



Figure 1 The solar gain profile for 45 Napier Street. This graphic shows the position of the sun at different times of the day at different times of the year.

Insulation

Increasing the insulation in the ceiling is a valuable step towards increased thermal comfort and energy efficiency. The current insulation is a mix of fiberglass and loosefill insulation. The fiberglass insulation has moved and has suffered mechanical degradation of the fibres, which has contributed to a loss of function in many areas. The loosefill has moved (this can happen in high winds when there are ceiling drafts), and although it is generally ok, it is uneven. Approximately 30% of the ceiling area has inadequate or degraded insulation. Illustrative pictures are included in the appendix to demonstrate the problems with existing insulation.

The homeowners intend to increase the insulation in the ceiling by the installation of a polyester blanket insulation overtop of the existing insulation. *The best result when installing the blanket insulation overtop of existing insulation will be achieved by the infilling of gaps and the replacement of degraded current insulation.* All areas of the ceiling should be covered with insulation where possible, including above hot water cylinders (ensure a solid surface beneath the insulation to prevent accidents of people falling through). Insulation should be installed in line with NZ standard 4246.

http://www.eeca.govt.nz/sites/all/files/NZS_4246-2006_installing_insulation.pdf

Heating

A woodburner in the living area, a chippy in the kitchen and an econopanel heater in the hallway are the fixed heating sources. As the homeowners have been resident only during warm months, it is not known whether these are adequate for thermal comfort.

Ventilation

The house currently has a number of small air gaps around doors and windows, as well as a cat door in the laundry that provide some uncontrolled air flow. The day of the assessment was pleasant and warm and the homeowner was actively ventilating with several doors and windows open to increase air flow.