7 Steps to 7 Stars
The Phase-by-Phase Approach

THE HOME:

This 1920s weatherboard home is very typical of the era where post war homes were built en mass to meet the property demand. The home is timber construction finished in weatherboard external lining and pitched roof. The home has timber floors sitting on stumps with mostly original doors and double hung windows. Over the years the home has had some modification with the addition of rooms to the rear of the home under a skillion roof with North rooms facing onto a covered carport area.

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THE CHALLENGES:

Despite running two electric heaters throughout the day, the owners found the home very cold in winter. They decided that it was time to investigate what they could do to improve the thermal efficiency of their home. The home had been insulated some years back but they were just not sure if it was effective. While they could have undertaken some DIY measures, the couple wanted to call in the experts to get a true picture of their home and develop a priority list for improvement.

THE RECOMMENDED SOLUTIONS:

In 2008 the owners of the home invited *ecoMaster* to conduct an assessment of the property to see what would be the most effective way to improve its performance. The initial assessment rated the home at around 1.9 stars. The main aim of the assessment was to uncover the best use of funds for the greatest improvement in saving energy and comfort. The household made the commitment to approach their retrofit plan phase-by-phase, the following measures were taken over a period of four years to bring the home to its current 7.0 Star Rating.

STEP 1 - Draught Proofing: The major source of draught in the home were the redundant wall vents, poor sealing of external doors and windows, which have deteriorated over time and an unsealed exhaust fan which had a chimney effect, sucking any heat into the roof cavity. The redundant vents, which are very common for this era of home (and are no longer necessary as homes are no longer heated by open fireplaces or unflued gas heaters), were sealed with *ecoMaster*'s highest quality, clear sealant. All external doors and sash windows were fitted with timber, architectural perimeter seals that comprise compressive seals or brush seals to eliminate draughts. The exhaust fan was replaced with a self-sealing model from Mistral.

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STEP 2 - Solar Control: While most of the windows of the home were well-served by shading, the kitchen area presented a challenge, with the major heat build-up from the North covered carport. This was addressed with the installation of a solar reflective blind fitted to the inside of the window which could be pulled down on hot days to deflect the heat.

STEP 3 - Heat Transfer System: With the home now protected from draught, *ecoMaster* recommended that an air transfer system be installed to address the front rooms, which has always been difficult to heat. This would work to move warmer air from the rear of the home to the front rooms, not allowing any air to escape via unsealed areas. The system could also double as an air clothes dryer, minimising the need to use an electric dryer. The couple also chose to install a passive solar heating system into the bedroom to reduce moisture and warm the room using heated air from an external heat box located on the roof.

STEP 4 - Ceiling Insulation: The home had been insulated some years prior with blow-in cellulose and had varying depths throughout the roof space offering a low resistance value of approximately R1.5. The rear skillion roof had fibreglass batts offering a value of around R2.5. The pitched area of the roof was improved significantly by adding highest quality, environmentally sound R2.0 polyester insulation over the existing cellulose product and applying a reflective pleated batt to reflect radiant summer heat. This solution now offers a finished resistance value of R4.9 in summer and R4.2 in winter.

"Cool in summer, warm in winter, with significantly reduced energy costs..."

STEP 5 - Underfloor Insulation: As the home had a highly ventilated sub floor it was suggested to insulate the floor as well as seal the insulation from draughts with a wind barrier. The floor was treated by installing environmentally sound R 1.5 Polyester batts between the joists of the floor and then sealing over the complete sub floor with Air-Cell Retroshield. This treatment with the timber floor now offers a resistance value of around R2.9.

STEP 6 - Wall Insulation:
The external walls of the home were another significant area of heat with just the plaster board and weather boards to offer resistance. In order to bring the walls to a rating of R2.0, a granulated rockwool insulation was pumped into the cavity via small holes drilled into the weather boards externally. These were then sealed and repainted.

"We are VERY HAPPY with the work done so far... the team were a delight, clean, neat and meticulous as to detail and consultation. A real pleasure."

STEP 7 - Glazing: As many of the other areas in the home were now treated the windows remained as the only area preventing the home from reaching its highest possible star rating. With the new developments in secondary glazing, the home's original windows could be improved to create cost-effective double glazing. *ecoMaster*'s own secondary glazing system, *ecoGlaze®* allowed additional components to be added to the existing frames to create optimal still air space for the best possible outcome. This final piece of the puzzle allowed the home to reach it current star rating of 7 Stars.

The owners of the home now enjoy a 7 Star rated home.

Cool in summer, warm in winter, with significantly reduced energy costs - *quiet and comfortable all year around*.