

## **BARRIERS TO SUSTAINABLE RENOVATIONS AND INCENTIVES THAT LOCAL GOVERNMENT CAN OFFER**

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### **ABSTRACT**

This paper reports on research being undertaken for a Master of Planning on the barriers to sustainable residential renovations and the incentives that Local Government can offer. This paper examines the findings of a survey of residents who undertook renovations on private houses in North Shore City and Waitakere City. This paper covers the methodology, results of the survey and the writers own suggestions based on these results.

### **KEYWORDS:**

Sustainable Renovations; Renovators Concerns; Council Incentives

### **INTRODUCTION**

From the beginning of 2006 I have been a part time Masters of Planning Student. As part of my Master's research I undertook a survey of residents of North Shore City and Waitakere City. This paper discusses reasons for the research, and methodology. A brief overview of the results is included and the key issues raised from these results. I will conclude this paper with recommendations.

### **REASONS FOR RESEARCH**

While there is a large amount of new residential development in both North Shore City and Waitakere City, there are also many renovations of existing dwellings undertaken by owners. Much of the education and research around sustainable building is focussing on commercial or new buildings. BRANZ, EECA and the New Zealand Green Building Council are just some of the organisations that publish guidelines and have sustainable rating tools for new buildings. Over the past few years there has been an increase in the awareness of the benefits of a sustainable, healthy home. These benefits include energy and water efficiency, healthy materials and cost savings in the long run (Mobbs, 1998 & Wrigley, 2005). My research asks the following questions:

- What are residents' main concerns surrounding their renovation?
- Where do residents' in these two cities source their information?
- What is the uptake of sustainable products in renovations?
- Why are people using or not using sustainable products?
- What incentives can Local Government offer to encourage people to renovate more sustainably?
- Does living in the 'eco-city' prompt residents to build more sustainable homes?

### **METHODOLOGY**

A survey was chosen as the best way to gather information for the key questions. Residents were surveyed on their renovation process. Many people who undertake renovations do so to improve the quality of the home they live in and once the renovation is complete will live in their home for some time. It was hoped that residents would provide an unbiased opinion of sustainable options and would also provide good feedback on the level of knowledge in the community of sustainable options for home renovations.

The surveys were developed over the course of a few months near the end of 2006 and were granted Ethics Committee Approval from the University of Auckland in November 2006.

The survey participants were all homeowners who had applied for and been granted a Building Consent for Additions and Alterations in 2006. The survey was specifically not sent to any other person other than the property owner, such as a builder or architect. This was because after discussion with North Shore City Council, who helped with the survey, we felt that we would be unlikely to get a response from a builder or architect. The survey results are anonymous and the survey respondents will not be contacted for any other purpose from either Council.

857 surveys were sent out, 605 to North Shore residents and 252 to Waitakere City residents. As the surveys were sent out for Building Consents that had been for 'additions and alterations' the numbers varied in each city. Surveys were sent to all homeowners who had applied for a Building Consent for 'additions and alterations' except for those with the subheading of 'retaining walls or fences' as that would not have been relevant for the survey.

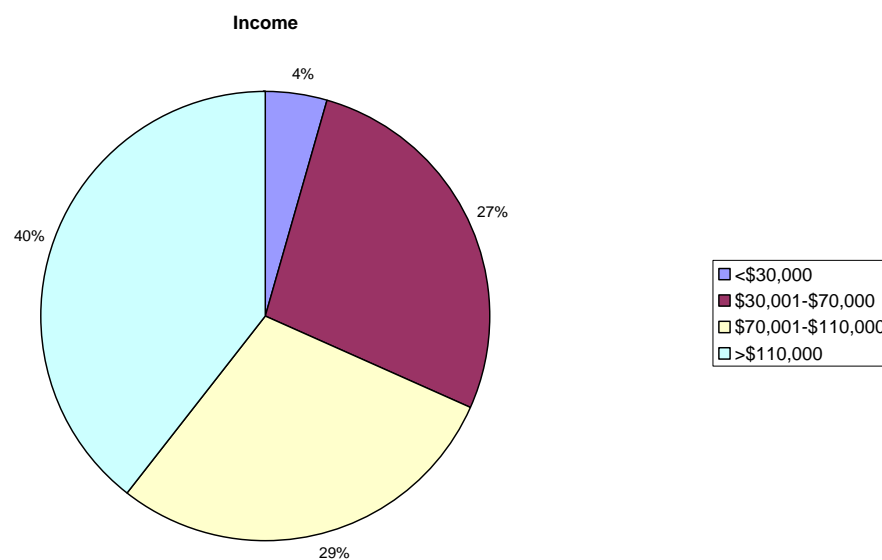
The surveys included a pre-paid envelope for the respondent to reply. The surveys went out in the beginning of March 2007 and the respondents had until the end of April 2007 to send their completed surveys back in.

## RESULTS

### General Demographics

The total number of responses were 185, exceeding the expected 10% response rate for a survey of this type. 142 surveys from North Shore City came back, which represented 24% of the surveys sent in this city and 43 surveys were received from Waitakere City residents, being a 17% response rate. A wide range of residents answered this survey, the following graph (Figure 1) represents the combined income brackets of residents in both cities.

**Figure 1:**



The most common reason for people to undertake a renovation is to upgrade their existing home. This was followed by those who wanted more room in their existing home. Very few respondents renovated their home with the intention of selling after the renovation. 5% of respondents in North Shore City owned the home they did the renovation on but rented it out to tenants.

The budget that people spent on their renovation was included in the general demographics section. This question was included to give an indication of the scale of renovations that were undertaken. As Table 1 shows, across both cities there was a range of renovations from the small to the large.

**Table: 1**

| Budget        | North Shore City (%) | Waitakere City (%) |
|---------------|----------------------|--------------------|
| <\$25,000     | 26                   | 15                 |
| 25,001-50,000 | 16                   | 28                 |
| 50,001-75000  | 7                    | 21                 |
| 75001-100000  | 13                   | 16                 |
| 100001-200000 | 23                   | 5                  |
| 200001-300000 | 5                    | 10                 |
| 300001-400000 | 3                    | 5                  |
| 400001+       | 7                    |                    |

There are differences between the two cities. 7% of residents who responded in North Shore City spent more than \$400,000 on their renovation, while no respondent in Waitakere City spent this much. This may represent a difference in income and house prices between the two cities.

Not surprisingly, almost 60% of respondents say that they spent more than they had budgeted for their complete renovation.

### **Where did people access their information?**

A list of information sources, including information offered by the two studied Councils was listed in the surveys. 75% of people surveyed in North Shore said that they used some form of information. Table 3 lists in order the most popular sources of information for these 75% of respondents from the North Shore.

**Table 2:**

| Information Source             | % Used |
|--------------------------------|--------|
| Magazines                      | 81     |
| Internet                       | 60     |
| Library/Books                  | 47     |
| The Home Ideas Centre, Parnell | 38     |
| NSCC website                   | 28     |
| NSCC advisory service          | 24     |
| Architect                      | 17     |
| Friends/Word of mouth          | 14     |
| Builder                        | 12     |
| BRANZ website                  | 11     |
| Homeshow                       | 6      |
| EnergyWise Home Grant          | 4      |
| EECA website                   | 3      |

|                 |   |
|-----------------|---|
| Hardware store  | 3 |
| Kaipatiki Trust | 2 |

There are similar figures for Waitakere City in Table 4. A couple of extra options were added in the survey for Waitakere City residents, to reflect the eco-city approach this Council takes. 70% of the residents in Waitakere used some form of information.

**Table 3:**

| Information Source                      | % Used |
|---|--------|
| Magazines                               | 79     |
| Internet                                | 72     |
| Library/Books                           | 41     |
| The Home Ideas Centre, Parnell          | 41     |
| Waitakere City Council Website          | 41     |
| BRANZ website                           | 28     |
| Waitakere City Council advisory service | 24     |
| EECA website                            | 17     |
| Waitakere City Council eco-advisor      | 10     |
| Friends/Word of mouth                   | 10     |
| Builder                                 | 10     |
| EnergyWise Home Grant                   | 7      |
| Hardware Store                          | 7      |
| Homeshow                                | 7      |
| Eco-Days and Eco-Matters Trust          | 3      |

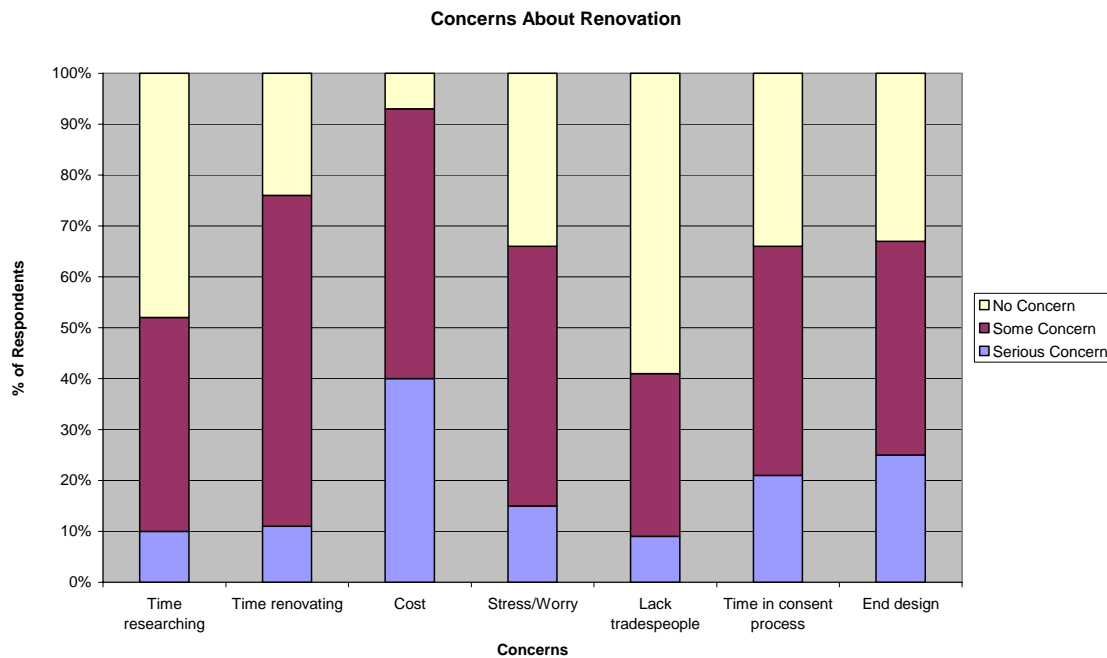
This indicates that the residents are consulting easy to access resources that allow them to go at their own pace with research and which are likely to provide a wide range of options. For the 24% who visited North Shore City Council and Waitakere City Council, it is likely that they already had a good idea what they were aiming to achieve with their renovation and were coming in for technical advice.

The newly implemented eco-advisor at Waitakere City would have only been relevant to those who had approached Waitakere City Council after 1<sup>st</sup> September 2006 and so would not have been available or known to many of the respondents.

### **What are the primary concerns of renovators?**

The respondents were asked about a number of possible concerns when looking at doing their renovation. The following graph (Figure 2) illustrates the concerns of respondents from both cities. If a concern was 'Serious' the respondent changed their original ideas because of this concern.

**Figure 2:**



The biggest concern to renovators in this study is cost, with 40% of respondents saying that the potential cost of the renovation changed their ideas. The overall time taken in researching and renovating are of some concern to respondents and resulted in some changing their original ideas. The end design and the time in the consent process in Council were also major concerns.

Respondents seem to be happy that there are enough qualified tradespeople to undertake the renovation and also in the time it takes them to research the renovation.

**Reasons for not using sustainable products in renovations:**

As part of the survey the respondents were asked about a series of sustainable products or ideas. These were grouped into the following categories:

- Energy Efficiency
- Water Management
- Home Design
- Rubbish

The respondents were asked if they used a product, or, if they did not, why not. It is important to note that this survey was not about individual sustainable products and was not a review on the uptake or popularity of these different products. The aim of this section was to gauge respondents' knowledge of the availability of these products and ideas and what the primary concerns were for those who did not choose to install these products.

Energy Efficiency:

The following table indicates the percentage of respondents who did not, considered or used these products: (Note: respondents were also given the option to indicate that a product or idea was not relevant to their renovation. For those who 'did not use' this indicates that they did not consider and did not use a product, whereas, for those who 'considered' they considered the idea but did not use).

| <b>Table 4: Energy Efficiency</b> | Did not use (%) | Considered (%) | Used (%) |
|-----------------------------------|-----------------|----------------|----------|
| Hot water cylinder wrap           | 43              | 37             | 20       |
| Solar hot water heating           | 38              | 48             | 14       |
| Energy Efficient appliances       | 27              | 8              | 65       |
| Gas cooking                       | 18              | 21             | 61       |
| Extra insulation in floor         | 21              | 24             | 55       |
| Extra insulation in roof          | 18              | 11             | 71       |
| Double glazing                    | 58              | 32             | 9        |
| Thermal backed curtains           | 30              | 16             | 53       |
| Energy Efficient lightbulbs       | 20              | 20             | 60       |
| Heat pump                         | 39              | 25             | 36       |
| Micro-generation                  | 93              | 7              | -        |

The primary reason respondents stated as to why they considered but did not use any of the above products was expense, with 61% stating that these products were too expensive for them. 25% of those who did not use any of the above products said that they did not have the space for these products or had not factored these products into their initial design. 7% said that they had been told they did not need to use these products.

The respondents appear to be making the 'easy' changes, such as putting in extra insulation in the roof and using easily installed products such as energy efficient lightbulbs. These are steps that the average homeowner can take without the need for specialist knowledge or support. Interestingly only 9% chose double glazing. The comments as to why 32% of respondents thought about double glazing but did not use were about cost, concern over appearance and they thought they didn't need it in the Auckland climate.

#### Water Management

| <b>Table 5: Water Management</b> | Did Not Use (%) | Considered (%) | Used (%) |
|----------------------------------|-----------------|----------------|----------|
| Low-flow shower                  | 52              | 17             | 36       |
| Low-flow taps                    | 59              | 10             | 25       |
| Separate shower & bath           | 19              | 7              | 73       |
| Rainwater re-use tank            | 51              | 25             | 24       |
| Retention tank                   | 62              | 13             | 25       |
| Permeable outdoor surfaces       | 66              | 12             | 22       |

34% of the respondents said that they had not taken these ideas into consideration when they were first doing their design, and as such, did not have room in the design for these ideas. 30% said that these products were too expensive and 17% felt that they did not have enough information to be confident in installing and using these products.

#### Home Design

| <b>Table 6: Home Design</b>   | Did not use (%) | Considered (%) | Used (%) |
|-------------------------------|-----------------|----------------|----------|
| Orientation of house north    | 29              | -              | 71       |
| Passive solar design          | 52              | 2              | 45       |
| Thermal mass for heating      | 76              | 7              | 16       |
| Timers for lights and heating | 64              | 56             | 30       |
| Shade sails or pergola        | 30              | 20             | 50       |
| Healthy materials             | 55              | 6              | 39       |

The primary concern for this section for respondents who considered, but did not use, any of the above products and ideas, was expense, with 45% of the respondents stating that this was their main concern. 29% did not have any room in their design for these features and 18% felt they did not know enough.

The historical method of building houses in New Zealand is shown in the orientation of the house, many people indicated here that they did not need to implement this, as their house was already orientated to the north.

### Rubbish

| <b>Table 7: Rubbish</b>         | Did not use (%) | Considered (%) | Used (%) |
|---------------------------------|-----------------|----------------|----------|
| Recycling of existing materials | 11              | 13             | 76       |
| Return un-used paint            | 46              | 8              | 46       |
| Composting toilet               | 94              | 6              | -        |
| Recycling bins in kitchen       | 26              | 4              | 70       |
| Compost bin                     | 27              | 16             | 57       |
| Worm farm                       | 59              | 25             | 16       |

The focus of concern changed in this section, with 31% considering but not using these products because they did not know enough. 18% said they would use these products in the future and 13% said that their builder lacked the experience to carry out some of these actions.

The results of this section indicated that a large portion of these communities know about these products, but did not choose to implement them at this time. Not surprisingly nobody installed a composting toilet. 76% of those surveyed recycled existing materials.

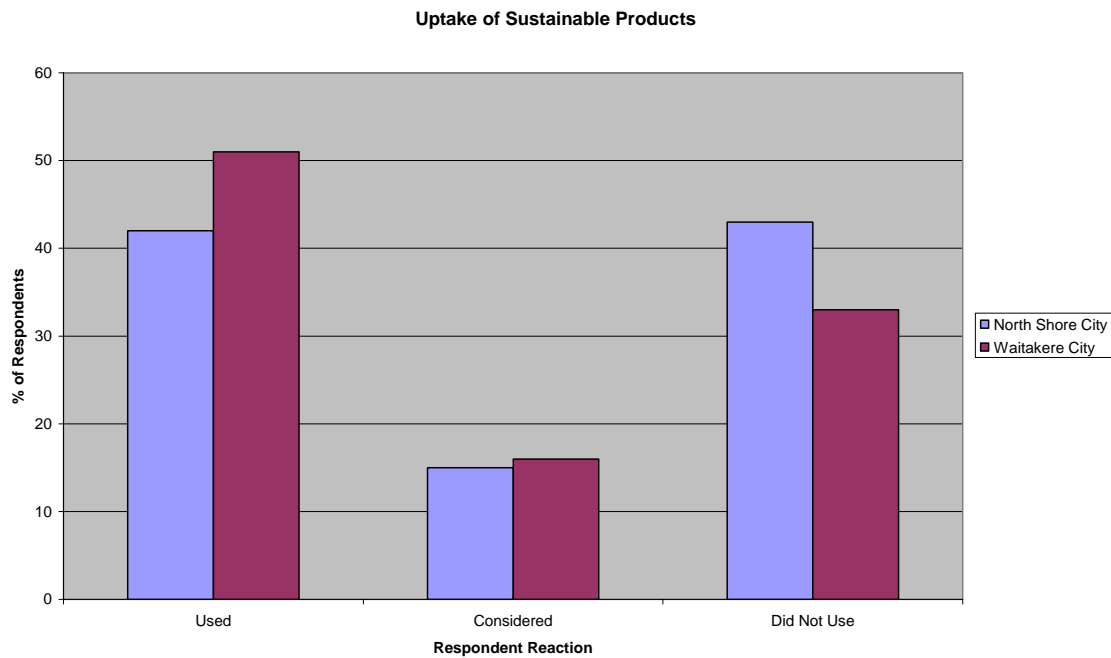
### **Does living in the ‘eco-city’ encourage a sustainable renovation?**

One of the primary reasons Waitakere City was included in this survey is their emphasis on being an ‘eco-city’. Waitakere City Council works hard to promote this environmental image with sustainable home guidelines, the location of the ‘Now’ home in New Lynn and an eco-design advisory service at their front of house. This survey hoped to discover if this reflected the behaviour of the residents in the city. The following graph (Figure 3) illustrates the uptake of sustainable products in the renovations between the two cities.

This graph shows that 50% of residents in Waitakere City used some form of sustainable product in their renovation, while 42% of North Shore residents used some type of sustainable product. Before the survey was conducted I believed that residents in Waitakere City would be more sustainable. However, both cities are very similar with 16% of respondents in Waitakere City considering a sustainable product or idea compared with 15% of North Shore City respondents.

The similarities between the two cities indicate that the level of knowledge about sustainable products and concerns are similar for residents in both cities.

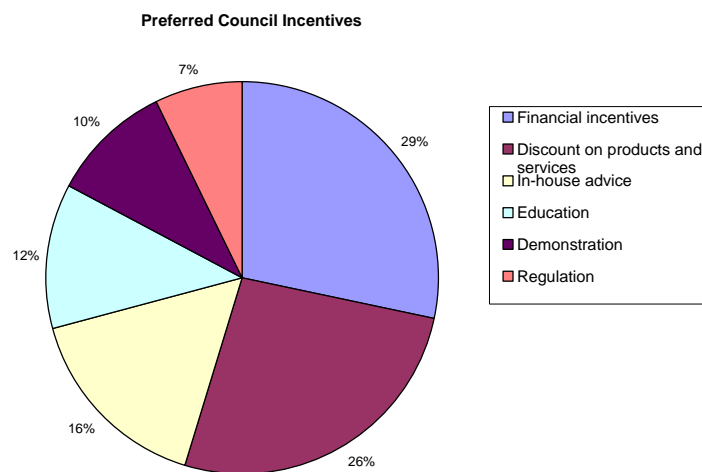
**Figure 3:**



**What is the best way for Local Government to encourage sustainable renovations?**

The respondents were given a list of possible Council Incentives that would encourage them to act more sustainability if they were to undertake a similar renovation in the future. Figure 4 demonstrates the results for the combined samples:

**Figure 4:**



The most preferred incentive is financial, which could include a reduction in development contributions or the fees from the consent process if the applicant was implementing sustainable ideas. In-house advice was also very important, the respondents wanted to be able to feel they could come

into their Local Council and get advice and education for future renovations. Comments that respondents made in this section were that the Council needed to improve their processes, as fees and time were constraints against renovations. Education by way of a newsletter was also suggested by a number of respondents.

## **SURVEY FINDINGS**

- The biggest barrier between residents and sustainable renovations is the cost of the product and installation.
- A large number of respondents also indicated that they did not feel they were adequately educated about sustainable home ideas.
- The majority of the residents surveyed in these two cities are using information sources such as magazines and the internet.
- The types of information used and whether respondents changed their original idea based on that information indicates that residents have their designs set well before they get to the Council process
- Almost 50% of survey respondents are using some type of sustainable product in their home renovation
- There is a large number of residents who considered sustainable products, which indicates that there is some level of knowledge and awareness but barriers such as cost hamper the actual installation of these products
- Residents would react most strongly to changes to the Council fees and processes and would also be encouraged to undertake a sustainable design if there are discounts on products and services offered by their Local Council.
- Residents feel uneducated about many sustainable ideas and techniques and would utilise further education if provided.
- Residents would appreciate if their Local Council led by example in their processes and were more sustainable
- Residents in Waitakere City are slightly more likely to undertake a sustainable renovation

## **RECOMMENDATIONS**

### **Information Sources:**

The majority of respondents used information sources that were easy to access, being magazines and the internet. They then talked their ideas through with their architect and builder to decide on the final design. Some residents are going further into their research and visiting the Home Ideas Centre in Parnell. Very few residents used the Local Council resources, and even fewer were persuaded to change their idea based on the information they received from their Local Council. This leads to two recommendations:

1. Better education about sustainable products and their benefits is necessary for architects, builders and those in the building industry. These people are some of the primary sources of information for respondents and if the education was increased it is likely that sustainable ideas would be passed onto renovators. Choices on products and design techniques can be presented at an early stage by architects and builders to allow the resident to make an informed decision
2. Increasing the number of articles on sustainable renovation in magazines and on popular internet websites may also help to better educate respondents. Magazines are the most popular source of information for respondents and increasing the level of sustainability content may help to increase the awareness of respondents.

### **Council Incentives:**

Expense was the largest concern with regards to energy efficiency, water management, home design and the overall renovation process. The following incentives could be offered by Local Councils based on the response from the surveys:

1. For key sustainable improvements to a house, such as a rainwater detention tank, solar hot water heating or improved insulation, the Council could offer a reduction in the fees for a Building Consent or Development Contribution. This is based on the idea that if these types of products are used in every house within a city, the pressure on the electricity and water infrastructure would decrease. This would in turn minimise the cost to Council for upgrades and maintenance.
2. North Shore City has identified areas where stormwater management is important. Discounts on the stormwater and rainwater detention tanks that the Council requires could be offered to all residents. When a Local Authority has recognised that some part of the infrastructure is stretched by the development and built form in a city, they could be pro-active by offering these types of discounts. This would encourage some of the residents to upgrade before they are required to by the regulation.
3. Changes to current regulation was the least popular option as indicated by the respondents. Nonetheless, changes in regulation will make it fair for renovators, as all renovations will be required to meet the same standard of sustainability. For changes to regulation to be successful, this will have to be reflected in upgraded education of Council staff.
4. Pre-application meetings or workshops can be offered to architects and builders who wish to increase their education in sustainable products.
5. Free education is already offered by both Council's through their Community based organisations, Kaipatiki Group in North Shore and the Eco-Matters Trust in Waitakere City. Many of the respondents said that they would appreciate better education. The promotion of community groups such as these can be better promoted by the Council. This can happen when people make the original application for a building consent or when they approach the Council for advice.
6. Council processes could be reassessed. The thought of getting a Building Consent is daunting and confusing for many residents. For many of the respondents they were doing relatively minor additions and alterations and did not want to spend more money on professionals to deal with the Council. Transparent advice and goals for the built form must be presented by the Council. Many respondents indicated that they would have been more sustainable but thought that a complex design would be hard to get through the Council process. If changes to the regulations are not immediate, the forming of guidelines both for the general public and staff could go a long way to encouraging sustainable development.

The above suggestions cover a wide range of options for Local Government. Resources, time and legislation will dictate the level to which these suggestions can be implemented. However, there are possible benefits for a Local Council by encouraging this type of development, such as less pressure on infrastructure and the health system, residents who do not spend so much on household bills and higher house prices. While both North Shore City and Waitakere City are enjoying a new build 'boom' the available land for new and infill development is decreasing. The suggestions made by this paper will help Local Councils address the longevity and stability of the current housing stock.

### **CONCLUSION**

The results published in this paper are a snapshot of the information from the surveys. These results are designed to give an overview of the concerns of residents undertaking renovations and respondents level of knowledge about current sustainable practises. There are different types of encouragement that Local Council's can offer their residents to build more sustainably.

Sustainability is an important idea and one that New Zealand is wise to encourage. It not only embodies a protected natural environment, but also healthy communities and stable built forms (Frame & Vale 2006). Many residents that were surveyed wanted to act more sustainable but did not know how to and did not have the required funds. The ideas presented by this paper will hopefully encourage Local Councils to act, both financially and as an example to their residents.

### **ACKNOWLEDGEMENTS**

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