose because of a lack of Beacon guidance on heating options. Both Invercargill and Dunedin have very cold climates, and many of the dwellings were large but in poor condition. The assessors involved are likely to have had limited or no experience in giving whole house heating advice, and as the Renovation Plans were prepared in Wellington by an admin person, personalisation of heating recommendations was not undertaken. The plans themselves however were accurate to the Plan Builder and Assessment and were well edited.

As for the Plans produced by CEA, none of the Energy Smart assessors or who prepared the plans used the packages component of the Plan Builder well. Packages varied in size and didn't relate to the ideal sizes identified by Beacon.

Sketch plans prepared by Energy Smart staff were consistently of a higher standard compared to other assessors. This was largely a result of Energy Smart inserting specific space and grid paper for the sketch plans in 3 locations in the Assessment Tool. Good sketch plans led to accurate assessments of heating demand for living space, and would make it easier for more detailed/tailored advice to be provided, if the Plan Builder allowed for it.

5.2.1.4 EcoMatters Environment Trust

EcoMatters Environment Trust was the fastest to get assessments and Renovation Plans underway, with one assessor undertaking all assessments and preparing all Renovation Plans. In the early stages numerous problems with the “slapdash” approach of the assessor arose, as Renovation Plans were frequently full of typing errors, and data entry mistakes were occurring whilst using the Plan Builder.

In addition it became clear from feedback from homeowners, that a less than thorough assessment was undertaken –for example homeowners were often asked what sort of insulation they had in their ceiling, rather than the required physical inspection. However on the plus side this assessor gave the most competent assessment of the water aspects of the tool. Once CEA finished in May the same assessor also completed the remaining Christchurch assessments in a batch; however, those homeowners who could not be booked in the week he was available, missed out on participating in the assessment.

An audit by Beacon after all the assessments and plans were completed indicated the following issues:

- Ongoing issues with accuracy in application of the tool – often questions were not answered (probably when the answer was “no” but this is not certain)
- Sketch plans were very poor – and in some instances non-existent. This means that the accuracy of heating recommendations cannot be checked, and this aspect of the assessment may also have been poor.
- Plans were generally poorly edited. This improved over time, but editorial errors were still common in later plans.
- Poor provision of heating advice/tailoring to circumstances.

5.2.1.5 Energy Options

The Energy Options assessments were stretched across a long period of time with significant delays in both assessments being undertaken, and Renovation Plans being produced post assessment. Particular problems arose with the Marlborough assessments, where again poor assessment technique (asking questions of homeowners rather than physical inspection) was observed by homeowners. Due to the ongoing software problems the Renovation Plans for Marlborough homes were prepared at Energy Options main office in Whakatane – many months later. The Rotorua/Taupo assessments were much better, with the same person undertaking the assessments and preparing the Renovation Plans.

An audit by Beacon after all the assessments and plans were completed indicated the following issues:

- Renovation Plans for Marlborough assessments were poorly edited and contained errors. This is likely to be a result of them being produced in a hurry, many months after the assessments, and due to a lack of familiarity with the Plan Builder. Heating recommendations and tailoring of plans for Marlborough assessments was also poor – reflecting this disconnect.
- Wrong assumptions around underfloor insulation for concrete floored homes in Marlborough (assumption was that there was normally insulation there)
- Poor identification of type of home ventilation system (heat transfer vs forced air) in Rotorua/Taupo assessments
- Homeowner feedback indicated that in some instances Marlborough assessor asked questions around insulation, rather than undertaking a physical inspection.

5.3 Assessor Feedback – Ways to Optimise the Tools and Programme

Semi- structured interviews were undertaken with assessors from each of the partner organisations in order to gauge their experience and feedback on the use of the tools and the programme. A range of key themes came through those interviews, and these are summarised below:

5.3.1 *The HomeSmart Renovations Project – Process for Partner Organisations*

Issue

The extended process and timeline made it hard for some partners to gear up and resource appropriately – the delays and reduced numbers impacted on the economics of the work to partners and their ability to prioritise ahead of other volume clients such as EECA.

Comment

When the project was first discussed with partners and partnership agreements and then contracts were drawn up, it was envisaged that recruitment would take place over spring 2008 and that the assessments would be completed by May 2009. As it transpired recruitment was much more difficult than expected, and budget constraints also led to a reduction in participant numbers possible. However, EnergySmart, in particular, appeared to be massively overcommitted – not only to Beacon but its other contracted partners. For example, assessments in Dunedin did not commence until May 2009 – despite the fact that there was at least a month’s work for a full time assessor as a backlog. Given that the project was a “one off” it is questionable whether with higher numbers and a shorter timeframe the Beacon work would really have been prioritised ahead of EECA. All the HomeSmart Renovation partners, except EcoMatters, rely on EECA funding. The characteristics of their relationship are: dominant single funder who issues multi-year contracts, often with short notice changes and inflexible deadlines. This creates an uncertain environment for these organisations, who then find it difficult to build capacity, schedule workloads, be flexible and so engage with other partners.

In terms of getting through the assessments it appeared that the project worked best where a specific staff member was allocated to do the work as a dedicated resource – as was the case with EcoMatters Environment Trust. However the business models of most of the partner organisations did not allow for this – and they did not want to take on temporary staff just for the purposes of undertaking Beacon work.

Issue

Booking assessments was hard – because homeowners were recruited by Beacon, the feedback was strong that the lack of relationship between the provider and the homeowner created misunderstandings and a lack of ownership. A comment was made by one partner organisation that it could take as much as an hour, over a number of calls, to get hold of some people to book an assessment. This meant that some participants had completed their renovations by the time they were assessed.

Comment

As is discussed in Section 3.1.2 most participants were recruited via newspaper articles. It is difficult to know what made this different from other clients of providers – however it should be noted that in many instances significant delays between registration and actually attempting to book an assessment were occurring – often some months. It may be that this perceived lack of customer service from the provider created a lack of enthusiasm from the homeowner, despite the fact that the service being offered was free. Initial enthusiasm and understanding about the project might well have been significantly dampened by time delays between registration and the delivery of the renovation plan.

Issue

Many people required evening and weekend assessments – most organisations weren't well geared up for this out of hours work.

Comment

This was an interesting comment, and perhaps arises from the fact that, until recently, most EECA contracted work is for low income/unemployed/retired/sick households – where someone could be expected to be home during the working week. With the change in criteria for EECA subsidies now including households with any income, this is an issue which by now partner organisations undertaking EECA contracts will have had to deal with – unless they have decided to largely focus on their traditional market of low income households.

Issue

Recruitment delays meant that completing the assessments ended up conflicting with the EECA peak assessment season for those providers also doing EECA work.

Comment

This was a problem identified at the beginning of the project, and in the case of CEA a clear date was set beyond which they would not do assessments. Because this was made clear to the project team alternative assessors (EcoMatters) were able to be found to complete most of the assessments. What was disappointing in the cases of both Energy Smart and Energy Options was the repeated assurances from the organisation that the Beacon work would be prioritised and completed by required dates, but in actuality slippage continued to occur and EECA work was given priority.

It would have been much better if, as in the case of CEA, the organisations had acknowledged their inability to complete the work on time, and let Beacon engage other organisations and assessors to complete the work for them. This is an issue of customer service for these partners – certainly in a commercial setting neither EnergySmart nor Energy Options could be regarded as having performed in a timely fashion.

Issue

Batch system and administration requirements were complex and led to internal delays and errors.

Comment

This is a valid concern, which Beacon should be aware of for further research projects. There was a heavy reliance on the provision of hard copy information back to Beacon (rather than, for example electronic files of scanned copies) and allocation of batches was managed tightly to ensure that Beacon issues of quality were being addressed – however this created problems for providers. For future projects more up front work with providers to ensure administration systems are fully developed and work for both partners is needed. It may be that automation and electronic filing and mailing systems would assist in mitigating this issue.

Issue

The project was perceived as being very complex for the partners – the process and initial documents were considered to be complex, and presented in a complex manner. This created confusion and distraction for the organisations, when what it boiled down to was a relatively simple job.

Comment

A lot of the complexity and confusion arose out of the desire of the project to create a link between the assessment and implementation – with the assessor organisations expanding their current implementation programmes (insulation + water retrofits) to wider measures. The early work scoping the project had identified a “let us walk before you ask us to run” response from some organisations, however others were keen to explore the possibilities of expanding their roles. It was with the latter organisations that the difficulties of complexity of the project arose – they engaged initially to a greater level in the idea of an expanded role, and then pulled back as the full scope and issues and performance requirements became clearer.

With regard to complexity of documentation and processes in the actual running of the project, again this is a pertinent comment which needs to be taken on board for future research projects.

Issue

Participants with monitoring equipment were often confused about this and what to do with the equipment and how it would be replaced. There was a need to provide information for assessors to be able to help them to understand the role that the monitoring equipment was playing in the project.

Comment

There was a general issue with participant confusion (not just from monitored households) about process. Despite the fact that people got information about what to do and what was happening, the communication process was almost entirely by email, and using written documents. Undoubtedly this was too complex and too reliant on both the written word and electronic media for some participants. Providing more information to partner organisations and assessors on a regular programmed basis (verbally with email follow up) might have helped this – however it is noted that all the information, plus regular email updates went to partner organisations anyway.

From an assessment of email responses from homeowners, it's clear that one of the areas of confusion about the monitoring equipment was how infrequently anything needed to be done with it. Most of the temperature loggers could be in situ recording data for 6 months, without any action being required by the homeowner. For many participants this was perceived as a long time -and some seemed to want more frequent contact and interaction around the equipment.

5.3.2 Training Programmes

Some of the partner organisations identified that a more comprehensive training programme was required. A theme that came through strongly was that the training needed to be held in a series of workshops, rather than a one day intensive – starting with the very basics and then building up. As a general statement, all the organisations thought the training materials were good – and some organisations (eg EcoMatters, Energy Options) used the training as a way of upskilling a larger number of their staff than would be involved in the assessments. However some partners felt that the training assumed a higher level of experience and competence than many assessors had. The move from simple insulation or water assessments to overall sustainability assessments is quite a large step.

In essence ongoing training, with regular phone conference discussions between assessors, and perhaps even an assessor newsletter (to be added as notes to the training folder) was considered as a preferred approach.

With regard to content, there was a particular concern that there was insufficient linkage and explanation in the training which clearly identified the links between the assessment questions and the plan builder outputs, i.e. why a particular question was asked, and what sort of answer it would generate. In particular the reasons why Beacon recommends a higher insulation specification than EECA was sought.

Most partners agreed that both a manual accompanying the assessment tool which gave examples of how to assess each question would have really helped. In addition some written support information for using the plan builder was also considered necessary.

5.3.3 In Home Assessment Tool – specific comments

Generally the In Home Assessment Tool was considered to be comprehensive and fairly easy to use, however the following specific problems were identified by the partner organisations identified.

General Issues

- Difficult to learn (took 15-20 assessments not the 4-5 expected)
- Doesn't flow with the house
- Too spread out with inefficient layout
- Drawing the plans was time consuming – required 4 plans, some assessors put graph paper in to accommodate this
- Fire Safety section was considered unnecessary

Issues of Assessment

- Hot water temperature question required taking the thermostat cover off and was a health and safety issue
- The lightbulb count was not collected accurately. Dimmers are a complicating factor not considered.
- They couldn't figure out whether houses had wall insulation or not.
- There is a difference between the Beacon standard and the EECA “done” for insulation and this made it more difficult to do both the Beacon assessment and an EECA assessment at the same time.

Issues of Content

- Auckland assessors felt humidity and dampness wasn't covered adequately
- General drainage problems weren't covered adequately
- No question on recycling or domestic refuse
- Doesn't cover outdoor watering
- Doesn't cover all lighting types (LEDs starting to be seen)
- Doesn't address heat transfer for people with wood/pellet burners
- Doesn't address cooling sufficiently – or window location/overheating issues within the house
- Doesn't capture major renovation opportunities
- Need percentage for underfloor insulation –some people only had for 1-2 rooms
- Ceiling questions didn't recognise many houses have a couple of types of ceilings – and access will be different to each

- Didn't recognise that some ceiling insulation has a "zero" effect – also it didn't pick up if there were holes in the ceiling, or if there was no insulation on the access hatch, or if the access hatch had no cover (eg in closet).
- It would also be good to add a question about the integrity of the thermal envelope.

5.3.4 Plan Builder –specific comments

The general feeling was that the Plan Builder was a good tool, was easy to learn and use, but was the errors and compatibility issues caused problems. Some combinations of answers gave specific glitches. Grammar and spelling had a number of errors which had to be corrected manually for each assessment prior to the final plan being produced. It was strongly emphasised that there was a need for a lot more time and user testing for the next version. This would also have enabled the technology issues to be sorted out – though it was a general comment that community organisations don't have the latest software so designing the system with that in mind was essential.

The information provided in the output plan was considered to be reasonably generic – and this was built into the tool to meet the majority of most customer demands. However, this resulted in the advice being too light on detail for informed customers, and for others it was overwhelming. Better formatting and use of bullet points and summary tables up front with the more detailed information towards the back might have helped address this. Within the Plan itself it is difficult to tell generic text from specific recommendations – the specific recommendations need to be highlighted and included in the summary information at the front.

In terms of modifications suggested, these were relatively few, but some key issues which need to be addressed are:

- Provide for greater ability to individualise/customise more (as is currently in place for the heating section) e.g. to add advice if doing a major renovation, about passive solar design, about the importance of good floor length thermal curtains, benefits of reducing glazing on south side/relocate windows
- The method of developing the Packages was too complex and was poorly understood by the assessors. More training and support needs to be developed for this aspect.
- The costing information was inaccurate as it was materials only. A large number of things (eg drapes, double glazing, pelmets) were completely un-costed making the cost estimates for the packages even more inaccurate.
- Needed a lot more information on underfloor – eg if had foil should have told them to consider upgrading to underfloor insulation
- A diagram to show the cumulative size of gaps around doors/windows and what they add up to would also be good
- The heating section wasn't good enough – people still have basic questions about heating and ventilation. EECA provide a heating sheet to help – and Beacon should consider adapting the material in future work.

- It would have useful to include some pictures eg a picture of heat leaking out – a diagram showing a wall and heat leaking out eg 10% out the uninsulated wall and 10% out of the single paned window, then a diagram showing an insulated wall with double glazed window, curtain to floor and pelmet
- There was not enough emphasis on weather proofing and draughts.
- Also not enough emphasis on drainage and guttering systems and generally dealing with site water and plumbing leaks.
- Wetbacks weren't recommended for water heating – but would be good for some circumstances
- No recommendations around dryers being vented to the outside
- Vapour barrier recommendation didn't come up as often as it should have
- Downlight information was not considered sufficient
- Explain more about the “technology” of windows and “technology” of curtains
- Didn't adequately deal with houses that already had gas
- Estimates of costs were way out and some things weren't costed (eg pelmets, downlights, curtains, double glazing...)
- In the Plan it would be great to have a cross reference to the relevant information in the Homeowner Manual – linking the two.

6 Lessons for Beacon - Improvements needed in the v1 Procedures and Tools for Development of v2

The HomeSmart Renovation Procedures and Tools have been piloted through the HomeSmart project.

Feedback from Assessors and partner organisations has been outlined above in Section 5 preceding. This section looks at the results of the qualitative evaluation undertaken by Beacon personnel of the use of the Procedures and Tools to date.

In order to do the evaluation a workshop of the core Beacon Team (Kay Saville Smith, Lois Easton, Verney Ryan, and Vicki Cowan) was held, following the completion of, and informed by, the first series of Homeowner Interviews and the Assessor feedback interviews. Table 6 summarises the findings of this evaluation to date, and the views of the Beacon team as to how effectively the Procedures have been used.

Table 6: Summary of Findings from Beacon Team Evaluation of HomeSmart Renovations Procedures and Tools

Purpose	Procedure item	Commentary
Capability building for industry partners	Principles and process	Used by Beacon in recruitment of partners, not used further. Would be most useful amalgamated into industry facing material to promote the need for sustainable renovations and the business opportunities.
	Marketing Procedure	Used effectively by ¼ of the partner organisations. A potentially useful component which was underutilised because (with the exception of CEA) the marketing part of the partner organisations was either undeveloped, or unengaged in the project.
	Training	While effectively used, the training needs to be substantially expanded from current provision. This highlights need for more comprehensive training in this field generally - through an ITO or similar. There may be scope for the basis of the training to be used for a specific qualification in whole house sustainability assessment. This could be pursued through the appropriate ITO. assessment.

	Best Practice Guide	Not used. Needs to link with contract requirements of EECA. May best be provided as part of industry training outlined above.
	Project Management for Partners	Not used. Needs to link with contract requirements of EECA. May best be provided as part of industry training outlined above.
Implementation tools	In-Home Assessment	Need for some revision at both a technical and editorial level to better enable good renovation plans. Need for supporting manual which goes through each question and gives examples of situations which may arise, to better assist assessors to consistently answer questions correctly
	Plan Builder and Renovation Plan Template	Needs to be rebuilt with significant user testing before go live. Needs to be revised at a technical level and to be better paired to aspects of the Assessment Tool. Heating section needs major revision and expansion. Consider upgrading the Excel platform or moving to different software.
Home Owner information	Renovation Plan	Needs re-writing/editing to make more accessible and better targeted at consumer needs and motivations. Expansion to address key issues identified by homeowners such as damp and heating. If costing information is to be included, needs to have full materials and installation cost estimates.
	Homeowner Manual	Needs re-writing/editing to make accessible and better targeted at consumer need and motivations. Expansion to address key issues identified by homeowners such as damp and heating.
	Project Management for Participants	Needs to be shortened and merged with Homeowner Manual.

6.2 Procedures and Tools to Raise Capability

6.2.1 What was Used – and What Wasn't

Of the procedures and tools to raise capability, only the training was used by all organisations and assessors. All assessors involved in the project were trained. Most were trained in the workshops run by BRANZ and Beacon, but some EnergySmart assessors were trained by the EnergySmart trainer using the Beacon materials provided.

The Principles and Process procedure was used at the start of the project in early discussions with partner organisations, and the material contained in this procedure was then used in part in the development of the Marketing procedure.

The Marketing procedure was used by Community Energy Action and EcoMatters Environment Trust, although only in early stages of recruitment for the project. The information contained has not been picked up for wider use in their organisations to promote their services.

None of the partner organisations used the Best Practice Guide.

6.2.2 What the Beacon Project Team Thought

As a general comment, the team felt that the partner organisations didn't realise their own lack of capability – both at the start, and at completion of this phase of the project. The partner organisations' business is largely set up to deliver specific subsidy funded programmes, mainly targeted at low income households.

6.2.2.1 Reasons for Capacity and Capability Issues

With the expansion of EECA subsidies 3 of the 4 partner organisations (Energy Smart, Energy Options and Community Energy Action) have expanded in terms of staff numbers and extent of intervention (insulation + heating rather than just insulation), however the same systems and approach used for the smaller scale operations are being used. At the time of implementation of HomeSmart Renovations, these three organisations were in a stage of significant flux, with stop-start messages coming from EECA. Early in 2009 these organisations were told that the EECA budget was overcommitted and that from July 2009 there would be fewer contracts issued. However, in May, the Warm Up New Zealand Heat Smart programme was launched which actually required, and resulted in, a massive expansion in the size of the organisations.

All four of the partner organisations are under ongoing funding pressure. EECA is a major source of funding for the three through Warm Up New Zealand contracts, and Waitakere City Council is a major funder for EcoMatters Environment Trust. All of the organisations were (and still are) suffering uncertainty of contracts and ongoing funding, and at the time of the assessments two of them (CEA and EcoMatters) were also distracted by setting up Home Energy Advice Centres.

Energy Smart, in particular, was undergoing a massive geographic expansion – to Dunedin, Southland and Nelson.

The expansion of these organisations, and the lack of recognised industry qualifications means that in some instances organisations were hiring bodies, rather than capable staff. In all instances internal systems and processes were clearly stretched.

6.2.2.2 Implications of Capacity and Capability Issues

The four partner organisations were chosen for the HomeSmart Renovations project because an assumption was made that their long involvement in the retrofit sector meant they were likely to be “the best”. in terms of delivery. It is the Beacon team’s view that that assumption is still correct – however given their performance then there is clearly a major issue of capability in the wider sector. EECA’s Warm Up New Zealand: Heat Smart programme has resulted in a large number of commercial entities being developed to service the programme and access the subsidies, and these organisations will have sought staff from the same pool accessed by Beacon’s community organisation partners.

The assumption had been made that internal training about the organisation’s work area (energy in the case of CEA, Energy Smart and Energy Option and water/waste in the case of Eco Matters Trust) took place in a relatively formal and consistent manner, however with the fast growth of this sector and the amount of work, this doesn’t seem to be the case. In addition there is an absence of consistent training information able to be used by the organisations.

Unless training systems are significantly better in the commercial sector (and there is no evidence to suggest that this is the case) then there is a clear need for industry wide training and certification. The view of the Beacon team is that there is a need for an Industry Training Organisation around assessment and implementation. – as well as a recognised qualification at the appropriate level.

6.3 Implementation Tools: In Home Assessment, Plan Builder and Renovation Plan Template

6.3.1 Audits of Renovation Plans against Assessments

At the start of the assessment process, a random audit of 5 of each of the assessors' Assessments and Renovation Plans was undertaken, with feedback then provided back to the assessor team in order to ensure that improvements were made. These audits picked up a number of key issues with the Assessment Tool, Plan Builder and Renovation Plans. While some efforts were made to improve the tools (two further iterations of the Plan Builder were issued), and ensure that the assessors were aware of, and reduced, the incidence of common errors, a number of key problems were identified as follows:

In Home Assessment Tool

- Lack of accuracy in assessor filling out the form – crossing things out, guessing or asking the homeowner - rather than physically checking, leaving some questions blank.
- Differences between EECA assessment and Beacon assessment on “acceptable” levels of insulation meant that often the assessor told the homeowner their insulation was OK, or didn't note the insulation as being inadequate
- Consistent errors – eg some assessors couldn't tell the difference between heat transfer systems and ventilation systems
- Hot water cylinder temperature question often not answered (health and safety) and tested differently by different assessors
- Need for specialist equipment (eg electronic measurer for room dimensions, plastic bags to efficiently measure shower/tap flow)
- Plan drawing and measurement often very poor
- Developing good heating recommendations would require more detailed plans to be made by the assessor
- Assessment didn't “flow” with the house – meaning more mistakes were made and it took a long time for assessors to “learn” the tool.
- Number and type of lights not accurately recorded in many instances
- Drainage issues and type of draughts not adequately assessed

Plan Builder

The intention of the Plan Builder was that it would provide a tool that could be used by assessors to deliver consistent and comparable advice and recommendations to homeowners. However, the errors and inaccuracies in the tool often meant that the output contained errors that undermined the authority of the advice and provided inconsistent recommendations to some homeowners. Other significant issues were noted as follows:

- Significant inaccuracy with data entry
- Lack of ability to clear data from Excel sheets meant data from previous entries was sometimes carried over if care was not taken
- Lack of ability to save data meant that checking against assessment later was not possible without re-entering the data

- A wide range of ‘glitches’ which were not able to be removed by subsequent iterations. These seemed to often relate to particular combinations of data entered.
- Some data collected in the assessment was not included in the Plan Builder
- Lack of discretion for assessor to include personal recommendations in the final plan
- costing information was poor as some things (eg double glazing, pelmets, curtains) not costed, and few of the costs included accurate data regarding installation

Renovation Plan Template

- no overall summary at the beginning
- difficult to separate the general recommendations from the specific
- Errors in the Plan Builder and template meant that the readability of some plans was poor

6.4 Homeowner Information – Renovation Plan, Homeowner Manual, Project Management for Participants

Feedback on the homeowner information will largely be provided through the homeowner interviews and this will be dealt with in a systematic manner in that reporting, however observations from the Beacon team to date are as follows:

- 1) Language and readability are an issue with all of the homeowner information. The number of requests for clarification and further information received by email from homeowners indicates that improvements in the presentation of the information are needed. While the interviews indicate that the information provided is useful, revision to be more reader friendly is required.
- 2) There seems little merit in providing a separate Project Management Guide from the Homeowner Manual and these should be amalgamated into one piece of Homeowner Material.
- 3) Cross-referencing between the Renovation Plan and relevant sections of the Homeowner Manual would make both documents more useful.
- 4) All the material suffers from a lack of diagrams and pictures and is too reliant on text only.
- 5) There was a perception that the plans were too generic. An appearance of greater personalisation of the Renovation Plan (eg if the homeowner is planning specific renovations) could be achieved and would make people believe the recommendations were more credible for their home.
- 6) There is a need in the Renovation Plans to more clearly separate the information which is specific to that house, from the explanatory text about the issue. In addition providing summary information at the front of the document would be useful.
- 7) Issues of damp and best heating options are not dealt with adequately. These sections need substantial reworking in both the Renovation Plan and the Homeowner Manual.

7 Conclusions

Phase 2 of the HomeSmart Renovations project has delivered a number of key learnings and findings, in particular around the expectations and response of homeowners in the project; the capability and capacity of the partner organisations; and in the usefulness of the HomeSmart Renovations Procedures and Tools in the pilot phase.

Some specific conclusions which can be drawn are as follows:

- Of the methods used, local newspapers were the most useful recruitment vehicle for the project.
- Registrants had a wide range of spending intentions, however some participants planned very substantial renovations.
- Significant delays between recruitment and assessment occurred and in some cases also between the assessment and receipt of the Renovation Plan. The impacts of this on the project are likely to include: homeowner dissatisfaction with the project, increased dropout rate, difficulty of assessors in booking assessments, reduction in efficacy of Renovation Plan in stimulating change.
- Homeowner newsletters were a useful tool to both update homeowners in the progress of the project, and provide additional information to address deficiencies in the Renovation Plans and Homeowner Manual.
- Retrofit providers had significant issues of capability and capacity to deliver on HomeSmart Renovations. These problems are likely to be widespread in a sector which has been expanding significantly and there is a need for formal industry training and certification.
- Some of the Procedures aimed at addressing gaps in partner capability were not used by the partner organisations, so the ability to evaluate them is very limited. The fact that they weren't used is in part a reflection of a lack of understanding of the need by the partners to upskill in these areas.
- Generally the In Home Assessment Tool and Plan Builder were regarded as good tools. There are however many specific changes which are required to be made to these so they deliver a high quality outcome, on a consistent basis. This includes the development of better training and support information.
- The way in which Beacon ran the project created some difficulties of implementation for providers. Any future research project of this type needs to be set up to minimise the additional administrative burden on providers.
- Different delivery models of providing the Assessments and Renovation Plans impacted on the quality of output. It is preferable that the person who undertook the assessment prepares the Renovation Plan, otherwise a rigorous checking process is needed.
- Greater personalisation of the Renovation Plans, and in particular better provision of personalised information around heating is required.
- The amount of time between assessment and preparation of the plan should be as short as possible – preferably the two should be able to be undertaken on the same day, whilst the details of the house are fresh in the mind of the assessor

- The individual nature of houses and householders are a complicating factor in providing useful tailored solutions to homeowners – homeowners appear to want very specific advice to act upon
- Partner organisations at the community level are substantially affected by the uncertain nature of government funding programmes and this provides challenges with respect to their delivery and capacity.

8 References

Easton, L. and Cowan, V. June (2007) *Homes Strategy*. Restricted report for Beacon Pathway Limited.

Easton, L., Gibbons, J., Karlik-Neale, M., Ryan, V., and Saville Smith, K. November 2008. *HomeSmart Renovations Phase One Report: Development of Procedures and Establishing the Pilot*. Restricted report HR2420/5 for Beacon Pathway Limited.

Saville Smith, K. 2009. *HomeSmart Renovations: Early Data from the Homeowner Interviews*. Report HR2420/9 for Beacon Pathway Limited.

9 Appendix A: Support Information for Attracting Participants to Home*Smart* Renovations

10 Appendix B: Gib Living Solutions Recruitment Email

Dear

Last year, you contacted us regarding your renovation project. If you are still looking at renovating you may be interested in taking part in the **HomeSmart Renovation** project which is being undertaken by [Beacon Pathway](#).

Winstone Wallboards Ltd (GIB®) is supporter of Beacon Pathway which is a research organisation developing sustainable building solutions.

We're constantly being told that a huge number of New Zealand homes are **cold, damp and draughty** – and it's true. The average temperature in New Zealand homes during winter is over a third less than the World Health Organisation's recommended minimum, and we have the world's second-highest rate of asthma.

Involvement in the project will mean a HomeSmart assessor will show you how to make sure you get the **best return on your investment**, by drawing up a detailed pathway to improving the sustainability of your home.

The **independent assessment** takes a whole-of-house approach: it reviews all aspects of your home's performance – energy, water, waste and the living environment. We'll design a plan tailored to you: your timeframe, your budget, and your household's needs. And you might be surprised by how **cheap and easy it is to get results**.

If you are interested in finding out more about the HomeSmart renovation project simply [click here to Register your Interest](#) with Beacon Pathway or you can click on this link and [send to a friend](#) who may be interested.

Kind Regards

Mark Jury
Market Manager
GIB Living Solutions®
www.gib.co.nz

11 Appendix C: PlaceMakers Recruitment Email

Dear,

Member no:

If your home is plagued by problems such as cold, dampness, mould, condensation, overheating, draughts and spiralling energy bills, no doubt you'd like to take steps to fix them.

It can be easier and cheaper than you may think.

PlaceMakers is working with a research organisation

called Beacon Pathway to improve New Zealand's existing housing. Beacon aims to renovate 750 homes around New Zealand to ensure a healthy indoor environment by improving their energy and water efficiency.

How does this affect you?

PlaceMakers New Lynn is helping Beacon run a pilot project to encourage competent DIY homeowners keen to improve their homes and prepared to undertake some of their own renovations. You would need to be able to fund these renovations, either out of your own pocket or with partial funding through local council and government sponsored programmes (such as the EECA interest free loans for energy efficiency upgrades).

If you sign up to the PlaceMakers DIY pilot, Beacon will arrange a free home audit* and will prepare a renovation plan tailored to your house. This will help you make informed choices about improving the performance of your home - and you should see the benefits in comfort, health and lower utility bills.

Why should you get involved?

- You will get free, independent information on how to renovate your whole house, based on what's most suitable for your home and circumstances. You will be able to confidently decide how to spend your money to get the best outcome for your household.
- You will get impartial advice - we're not trying to sell a particular product.
- You can reduce your energy and water use - your home will be cheaper to run.
- You can live in a healthy home - no more of the cold, damp and mould that is linked to asthma and respiratory illnesses.
- You may increase your home's resale value. Home rating schemes in development mean buyers are more aware of the benefits of good performance.

Limited spaces are available for this pilot, so get in quick to secure your place.
Keen to participate?

If you are interested in being part of this project,
[Click here to email us and register your interest](#)

*Home Audit consultations outside the pilot are valued at \$300

12 Appendix D: Press Releases



Media release

21 October 2008

Sustainable renovations project seeks homeowners

Research organisation Beacon Pathway, in partnership with EcoMatters, is inviting interested homeowners to take part in the Home*Smart* Renovation project.

The Home*Smart* Renovation project is a large-scale demonstration and research venture with the goal of retrofitting up to 1000 homes around New Zealand to Beacon's High Standard of Sustainability, a set of performance benchmarks to measure a sustainable home.

Beacon and EcoMatters are canvassing Waitakere City for people who are keen to improve their homes' performance and looking to make them warmer, drier and reduce their energy costs.

"We're constantly being told that a huge number of New Zealand homes are cold, damp and draughty – and it's true," said Beacon Pathway researcher and Home*Smart* project manager Lois Easton.

"The average temperature in New Zealand homes during winter is over a third less than the World Health Organisation's recommended minimum, and we have the world's second-highest rate of asthma."

The trouble, according to Ms Easton, is that it's often difficult to know what steps to take to make our homes warmer, drier, healthier and cheaper to run. "That's something the Home*Smart* Renovation project aims to set right."

The Home*Smart* approach ensures homeowners have the best information on where to invest. EcoMatters assessors, based in New Lynn at The Trusts Eco Home (formerly the Waitakere NOW Home), will show participants how to get the best return on their investment by drawing up a detailed pathway to improve the sustainability of their home.

The independent assessment will take a whole-of-house approach, by reviewing *all* aspects of the home's performance – energy, water, waste and the living environment. The resulting renovation plan is tailored to the homeowner: their timeframe, their budget, and their household's needs.

“People may be pleasantly surprised by how cheap and easy it is to get results,” said Ms Easton.

One of the aims of this project is to pilot assessment tools developed by Beacon to assess the best renovation packages to address whole-of-house sustainability. The information collected will enable both better understanding of the benefits of retrofitting homes and the best ways to do this.

To collect this information small temperature and humidity loggers will be installed in approximately 20 houses, and a water meter if there isn't already one in place. The project will require access to the household's power bills (electricity and/or gas) for the last 12 months and for the next 18 months. Households within the project will also need to participate in a series of interviews about how they interact with their house, and their experience of the renovations.

Beacon says there are a lot of good reasons to take part in the Home*Smart* Renovation project:

- The assessment is free.
- You will get independent, research-based information on how to renovate your *whole* house in the most efficient, cost-effective way.
- You'll avoid wasting money by doing things in an ad hoc fashion, for example, installing expensive heating equipment in a poorly insulated house.
- Eliminating the cold, damp and mould linked to asthma and respiratory illnesses will give you and your family a healthier living environment.
- Reducing your energy use will cut your power bills.
- You will have a plan tailored to your needs, one that identifies the key priorities based on your house type, location and budget.
- One assessor will provide whole-of-house advice on energy, water, waste and the living environment, eliminating the need for a series of different specialists.
- You will get impartial advice; Beacon won't promote particular brands, but will encourage you to use energy efficient products.
- You may boost the resale value of your home – the growing popularity of home rating schemes means future buyers will be increasingly aware of the benefits of a well-performing house.
- You'll make a difference to future generations and our environment by reducing the environmental footprint of your home.

Homeowners must be able to fund the retrofits in the second half of 2008, either themselves or with assistance from EECA's interest-free loans for the energy efficiency improvement component.

To register your interest, or to find out more about the project, visit www.beaconpathway.co.nz.

For further information contact:

Lois Easton
Beacon Pathway
E. loise@beaconpathway.co.nz
M. 021 137 6489

About Beacon Pathway

Beacon Pathway Limited is a research consortium that is working to find affordable, attractive ways to make New Zealand's homes more sustainable: warmer, healthier, cheaper to run and kinder to the environment. Beacon aims to bring about a significant improvement in the sustainability of the residential built environment in New Zealand through science-based New Zealand research.

The Foundation for Research, Science and Technology matches funding from Beacon's shareholding partners, a unique mix of industry, local government and research organisations: BRANZ, Scion, New Zealand Steel, Waitakere City Council and Fletcher Building.

For further information about Beacon Pathway visit www.beaconpathway.co.nz and www.nowhome.co.nz

Media release

30 March 2009

Nelson to take part in hot water research

A study in to solar and heat pump hot water systems is soon to get underway in Nelson and Marlborough.

The study, which will play out in other centres around the country, will explore the difference in performance of solar hot water and heat pump hot water systems, and determine the best location for the technologies.

Beacon Pathway's recently completed Papakowhai Renovation project showed that in Wellington solar hot water systems can provide up to 70% of a household's hot water in winter, and close to all of it in summer.

To date, however, very little research has been done on heat pump hot water systems in New Zealand, so this study will help to provide input to policy decisions regarding support for these.

Beacon Pathway researcher Lois Easton said that both hot water systems are sound, but there will be situations that will suit one technology over the other.

"A properly installed hot water system should work well in all the locations we are researching, but it's likely that a heat pump hot water system will be preferable, for example, where homes don't have a north-facing roof to receive year-round sun," said Ms Easton.

The study is looking for homeowners who plan to install one of these technologies within the next three to four months but haven't yet decided on the system.

The study will complement Beacon's Home*Smart* Renovation project, and people wanting to be involved in the hot water research will need also to sign up for Home*Smart*.

The Home*Smart* Renovation project will explore the best combination of sustainable renovations to improve the performance of a home.

It is a large-scale demonstration and research venture with the goal of retrofitting 750 homes around New Zealand to Beacon's High Standard of Sustainability, a set of performance benchmarks to measure a sustainable home.

Beacon Pathway is canvassing Nelson and Marlborough for people who are keen to improve their homes' performance and looking to make them warmer, drier and reduce their energy costs.

The trouble, according to Ms Easton, is that it's often difficult to know what steps to take to make our homes warmer, drier, healthier and cheaper to run. "That's something the Home*Smart* Renovation project aims to set right."

The Home*Smart* approach ensures homeowners have the best information on where to invest. Independent assessors will show participants how to get the best return on their investment, by drawing up a detailed pathway to improve the sustainability of their home.

The free assessment will take a whole-of-house approach, by reviewing *all* aspects of the home's performance – energy, water, waste and the indoor living environment. The resulting renovation plan is tailored to the homeowner: their timeframe, their budget, and their household's needs.

"People may be pleasantly surprised by how cheap and easy it is to get results," said Ms Easton.

Together, these research projects have the potential to build momentum for other sustainability initiatives in the region over time.

To register your interest or to find out more about either project, visit www.beaconpathway.co.nz.

For further information contact:

Lois Easton
Beacon Pathway
E. loise@beaconpathway.co.nz
M. 021 137 6489

Notes to editor

Solar and heat pump hot water heating project

Beacon has three key partners in the project: Azurro Solar, Parex Industries and Right House.

Participants in the research will enjoy a \$500 discount off the price of the system, on top of any EECA subsidy which is \$1000 for solar hot water.

Availability is limited to 25 solar hot water systems and 25 heat pump hot water systems across all the research centres combined. Households will be included in the study on a first-come, first-served basis.

Funding for the research is being provided in part by EECA and in part by Beacon and its partners. BRANZ and CRESA will carry out the monitoring.

A separate electricity meter will be installed at the same time as the new hot water system. This will be used to measure electricity used for hot water heating for 12 months post installation.

At the end of the monitoring period householders will be given a report of the performance of their hot water system.

HomeSmart Renovation project

Because the HomeSmart Renovation project is a research trial there will be a limited number of households involved – up to 40.

One of the aims of this project is to pilot assessment tools developed by Beacon to assess the best renovation packages to address whole-of-house sustainability. The information collected will enable both better understanding of the benefits of retrofitting homes and the best ways to do this.

To collect this information small temperature and humidity loggers will be installed in approximately 20 houses, and a water meter if there isn't already one in place. The project will require access to the household's power bills (electricity and/or gas) for the last 12 months and for the next 18 months. Households within the project will also need to participate in a series of interviews about how they interact with their house, and their experience of the renovations.

Further reasons for homeowners to take part in the HomeSmart Renovation project:

- The independent assessment is free.
- You will get independent, research-based information on how to renovate your *whole* house in the most efficient, cost-effective way.
- You'll avoid wasting money by doing things in an ad hoc fashion, for example, installing expensive heating equipment in a poorly insulated house.
- Eliminating the cold, damp and mould linked to asthma and respiratory illnesses will give you and your family a healthier living environment.
- Reducing your energy use will cut your power bills.
- You will have a plan tailored to your needs, one that identifies the key priorities based on your house type, location and budget.
- One assessor will provide whole-of-house advice on energy, water, waste and the living environment, eliminating the need for a series of different specialists.
- You will get impartial advice; Beacon won't promote particular brands, but will encourage you to use energy efficient products.
- You may boost the resale value of your home – the growing popularity of home rating schemes means future buyers will be increasingly aware of the benefits of a well-performing house.
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About Beacon Pathway

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The Foundation for Research, Science and Technology matches funding from Beacon's shareholding partners, a unique mix of industry, local government and research organisations: BRANZ, Scion, New Zealand Steel, Waitakere City Council and Fletcher Building.

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13 Appendix E: Homeowner Newsletters

December 2009

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▪ Renovating in baby steps: Lisa's story	Page 12
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Welcome

Greetings to you all and I hope you are all looking forward to the festive season.



As always at this time of year, cooling has become the big focus of life in our home, and I am glad of the changes I have been making to improve the summer comfort in my house. Shading is, of course, a huge part of the summer equation, especially on north and western faces.

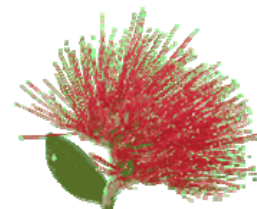
Summer is also bringing a wide range of social changes, with outdoor BBQs and events with the kids a big part of our life. Thank goodness it looks like this year (in Gisborne anyway) we aren't going to have a drought – I have been regularly watering my vege garden from my rainwater tank, but so far there is no sign that I need to worry about the water running out.

Meanwhile many of you are well underway with your own home renovations. This newsletter has some renovation stories from some of our participants in the project as well as a big focus on DIY and what you can do yourself to improve your home.

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

Wishing you all a very merry Christmas, a happy New Year, and a safe and enjoyable holiday season.

Lois



A big thank you

We'd like to thank everyone who participated in the interviews and with the monitoring.

- 530 households have been through the assessment and plan process
- Almost every household has allowed us to check their power and water bills
- By December this year 450 homeowners had been interviewed
- 200 homes were intensively monitored with temperature loggers and humidity gauges.
- A further 36 had water meters installed so we could monitor water usage.

Thank you all. Without your commitment and efforts, we couldn't have undertaken the HomeSmart Renovation project on this scale.



Update: HomeSmart Renovations

First findings from the project

By now, most of you will have had a follow-up interview with our researchers at CRESA about how you have found your Renovation Plan and the Homeowner Kit that was provided with it.

Thank you all for your participation in this – we’ve already got a lot of information which will help us improve the quality of assessments and Renovation Plans which are produced for future homeowners. We’ve also learned a lot about what further information would be useful to you, and we hope to provide some of this in this and future homeowner newsletters.

Following are highlights from an interim report on the homeowner interviews.

A quick snapshot of the findings

The good news is that many of you are acting on your HomeSmart Renovation Plan. In fact, in many cases the Plan has changed your view of your home’s condition as well as your renovation priorities.

60.3% of homeowners reported that they had invested in excess of \$2,000 in renovation work in the year prior to interviewing. 82.8% report that they intend to invest in excess of \$2,000 in renovations and retrofit in the coming year. The majority of households are prioritising insulation for future renovations.

47.1% of homeowners reported that they have changed what they planned to do because of the HomeSmart Renovation Plan. In addition, 62.2% had already acted on the recommendations of the Plan.

Although actions based on the HomeSmart Renovation Plan are still at early stages:

- 23.5% of homeowners reported that they had already paid a tradesperson to act on at least one of the recommendations in the HomeSmart Renovation Plan.
- 19% of homeowners reported that they themselves had acted on at least one recommendation in the HomeSmart Renovation Plan.
- 5.9% of homeowners were talking with suppliers.
- 16% of homeowners were obtaining one or more quotes.

Even more interesting for us, was what you saw as important benefits of your renovations.

- 92.7% of homeowners expect improved comfort or warmth.



- In fact, more homeowners (68.9%) value warmth or comfort ‘a lot’ than value power bill savings ‘a lot’ (37.8%).
- Fewer homeowners are concerned about water as compared to energy
- Concern for the environment also rated lower than improving comfort or warmth.

If you are interested, you can read this report in full on our website at:

http://beaconpathway.co.nz/existing-homes/article/progress_and_news



What happens next with HomeSmart Renovations?

Three more months of monitoring

Thank you again to all of you who agreed to have monitors in your home. Monitoring is finishing at the end of March, so if you have monitors, you will be asked to swap the temperature loggers one or two more times before then. Please keep the current loggers in place until we send replacements or advise you otherwise.

Feel free to call Nikki on 0800 925 347 or at NikkiBuckett@branz.co.nz if you have any questions on the monitoring.

Follow-up interviews

We will be interviewing all participants in the project twice more before the project is completed, so we can track progress with your renovation plans over time. CRESA began second interviews in December - they are much shorter than the initial one, and should only take about 10 minutes.

Monitoring results

Some people have asked us if they can have their individual home monitoring results. Unfortunately that's not possible, because our data analysis is of homes in the aggregate – for example, data from all the monitored homes in Nelson will be looked at as one set.

This is part of our research process because we are looking at groups of house performance, rather than individuals.

The overall report into the project will be produced in June 2010.

Want to do your own home monitoring?

If you are interested in monitoring your own home's performance on an ongoing basis, there is a range of temperature sensors and loggers which you can purchase from hardware stores and electronics shops.

I myself use both loggers and real time temperature sensors. However, with over 2 years' data from my house, I can say (hand on my heart) that the most useful things are the real time temperature sensors I have in my kitchen and office. I bought these for around \$40 each from my local hardware store in Gisborne.



They are indoor/outdoor sensors – I look at these several times a day and they provide me with the snapshot information I need to manage temperatures in my own home. The inside temperature lags a couple of hours behind the outside temperature.

In summer, when I see it heating up outside, I open windows and pull the blinds on the western and northern sides of the house to keep the sun out. In winter I look at the indoor temperature first thing in the morning to see if I need to do some more heating. If it's still very cold outside, I will stoke my wood burner up a lot, but if I can see the temperature rising quickly, I let the wood burner die down a bit.



Your questions answered ...

We've put our renovation plans on hold – should we still stay in this project?

For a range of reasons, some people have decided that they are no longer going ahead with their renovations. Even if this is the case, we are really keen for you to stay participating in the project.

Our research will continue until mid 2010. By continuing to stay in the research project (even if you are no longer renovating), you will be helping us develop better information to help other New Zealand homeowners renovate their homes for better performance.

Missing plans and questions about plans

We have had a few instances of plans being mislaid in the mail. If you haven't received yours, follow up with your assessor - their contact details are at the end of this newsletter.

If you have any questions about the recommendations on your Renovation Plan or how to prioritise your renovation, please contact your assessor. Their name will be on the front of the Renovation Plan and contact details are at the end of this newsletter.

How to access EECA subsidies for insulation and heating

A number of people have contacted me asking for information about how they can access the government assistance for insulation and heating.

You will need to do this through one of EECA's providers. The scheme is delivered by companies who will do the supply and installation of the insulation and heating

devices. It doesn't allow for subsidies on DIY insulation or heating installation because EECA are concerned that the quality of installation may not meet their minimum standards.

If your home was assessed through this project by EnergySmart (Dunedin, Invercargill, Nelson or Wellington), Community Energy Action (Christchurch), or Energy Options (Rotorua, Taupo, Bay of Plenty), it's worth noting that these community-based organisations are able to do the subsidised installations for you.

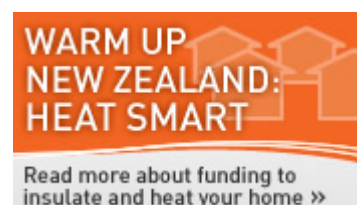
On the EECA website there is a lot more information about the programme, and what other companies you can contact to get a quote. They list installers by region so you can see the wide range of companies involved. You can see the list of providers for your area at the following link. <http://www.energywise.govt.nz/funding-available/insulation-and-clean-heating/step-one>

The programme has been very successful and now is a good time to start making enquiries about this programme, to ensure your insulation and heating is able to be installed before next winter. There was an overwhelming response when the programme was first announced and providers have a backlog of enquiries to work through.

Find out more at:

<http://www.energywise.govt.nz/funding-available/insulation-and-clean-heating>

or phone 0800 749 782



DIY Renovations

Some renovations are easy to do yourself

- Draught proofing
- Wrapping your hot water cylinder / pipes
- Checking out your ceiling cavity (i.e. relaying disturbed insulation after your plumber/electrician has been)
- Installing a rainwater tank or barrel for garden watering

Disclaimer: As an independent advisor, I don't recommend for or against any particular practitioner, product, or supplier. Any mention of a practitioner, etc, is not intended as an endorsement for or against them.

Draught proofing


Draughts are caused by cold air forcing its way through gaps around windows or doors. By blocking the gap, you will stop the draught.

To help find the source of a draught, light a candle and use it to find the source. Move the candle around the edge of a frame - the flame will flicker where the draught is coming in.


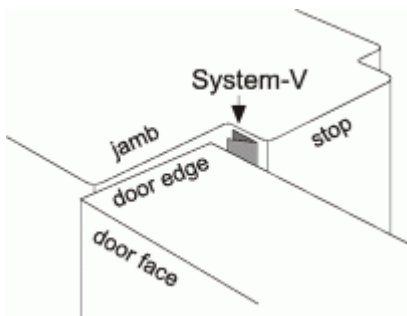


It is often difficult to calculate the size of the gap when draught proofing. To help you measure small gaps, a useful gauge can be the thickness of the edge of a coin. A quick reference is:

- Old style 50 cent piece = 2mm
- \$2 coin = 3mm


Types of draught proofing products

<p>Self-adhesive foam strip</p> 	<p>Widely available from your local hardware store – usually in packs of different millimetres thickness, or strips you can cut off to the length you want. Eyeball the gap you want to fill and, if possible, measure its width in millimetres before buying your draught strips.</p> <p>This product is best used around doors – on the door frame, so that the door fits snugly when closed. Make sure the surface is clean when you stick it on (clean and then wipe with methylated spirits to remove any grease).</p> <p>If you use this product on windows, don't use one which is too thick – otherwise it will be hard (or impossible) to close the window.</p> <p>Don't use this product on wooden windows as it can warp them over time.</p>
<p>Self-adhesive rubber strip</p>	<p>Similar to foam in terms of availability and use. It is a more long-lasting product, so although it is slightly more expensive, it is probably worth the cost.</p>



<p>Brush strips</p> 	<p>Widely available from your local hardware store in a range of colours and styles.</p> <p>These are generally for installation on the bottom of external doors to stop draughts coming in the gap under the door. Can be mounted (with screws) on either side of the door (inside or out) depending on the way the door opens. May need to be cut to size.</p>
<p>V Seal</p> 	<p>As far as I know this is only available in New Zealand from Community Energy Action (www.cea.co.nz) in Christchurch (they have online sales), from Negawatt Resources in Wellington, or from Energy Options in Whakatane. These are able to be used on doors or windows and are particularly good for older wooden sliding windows, double-hung sash windows (like in a villa) or wooden casement windows (like in a bungalow or houses built in the 40s and 50s).</p> <p>These are self adhesive also, and you need to fold the plastic tape in half (make sure it's a really good fold) before doing the installation. Again clean the frame surface and wipe with methylated spirits to get rid of any grease.</p>
<p>Silicone sealant cartridge</p> 	<p>For filling gaps such as between skirting and floorboards. A flexible sealant will last for many years when used in this way. Silicone-based products are more expensive than other flexible sealants but are generally less prone to deterioration.</p> <p>Vacuum carefully around the gaps to be sealed and then apply the sealant directly into the gaps. If you have not used a sealant cartridge before (and even if you have), it may be wise to mask either side of the joint before applying the sealant – the tape should be removed immediately after application as it will be extremely difficult and messy to remove once the sealant has cured.</p>
<p>Draught sausages</p> 	<p>These are pretty easy to make yourself, or you can buy deluxe versions (which go under the door and surround both sides) from community organisations such as Community Energy Action (their online shop at www.cea.co.nz sells these).</p>



<p>Keyhole covers</p> 	<p>For a lock with a hole that goes right through the door, you can buy a range of products from a locksmith that fit over the external hole to prevent draughts when the lock is not in use. These normally pivot at the top and are simply swung out of the way when the lock is used and swung back afterwards. They can also be fitted to the inside of the door.</p>
<p>Cat doors</p>	<p>An ill-fitting or damaged cat flap is guaranteed to produce a draught. If yours is broken, replace it with a good quality cat flap with a close-fitting flap and strong return mechanism so it doesn't blow open in the wind.</p>

Wrapping your own hot water cylinder (and lagging the pipes)

Hot water cylinder wraps and pipe lagging are widely available from hardware stores. First check what size hot water cylinder you have. Most electric hot water cylinders are either 135 litres (small) or 180 litres. New cylinders may be larger than this. It is worth wrapping even new hot water cylinders.

To lag pipes, you can buy foam tube pipe insulation from your local hardware store or plumbers' merchants. It's important to wrap the first metre of the hot water pipe from the cylinder as this is where most heat loss occurs.

To install a cylinder wrap, you need to have good access to the cylinder. You will need at least 5 cm all around the cylinder - more will make the installation easier. If you have easy access to the cylinder, installing a wrap is not difficult and takes about two hours.



(Source : www.smarterhomes.org.nz)

Tips:

- Lag your hot water pipe first
- Check for leaks and that connections are in good condition - if there is a problem, get this fixed first
- If you need to cut your wrap down to size, mark it up first use a knife, and cut over a timber surface
- If it's tricky to get the wrap around, you can tie a cord to a bottom corner of the wrap to help pull it round the cylinder.
- Tape the join together near to where the thermostat and element control box are, so they can be accessed in the future if you need to.
- If you have a **gas hot water cylinder**, these should **not** be wrapped as they need ventilation to be safe, but you can still lag the hot water pipes.



Checking out your ceiling cavity

Even if you don't feel up to laying new insulation, check out the state of your ceiling cavity - there could be small improvements you can make yourself.

If you have had electricians in, or someone installing a ducted system (e.g. a heat transfer or ventilation system), chances are they have moved any insulation that is up there already. And there may be obvious things like ducting coming loose which you can fix pretty easily yourself. Here's a list of the kind of things to look for in your ceiling:

- **Ceiling hatch – is it insulated?** If the rest of the ceiling is insulated but your hatch isn't, it will act as a chimney for heat to escape. It's pretty easy to insulate the hatch yourself, by taping the insulation onto the top of the hatch so it stays on, even when you move the hatch.
- **Has any insulation been piled up somewhere? Are there bare areas with no insulation?** Move any piled up insulation back into place, trying to make it fit closely to the wooden rafters and next pieces of insulation. However, if there have been downlights installed in your ceiling, those areas might be bare for a reason – insulation mustn't be placed over downlights as it could catch fire.



- **Is ducting in the ceiling connected?** If it has come adrift, tape it back together again with duct tape.
- **Do you have a leak in your roof?** Can you see holes, or damp patches? Sometimes the nails pop up on corrugated iron roofs, and you can see this easily from inside the cavity.
- **Is there building paper between your roof surface and the framing?** (e.g. corrugated iron or tiles) If there isn't, next time you re-roof, make sure the roofer installs building paper to help keep your ceiling cavity drier.

For more information, download *NZS 4246: 2008 Energy Efficiency Installing Insulation in Residential Buildings* free at:

<http://www.energywise.govt.nz/sites/all/files/installing-insulation-in-residential-buildings-07.pdf>

Installing a rainwater tank or barrel

You can install either a rain barrel (generally about 240 litres) or a rainwater tank (500 litres +) for garden watering. Gravity-fed systems (without need for a pump) will need the barrel or tank on a stand. Because a litre of water weighs a kilo, a rainwater tank stand needs to be fairly robust, and should be concreted into the ground. It will need to be over 30cm and less than 1 metre high.

Ideally you should include a mesh grate to prevent leaves from entering the barrel or tank (this can be fitted in the guttering) and you will need down-pipe fittings. You might need to get these from a specialist plumbers' store; though in the provinces, they are also available at your local hardware store.

It's best to locate the tank in a cool place, out of sunlight, to stop algal growth. An overflow outlet, and access for cleaning is also important.



Installing secondary glazing: Charlie and Stephanie's experience

We've been working our way through the recommendations in our Renovation Plan prepared early this year. One of the last steps to implement was double glazing. We found a company, MagicSeal, which offers retrofitted double glazing using acrylic rather than glass. This option is considerably cheaper.

We fitted MagicSeal to the windows of two rooms in our house: our living room, which has a large window area, and in which we are trying to retain the heat; and our bedroom, which has a problem with condensation on the glass of the French doors.

The results

Combined with under-floor insulation and a curtain across the glass front door, we have noticed some improvements from the secondary glazing. We have inside-outside thermometers (see page 3) in both rooms so we are able to see the changes.

The living room now holds its heat better in the evening, although the inside temperature still drops to a few degrees above the outside temperature by morning. This is an improvement on a year ago, when the inside temperature might drop to the same as the outside temperature. The living room also heats up much more quickly in the morning. We have noticed some reduction in noise from outside, although perhaps not as much as we expected.

The secondary glazing in the bedroom was fitted just last week, but it will not be until next winter that we will be able to tell if it fixes our condensation problem. We are seeing record differences between the inside

and outside temperatures of up to 10 degrees. In that room, we recently had to replace the carpet due to sun damage, and the secondary glazing will reduce the UV and thus prolong the life of the new carpet.

All our windows are wooden framed. The acrylic is difficult to see in place, and there is therefore no problem with the appearance of the finished product. The acrylic has a 10-year limited warranty from the manufacturer, and the fitting has a one year warranty.

It took a while

We found the local distributor seemed to have some teething troubles in its installation of the product.

The initial measurements taken by the company proved to be insufficiently accurate for two of the windows, and the acrylic sheets for those windows had to be remade with new measurements.

One of those replacements also was difficult to fit since the window frame was not quite square, and they appear not to have noticed this during either measurement. A third window measurement was sufficiently inaccurate that they had to plane the frame of the acrylic panel to get it to fit.

There was also one fitting which left a gap of about a millimetre in the 'air tight' seal, which they fixed on a second visit.



<http://www.magicseal.com>



Secondary vs double glazing

The most recent research indicates that secondary glazing systems like MagicSeal, and Magnetite do perform as well as some types of double glazing. Research we have funded into this shows that these products can do a good job, for what can be quite a moderate price.

However increasingly double glazing methods are available which cost only a little more than the secondary glazing products. Some companies (e.g. Dual Glaze, Thermoglaze) are now retrofitting all types of existing aluminium windows (from 1970s to modern) with double glazing - at a cost of around \$300-\$350 per m². Comparatively,

secondary glazing is usually about \$250-\$300/m².

Some companies will also be installing double glazed aluminium inserts into wooden window frames. It might not be what you choose for a beautiful villa bay window, but if you have, like me, some pretty uninspiring draughty wooden windows at the back of the house, then it's a viable option.

The more expensive option for wood is what my colleague, Vicki, did (see June 2009 newsletter) - removing the wooden windows, getting double glazing panes installed and then the windows put back into the house. But it looks gorgeous.

Pros and cons

Secondary glazing

- is cheaper
- can be a better option if you are wanting to address external noise issues. Secondary glazing can be really good at blocking external noise
- can be swapped in summer for insect screens fitted to your windows in the same way - this is really popular in Europe
- can start to go cloudy over time (being acrylic panels) - though I am not sure what sort of timeframes this occurs in. You would want to ensure your warranty covered this for a decent period.
- can look ugly to some people, and this may be a consideration for you.

Double glazing

- is usually not as good for noise as secondary glazing, but still makes a big difference to noise levels
- can use advanced glass (e.g. low e (emissivity) glass which has great thermal properties). Double glazing with low e glass should perform better thermally than secondary glazing
- is probably a more permanent/long term option than secondary glazing (but, again, check that warranty)
- is probably going to be valued by the market more in the long term than secondary glazing (since new houses are now required to have double glazing).

Both double glazing and secondary glazing should reduce condensation on your windows considerably.



Working through the Plan: Bera's experience

Heating source

The first item on our Renovation Plan was to replace the old multi-fuel burner, which had rusted so badly it had inch-wide holes that let a lot of hot air up the chimney that should have gone out into the room! The new wood-burner was installed in July – just in time for some really cold mornings - at a cost of about \$3000 including installation. It is a Jayline SS300, chosen because it is almost the only emissions-approved model that will fit in the space available.

Insulation

Our second priority was to insulate the ceiling. I investigated options: cheapest was Pink Batts, at an estimated \$2100 including installation; wool was a lot more expensive (\$3600). Thanks to a suggestion from my HomeSmart assessor, I investigated insulation and heating subsidies on the community services card. It turned out that we did qualify, and this more than doubled the government subsidy on insulation!

Third priority was to insulate under the floor. The cheapest option seemed to be polystyrene at an estimated \$2200 including installation. Earlier I was thinking of reflective sheeting, but this would be quite hard to install in the cramped spaces under our house, and one supplier told me it would not qualify for the EECA subsidy. Polystyrene looks much easier to install, although most of the electric wiring is under the house, and polystyrene would have to be kept away from this (according to the manufacturer). In the end we used polyester rather than polystyrene.

In September an Eco-Insulation team came and put insulation above the ceiling (nice thick wool blanket with up to 40% polyester) and under the floor (polyester slabs).



Draught stopping

Fourth on the list was to replace most of the louvre windows on the north side of the house, which have become very worn and draughty. We have been looking at actually replacing the louvre windows (rather than trying to fix the leaks), but new windows would be expensive (particularly if double-glazed). In the meantime we have also been experimenting with bubble wrap (even "double-bubble" using two layers) to cover louvre windows that have no view to speak of, with the boundary hedge being only about a metre away.

DIY fixes

There are also several small projects to be done, requiring little money and no assistance from tradespeople:

- Draught-stopping the back door
- Replacing curtains that have worn out, damaged by moisture and mould, and/or bleached by UV (particularly on the north side of the house)
- Lagging the pipe above the water cylinder

We will not be replacing the toilet cistern: the one we have is dual-flush and has a brick in it, and water use is not a problem (except occasionally in summer when there has been very little rain).



Renovating in baby steps: Lisa's story

It's amazing the living standards we're prepared to put up with; then along comes baby and the same conditions are no longer acceptable. The transformation of our office into a nursery illustrates this point perfectly.

Set on the south side of the house with south- and west-facing windows, our small office, 2.2m x 2.7m and 3m high, was sweltering in summer and arctic in winter (our 800W column heater barely raised the temperature; it simply wasn't up to the job). And it's no wonder; with no wall, ceiling or under-floor insulation, it may as well have been a lean-to.

With baby on the way the office would soon give way to a nursery. As it was, it certainly wasn't fit for a baby.

From our involvement with the HomeSmart Renovation project my husband and I were aware of the importance of insulating the whole thermal envelope – floor, ceiling and walls. So my husband did the renovations himself to save cash.

Although the crawl space in the ceiling was tight, it was relatively straightforward to insulate the entire space. Similarly, we went ahead and insulated the entire under-floor area. Although we'd chosen a product that was easy to fit, this work was particularly arduous and unpleasant – cramped, dirty and dusty. If we hadn't been on such a tight budget we would have forked out the extra cash to have a tradesman do the work.

We live in a 1930's bungalow, so there is no wall insulation. Unlike the ceiling and floor, it's not so easy, or affordable, to install. So we've decided to tackle it one room at a time. First, of course, was the nursery.

My husband is a competent DIYer so he successfully renovated the interior himself – he stripped out the room, fitted battens and building paper for ventilation, installed insulation, re-lined, plastered and painted. Finishing touches included a low VOC acrylic paint and draught-stopping the windows. We ventilated the room for a couple of weeks before moving baby in so she didn't breathe any fumes produced by all the new materials.

In hindsight the only thing we'd change is the window furnishings. Prior to the HomeSmart project, swayed by current trends, we'd made the unfortunate decision to buy slat blinds – not terribly effective at keeping the heat in.

While we've yet to find out how the renovations will stand up to summer conditions, we're in no doubt of the impact the work has had on winter conditions – the little heater now warms the room, even on the coldest night. And the under-floor insulation has stopped the musty, damp earth smell coming through the floor boards.

We're now happy to tuck our new addition into her cot at night, confident that she's sleeping in a warm, dry, healthy environment.



Who is involved ...

... doing the research?

Beacon Pathway Ltd – we’re a research consortium dedicated to improving New Zealand’s houses. Government funding matches funds from our shareholders.

Key contact: Lois Easton

Phone 06 867 4458

Loise@beaconpathway.co.nz

CRESA – the Centre for Research and Social Assessment - is coordinating the monitoring and will be your main contact for surveys, homeowner agreements and monitoring.

BRANZ – the Building Research Association of New Zealand - will be undertaking the actual monitoring and analysis of how the homes perform.

Key contact: Nikki Buckett

Phone 04 238 1324

nikkibuckett@branz.co.nz

... doing the assessments?



Community Energy Action has done the initial Christchurch assessments. A charitable trust based in Christchurch, CEA is a leading installer of affordable insulation and offers a range of other home energy services.

Phone 03 374 5698

info@cea.co.nz



EcoMatters Environment Trust is doing the Auckland assessments and is finishing off the last Christchurch homes. EcoMatters is a charitable trust focused on sustainability initiatives.

Phone 09 826 4276

info@ecomatters.org.nz



Energy Options is a community owned organisation which is doing the Rotorua/ Taupo/ Marlborough assessments. They specialise in the retrofitting of insulation, renewable clean heating and solar energy solutions.

Phone 0800 151 561

info@energyoptions.org.nz



EnergySmart is undertaking the assessments in Wellington, Nelson, Dunedin and Invercargill. EnergySmart is a leading provider of energy efficient measures to New Zealand households across the country.

Phone 0800 777 111

info@energysmart.co.nz

... doing the renovations?

It’s your choice. Our partners, Community Energy Action, EcoMatters Environment Trust, Energy Options and EnergySmart are all experienced in energy efficiency improvements. They can help you with most energy renovations suggested in your HomeSmart Renovation Plan.

Or you can choose your own builder, plumber, or electrician to do the work for you.

