

Updating pensioner housing for future needs

A recent study looked at what was required to future-proof current pensioner housing in Napier. Insulation, efficient heating and accessibility were found to be key concerns.

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Typical pensioner housing in Napier.

Napier City Council has over 300 pensioner homes in nine villages spread across the city. Most were designed and built between the late 1950s and the 1980s. The original quality of construction was high, and the houses have been well maintained, but they were built for a time when fuel was cheaper and expectations of comfort were more modest than today. Accessibility demands have also increased with the increasing age of the population and desire for independence.

Study to investigate future-proofing

The pensioner homes average about 40 m² in floor area and, with the exception of a few adaptations and alterations, remain much the same as they were when built up to 50 years ago. Realising the housing needed to adapt for future changes, the city council commissioned a feasibility study to review the sustainability of these house types in the long term. This

was partially funded by Housing New Zealand Corporation.

The study, undertaken by Pacific Environments NZ Ltd, focused on energy, accessibility and maintenance. These areas covered the provision of affordable warmth, future fuels, access both within the home and to the wider community and also a maintenance regime so the properties remain robust for the next century.

Pensioner energy consumption different

Energy consumption patterns for space heating in pensioner homes are different from typical households. Budgeting for fuel bills can be a preoccupation that causes considerable stress, as a bill invariably comes as a shock. Consequently, to avoid this, many pensioners will under-heat their homes, only heat one room and frequently use prepaid fuel (for example, bottled gas) even though it

may be more expensive and cause other health problems.

Double glazing most cost-effective

The city council has already insulated all the roofs and accessible floors in the houses. Although these levels could be significantly increased at a relatively economical price, the cost benefit diminishes. Instead, changing other building elements could be more beneficial.

The heat loss characteristics of the house types were analysed to identify the optimum areas for improved insulation (see Figure 1). This was done on a room by room basis to avoid the problem of standard thermal modelling software that assumes even temperatures throughout a house.

In all cases, the most cost-effective measure was to double (or secondary) glaze the living and bedroom windows. This also has the added benefit of reducing noise problems from flanking transmission, which is common in these types of houses.

End-versus mid-row houses

The thermal analysis also produced an interesting result when comparing the heat loss from different house types. Houses located at the end of a row with solid floors had an annual energy cost that was 50% higher than a mid-row suspended floor house type. This is a significant difference and identifies the priorities for further improved insulation measures.

Trialling more sustainable heating

Traditionally, the houses were heated with open wood-burning fires, but these are not very energy efficient and have associated health and pollution problems. Over time, most of the fireplaces have been blocked up. Now, the preferred method of heating is electric radiators which are cleaner and easier to manage,

although some pensioners prefer gas heating because of its budgeting advantages.

It is likely that electricity prices will significantly increase relative to the cost of living in the years to come, making its use more expensive and unreliable for pensioners. One option is to look at more efficient means of using electricity.

The study recommended that heat pumps should be tested in a sample of homes. The heat pump is more efficient than standard radiators but it has some significant potential limitations in pensioner homes. For example, the control systems can be difficult to comprehend and operate, and there are occupants who distrust any form of heating with a time clock. There are also issues of maintenance that are inevitable with any piece of equipment with moving parts and filters, there are other issues of noise and additional electricity costs when used for cooling which require further research.

Another option is to return to wood burning with efficient wood-burning stoves. The technology of these stoves has advanced, and the use of a prevalent renewable energy source as a fuel offers great potential for a sustainable future. Again, this was recommended for trial in a sample of households.

Hot water heating with roof-mounted solar panels was also recommended.

Scooter storage

Tenants require access not only within their own homes but also to the community in which they live. The electric 'scooter' has become an essential item of technology that extends people's independence by allowing access into the wider community.

The research recommended design proposals that placed emphasis on scooters rather than cars. In the long-term, oil prices may result in car ownership being unaffordable for pensioners.

Secure storage of scooters was recommended along with sustainable recharging technology using photovoltaic cells so that pensioners can afford to remain active within the community (see Figure 2).

Remodelling for accessibility

The internal layout of flats varies between villages, and some building types prohibit reasonable movement within rooms. For example, bedrooms where a single bed fills the room require tenants to remove the door

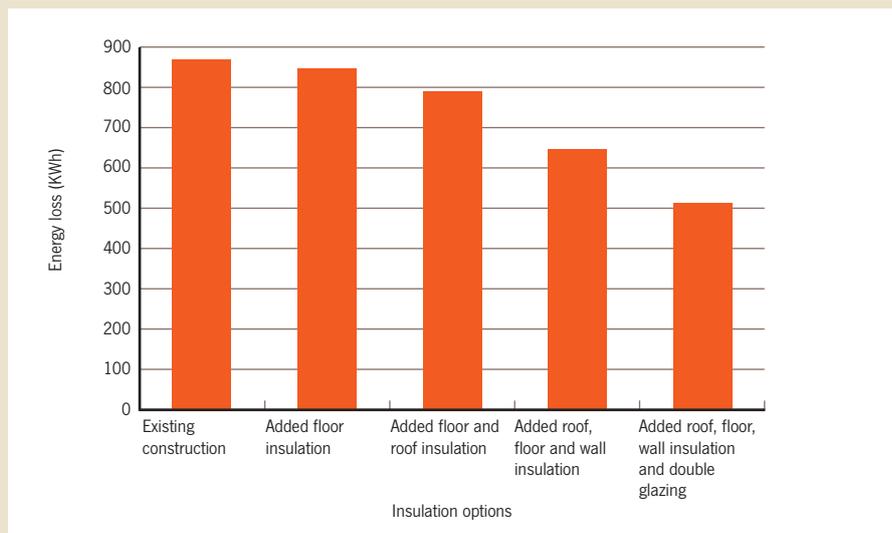


Figure 1: Energy loss in end flats with suspended floors and different levels of insulation.

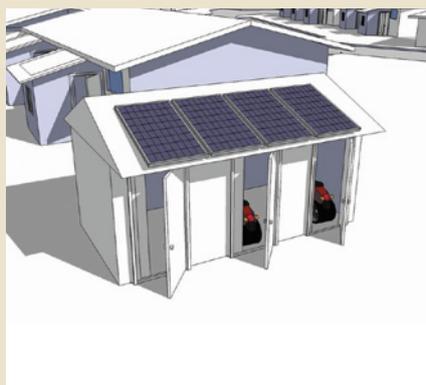


Figure 2: Secure scooter storage with photovoltaic cells for recharging.

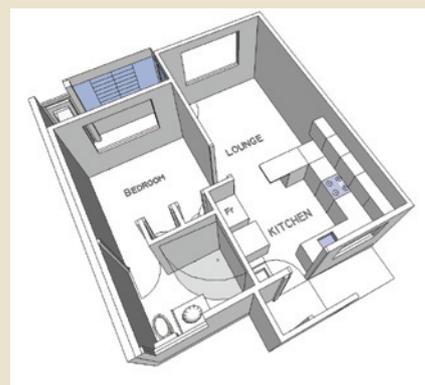


Figure 3: Typical proposed alterations.

to get reasonable access. There are similar problems with some kitchens and bathrooms that compromise the movement of tenants with the very least of mobility difficulties.

The design proposals resulted in remodelling rooms to provide reasonable access throughout the flat as well as accessible showers and kitchen facilities. The typical proposed alterations are shown in Figure 3 and include:

- removing the division between lounge and kitchen
- ramped access
- porch enclosed
- doorways widened
- accessible shower
- high-level WCs and grab rails
- double glazing to lounge and bedroom.

Encouraging vegetable gardens

A further consideration in the longer term is access to reasonably priced food. The cost of

food is inextricably connected to the cost of energy and will also increase relative to the cost of living.

The study recommended the integration of secure garden sheds to encourage the cultivation of food in the villages.

Maintenance plan developed

The development costs and embodied energy costs in new building materials will make it increasingly difficult to completely redevelop pensioner homes in the future. With appropriate maintenance, there is no reason why these house types cannot be sustained for many generations to come. The study assisted the city council with an asset management plan that noted the life expectancy of the main building elements and proposed planned maintenance to ensure that the buildings would remain robust. ◀