



Submission by Beacon Pathway Ltd (Beacon)

Submission on LTCCP for Christchurch City Council

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About Beacon

- Beacon Pathway (Beacon) is a research consortium that seeks to radically change the design, construction and renovation of New Zealand’s homes and neighbourhoods. 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.
- Beacon’s shareholding partners are organisations with a considerable stake in the quality of the residential sector: BRANZ, Fletcher Building, New Zealand Steel, Scion and Waitakere City Council. Contributions from the shareholders are matched, dollar for dollar, by funding from the Foundation for Research, Science and Technology (FRST).
- Beacon believes it is only through collaboration and the sharing of knowledge that there can be a significant improvement in New Zealand’s homes.
- Beacon’s goal is to significantly improve housing sustainability through influencing policy and regulation; understanding consumer and industry needs; defining an appropriate high standard of sustainability; and developing the tools to achieve, measure and monitor progress to achieving that standard at the house and neighbourhood scales.

A summary of Beacon’s research is annexed to this submission.

Reason for Submission

Beacon recognises the need for maximising the sustainability potential of the residential built environment during the development process at all scales- including individual homes, new developments and neighbourhoods. It also recognises the important role that local councils play in both supporting and encouraging the development and management of homes with a greater emphasis on sustainability.

Submission

1. Council Social Housing

Beacon submits that the Council should undertake significant upgrading of its social housing portfolio to achieve energy and water efficiency, alongside its other objectives for the portfolio. Beacon notes that it has developed a simple assessment method and renovation plan builder tool

which it is piloting across New Zealand, including in Christchurch. Simple cost effective measures recommended include things such as low flow devices for showers and toilets and wet area ventilation can easily and cheaply incorporated into upgrades. Other measures such as solar hot water and rainwater tanks are able to be incorporated in multiunit developments in a cost effective manner.

Beacon has already applied this tool to some Wellington social housing as part of its upgrade process and offers the opportunity for Christchurch City Council to also partner with Beacon in its use.

2. Water Supply

Beacon supports the development of a Water Supply Strategy for Christchurch City. Beacon submits that this should place an emphasis on promoting water conservation, the use of water saving devices and water efficient appliances. Beacon has developed “Slowing the Flow” a resource document on water demand management and this should be a useful resource to assist the Council.

Beacon supports the continued part subsidy for water conservation programmes run by the Council. Beacon would also like to see the programme widened to include the subsidy of water efficiency measures (e.g. the free provision of flow restrictors for showers and taps) and assistance such as the undertaking of free “water audits” for households to identify opportunities for water saving measures.

Beacon submits that metering of water supply should be undertaken across Christchurch City. This is a critical method to develop the incentive for water efficiency, as few householders undertake conservation measures unless they are aware of the amount of water they use, and the costs associated with this. Water metering would also have the benefit of reducing wastewater discharges. Research undertaken by other councils indicates that a 15-20% water saving (and reduction in wastewater discharges) can result from water metering. Beacon notes that Christchurch City Council has allocated significant budget for both water and waste water treatment, water efficiency measures such as metering could reduce the pressure on the upgrading needs for this infrastructure.

3. Funding for Environmental Education and Eco Design Advisor Role

Beacon supports the range of environmental education programmes offered by the Christchurch City Council, in particular those relating to waste and water. Beacon would like to see such programmes expanded to include wider sustainable building education, including measures which promote energy efficiency, passive solar design, use of sustainable building materials and the creation of healthy indoor air environments. Beacon submits that the Council should participate in the Eco Design Advisor programme co-ordinated by BRANZ. Such a role could add significant value to the City.

4. Solid Waste

Beacon supports the local implementation of the New Zealand Waste Strategy and commends Christchurch City Council's for its practical and effective approach to waste minimisation. Beacon strongly supports the waste minimisation and cleaner production initiatives undertaken by Christchurch City Council, particularly as relate to demolition and construction waste.

Beacon submits that as demolition and construction waste are major components of the waste stream that Christchurch City Council should prioritise work with the building industry to minimise this type of waste. Beacon strongly supports the Waste Exchange Programme and Supershed operations.

5. Opportunities for Demonstration of Sustainable Building Technologies

Beacon notes that the council is building a range of new community facilities and proposes that these incorporate sustainable features. Such a proposal would also have the benefit of creating a healthier environment for those using the buildings and reducing the council operating costs for things such as energy, water supply, wastewater and waste disposal.

6. Christchurch Agency for Energy Trust

Beacon strongly supports the establishment of this Trust. Beacon commends the Council for its innovation in this area and looks forward to working with this new organisation.

7. Unflued gas heaters

Beacon submits that Christchurch City Council should concern itself with the adverse effects on indoor air quality (high moisture, high CO₂) of unflued gas heaters. The council should introduce controls prohibiting their use and education programmes about their negative effects on health and safety within the home.

8. Policy Support for Sustainable Building

Beacon has undertaken research into the range of ways in which local government can promote sustainable building and looks forward to sharing this information in the future with Christchurch City Council.

Beacon submits that staff time should be allocated by the Council to liaise with Beacon over the results of this research and look at ways that Christchurch City Council can better promote sustainable building within its community. These measures could include amendments to the Christchurch City Plan and other regulatory documents to incorporate the following considerations:

- Orientation and design of all buildings to suit both passive and active solar (e.g. solar hot water heating);
- Design to suit natural ventilation;
- Design of all buildings for energy efficiency using existing means, such as optimal insulation and thermal mass properties of materials;

- Provision for wind turbines and other means of renewable energy generation in Plan rules and in the design of all buildings and infrastructure;
- Use of innovative stormwater treatment systems;
- Requirement for stormwater reduction mechanisms such as through landscaping design, pervious surface requirements, green roofs, rainwater tanks;
- Provisions in relation to trees in carparks, in order to provide shade, reduce the effect of large heat islands, and absorb runoff from impermeable surfaces;
- Provision for avenues trees to occupy a small portion of the space devoted to kerbside parking lanes;
- Provision or requirement for greywater recycling systems;
- Requirement for interconnected street patterns; and,
- Requirement for safe, convenient, and high-quality facilities for pedestrians, cyclists and users of public transport.

Beacon's research

Reports and further insight can be found at Beacon's website: www.beaconpathway.co.nz

National Value Case

Beacon believes there is a significant role for Government to drive the necessary upgrade of the existing housing stock to a higher standard of sustainability as well as substantially raise minimum standards in the Building Code for new houses. Furthermore, our research indicates a strong value case at a national level to transform a significant proportion of the New Zealand housing stock to Beacon's HSS High Standard of Sustainability® with beneficial social, health, environmental and economic outcomes.

- [National Value Case for Sustainable Housing Innovations](#) (PDF 2MB)

Large-scale renovation is big on job creation

Prudent investment by the Government in New Zealand's residential infrastructure, in partnership with local government and industry, will maintain employment and critical mass in the building, building product manufacturing and building retail industries. Beacon's submission to the Government's Job Summit showed that, for every 1,000 houses retrofitted, a total of 151 full-time equivalent jobs would be required for delivery solely of on-site retrofitting services; a total of 392 full-time equivalent jobs would be required to provide the products and services involved in the renovation activity.

HomeSmart Renovations

The HomeSmart Renovation project involves the assessment and evaluation of renovations undertaken by approximately 600 homeowners across New Zealand to improve their building performance. Each home will receive an individually tailored renovation plan (based on our research so far) which shows participants how to get the best return on their investment, by drawing up a detailed pathway to improve the sustainability of their home. Through the project,

we're developing tools which will assist homeowners in making good choices when they make changes to their homes, and collecting information to assess the benefits of renovating homes and the best ways to do this. The research outputs from the project will be available late 2010.

Barriers to sustainable building

Beacon has conducted detailed work looking at the barriers to sustainable building within local government and that this has resulted in the development of a Local Government Resource Manual which provides the detailed rationale, suggested solutions and case studies for best practice policy measures to support sustainable building. In 2009, this Resource Manual is being launched through a series of workshops in Christchurch, Wellington, Rotorua and Auckland. This resource will be available through our website to all councils.

- **Best Practice Policy Approaches to Encourage Sustainable Residential Building and Retrofitting: Evaluation and shortlist of initiatives** (PDF 118 KB)
- **Best Practice Policy Approaches to Encourage Sustainable Residential Building and Renovation: Survey and Literature Review Results** (PDF 820 KB)

Neighbourhood research

Beacon's neighbourhood research team have developed a framework which could be used to measure the sustainability of New Zealand's neighbourhoods. Our aim is to create a tool for developers, planners and local government which both measures neighbourhood sustainability and suggests improvements. The goal is how to design, construct, and manage neighbourhoods which: are adaptive; are resilient; allow people to construct rich satisfying lives; and, respect the limits of the environment.

Water research

Beacon has undertaken a significant amount of research over the past two years related to water. Our premise is that increasing cost and decreasing availability of water supply will require a more efficient and conservation-orientated approach if New Zealand is to achieve widespread household sustainability. During 2008 Beacon ran workshops with six councils across the country in order to influence and help councils to intensify their water demand management approaches. Key water reports are:

- 2008 **Slowing the Flow: A Comprehensive Demand Management Framework for Reticulated Water Supply** (PDF 1.4MB)
- 2008 **Best Practice Water Efficiency Policy and Regulation** (PDF 1.4MB)
- 2007 **Demand Management Through Water Retrofit Projects (Public report)** (PDF 737KB)
- 2007 **Making Policy and Regulations Rain Tank Friendly** (PDF 234KB)
- 2006 **Water Efficiencies: Report on Existing Technologies/Expertise in New Zealand** (PDF 116KB)

Energy research

Our Energy Retrofit research will provide robust information to inform decision makers and actors in the value chain on how to cost effectively renovate New Zealand homes to a high standard of energy sustainability. We're tackling this in three ways.

- 1) We're looking at how hard or easy it is to renovate the energy performance of **different types** of existing homes. Our houses were built significantly differently over the last century and each type poses different problems for energy retrofits.
- 2) We want to understand how **different consumers** see the energy performance of their home and respond to retrofit opportunities. Specifically we've focused on landlords, high energy users and recent home buyers.
- 3) We're using what we learned along with our experience in the Home*Smart* Renovations project to build a series of **energy retrofit packages** that will provide effective improvements for each type of home and different consumer groups.

- 2008 [New Zealand House Typologies to Inform Energy Retrofits](#) (PDF 651KB)
- 2008 [Housing Typologies: Current Stock Prevalence](#) (PDF 392KB)