

## 5. HOME INSULATION AND HEALTH RESEARCH PROJECT

<b>Officer responsible</b> Corporate Services Manager	<b>Authors</b> Dr Leonid Itskovich and Terence Moody, DDI 371-1793 & 371-1834
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The purpose of this report is to inform the Council on a health research project to take place in Christchurch and to seek the Council decision on financial support of the project.

### BACKGROUND

The Energy Manager has been approached by Smart Power Ltd which invited the Council to sponsor a research project "The Impact of Insulating Domestic Houses on the Health of Occupants".

The project consists of two parts:

- (a) the health study itself being managed by Dr Philippa Howden-Chapman, Director of Housing and Health Research Programme at the Wellington School of Medicine, and
- (b) the insulation of the houses being managed by Smart Power Ltd of Wellington.

Funding of \$1.4M for part (a) of the project has been approved by the Health Research Council (HRC). Approaches have been made to the Energy Efficiency and Conservation Authority (EECA), Housing NZ and a number of other potential sponsors for funding of part (b) of the project which has an estimated total cost of \$2.4M spread over the two years of the project nation-wide. EECA and Housing NZ have already confirmed their contribution.

In the Christchurch area, the project managers are now seeking \$120,000 plus GST over two years. They have approached Environment Canterbury, Orion and the City Council.

### THE PROJECT

Researchers consider that poorly insulated houses may be largely responsible for higher seasonal (winter) mortality rates in New Zealand, as well as leading to respiratory symptoms.

The aim of this project is to determine the effect of insulating homes on the indoor environment and the health of the occupants. It is intended that around 1,400 houses from South Auckland, Taranaki, Opotiki, Wairoa, Porirua, Christchurch and the West Coast SI will be insulated. Each area will be allocated an equal portion of homes, with a selection of 200 households being made on the basis of resident susceptibility to asthma, frequent bronchitis, coughs and colds or pneumonia.

In the Christchurch area, 200 houses will be chosen for the project: 100 experimental and 100 control. The selection criteria are primarily that the house needs insulating (based on current levels of insulation in the ceiling being less than R1.8) and that there are occupant(s) with some form of respiratory illness. Health data are collected from all members of the household. Data on houses (such as age, condition) are collected before insulation begins.

It is intended by the project managers to monitor all 200 houses and occupants' health in the winter of 2001 without any being insulated. The monitored parameters will be: temperature and relative humidity (10% of sample), health of occupants, comfort of members of the household (by self-report and interview), illness (by number of visits to GP and hospital records), energy use (from power bills), condition of house (by occupants being asked to report for example evidence of condensation). Then the 100 experimental houses will be insulated through the spring of 2001 and the monitoring of all 200 houses will continue through the winter of 2002. It is planned to have the study complete by the end of winter 2002 though the houses used as a control group during the study will be insulated as a reward for taking part in the study.

Participating houses will have the following measures installed (at no cost to the owners): ceiling insulation will be raised to a minimum of R2.6, underfloor insulation (foil) where appropriate, draught proofing around doors and windows, damp proofing (polyethylene film on ground) where reasonably possible.

The project benefits for the Council and community are that it is known that many Christchurch houses are below recommended heating levels during the winter months. There is overseas research that indicates that the health of occupants can be affected by the combination of cold housing and increased internal moisture. There is not any significant research in Christchurch, except anecdotal, supporting such findings. Nor, it might be added, determining that improved energy efficiency measures would change the health status of occupants. It may be that there are improvements in comfort levels, or a perception of such, and these may add to a feeling of well-being and hence less reported sickness rather than a decrease in disease conditions. This is, however, a matter of assisting in raising the health status of the population in a wider sense if it proves to be valid. It would be useful to obtain this information for future policy development in the public health field.

## **OPTIONS**

Should the Council decide to sponsor the project, the following options of providing support are available:

1. Allocating \$40,000 from 2001/02 and 2002/03 budgets to the health research project.
2. Re-allocating \$40,000 from the Warmer Homes programme budget in 2001/02 to the health research project.
3. Providing up to 100 houses participating in the Warmer Homes programme in 2001/02 to the health research project. Insulation of those houses would be paid for anyway as part of the programme.

## **POSITION OF OTHER PARTIES**

Mr Roger Sutton, General Manager of Orion NZ Ltd, has advised that Orion is very supportive of the health research project and *"will contribute one third of the costs (\$40,000) out of total costs of \$120,000 as long as the CCC and Environment Canterbury also contribute a third each"*.

Miss Darci Westergard, Energy Co-ordinator for Environment Canterbury, has indicated that while the current financial year budget has no provision for the health research project, there is a possibility of allocating funds in the next year as from July 2002 Environment Canterbury expect to have an insulation incentives programme in place.

## **DISCUSSION**

It has to be noted that the estimated cost of the insulation part of the project (\$1,714 plus GST per house) is substantially higher than the actual average cost incurred in the implementation of the Council's clean air and energy efficiency programmes since May 1998. The average cost of measures under the Warmer Homes programme to date was \$894 plus GST, which included not only grants for ceiling and/or underfloor insulation but also a heater replacement grant of up to \$350 and another grant of up to \$135 for closing off an open fire. Such a cost-effectiveness has been achieved through an efficient administration process and sensible selection of insulation measures to be included in the programme.

Based on a quite extensive experience of operating the Council's home insulation programmes, one can comment that the proposal to spend \$1,714 plus GST per house under the proposed health research project seems excessive. For example, replacing existing ceiling insulation of R1.8 with new insulation of R2.6 would produce a negligible and practically undetectable improvement. Installing polyethylene ground cover under the floor would not be necessary in a vast majority of cases at all and therefore would not have an effect on the health research results.

It is worthwhile to examine the three options of the Council support to the project from the point of view of comparative quantities and quality of the results achieved by the sponsorship.

If option 1 were adopted then, as it follows from the proposed project budget, the \$40,000 of sponsorship being sought from the Council would be spent on insulating 23 houses only. The additional expenditure would need to be included in the annual plan.

If option 2 were adopted then no additional expenditure would need to be included in the annual plan. However, only 23 houses would be insulated under the health research project but 44 Christchurch homes belonging to low income families would be excluded from participation in the Warmer Homes programme which means that they would not be insulated and would not be converted to cleaner forms of heating.

If option 3 were adopted then up to 100 insulated and converted to cleaner heating homes would be available to the health research project, at no additional cost and at no expense to the Council's clean air programme. A similar approach was adopted by Housing NZ which sponsor the health research project by the provision of a number of houses and 50% of funds required to insulate them. Option 3 would mean the provision of about 90% of funding for insulation of each house from the Warmer Homes programme budget, with only 10% funding for draught stopping that would have to come from the health research project budget. If option 3 were adopted then sponsorship from Orion may become unnecessary.

The proposal to make houses available (option 3) has been discussed with Dr Philippa Howden-Chapman and seems to be acceptable and beneficial for the health research project.

**Recommendation:** That the health research project be supported by the provision of up to 100 houses participating in the Warmer Homes programme.

**Chairman's Recommendation:** That the above recommendation be adopted.