

Canberra passive solar home



Snow on the Brindabellas means frost in the suburbs of Canberra, but it's naturally warm inside.

CANBERRA, ACT
ENERGY PARTNERS
(INCORPORATING
SUNCONSCIOUS
DESIGN)

Especially in Australia's uplands, passive solar design is a very powerful technique for achieving year-round comfort with little or no purchased energy. The techniques successfully used in combination in this example, a home in south suburban Canberra designed by Trevor Lee, include the following.

1. Large areas of northerly windows.
2. Northerly clerestory glazing.
3. Strategic circular easterly windows for the cheer of early morning solar beams.
4. Verandah and shutters protecting small strategic westerly windows.
5. Trombe walls with double glazing and interposing curtains.
6. Insulation-enhanced earth-sheltering of southern walls.
7. Insulated reverse brick veneer construction above ground.
8. Stack effect and cross flow ventilation.
9. Seasonally adjustable shading.

10. Roof form optimised for solar water heating.

11. Complementary landscaping.

The 153 square metre home for two adults and two teenagers requires no cooling (the lounge has never exceeded 27°C and rarely exceeds 25°C), virtually no heating (an average of 20 hours operation per year for the controlled combustion wood heater) and a water heating energy demand well below average (attaining an 85 per cent solar fraction).

The house achieves all this within a standard suburban block with due attention to the commodiousness of the house as a home, its overall environmental impact and the environmental health of its occupants. At the same time it is an allegorical reference to both the soft curvaceousness of the Brindabella Mountains (its western vista) and the iconic forms and materials of rural Australia (the heritage of one of the owners).



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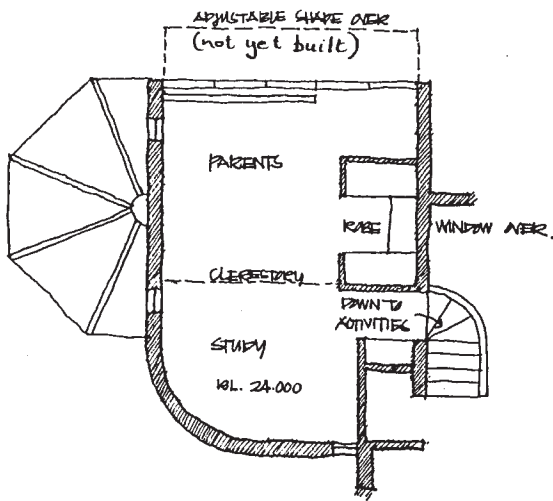
The Firm

Energy Partners is a leading house designer and energy rating assessor in Canberra, using the ACTHERS, NatHERS and FirstRate software as appropriate to both steer the design process and/or to evaluate the outcomes. The firm provides design and consulting services for housing and small commercial projects including active solar system design and high performance appliance selection and simulation using

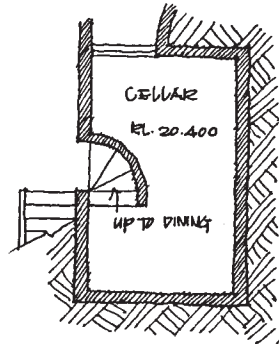
suitable software like SUNBEAR, THERM-2 and DOE-2. Trevor Lee is the author of the "Investing in Your Own Home" chapter in *Ethical Investment* edited by Ross Knowles (Choice Books, May 2000).

The Team

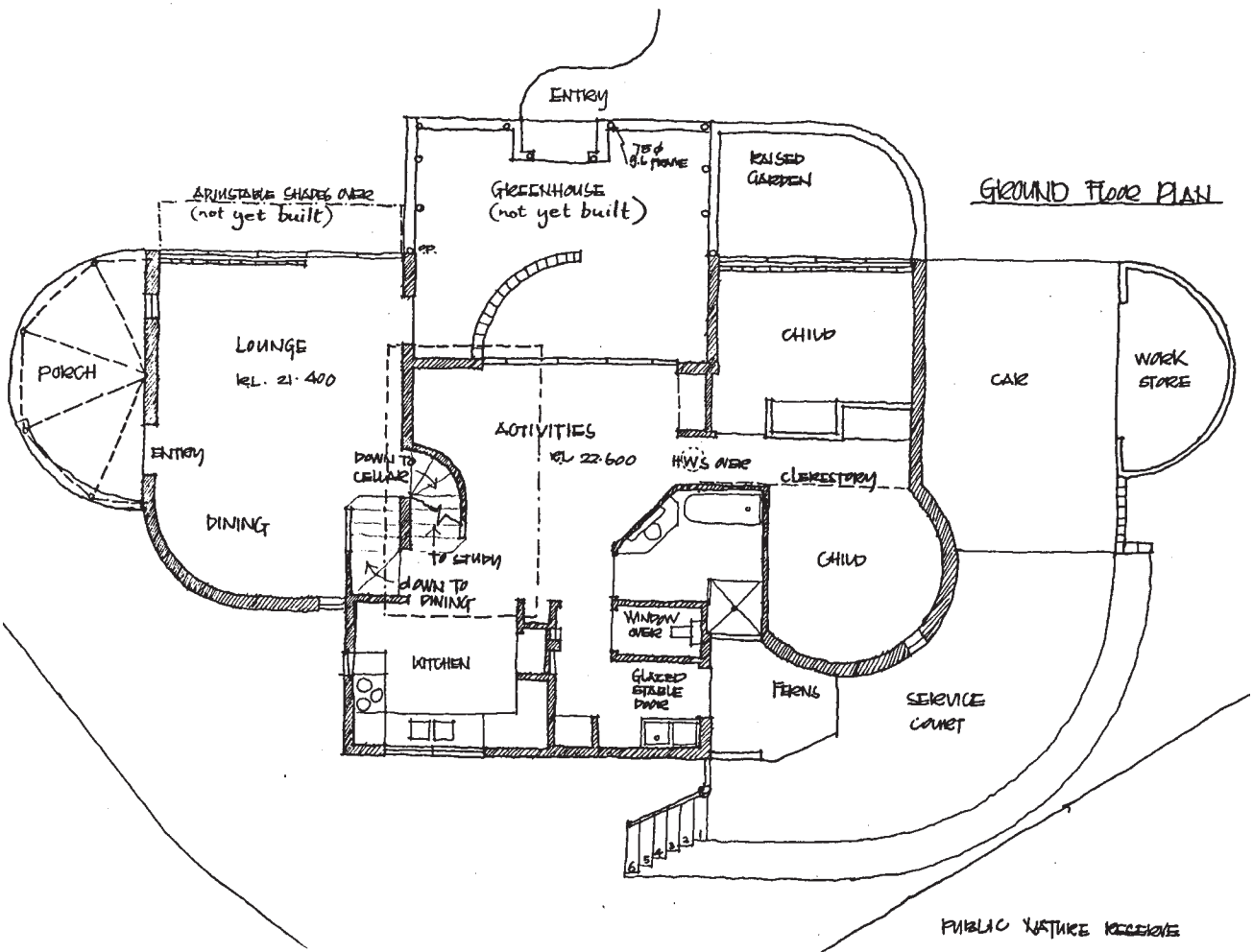
Trevor Lee: director, architect, solar and low impact building consultant
David McCook, PhD, mechanical engineer, active solar systems designer, appliance



FIRST FLOOR PLAN



CELLAR PLAN



GROUND FLOOR PLAN

CANBERRA PASSIVE SOLAR HOME



The east-facing 'back' door and south-facing shower recess window (double glazed reflective) with their fernery getting started.

analyst and energy rating assessor.
 Ward Westphal: assessments manager,
 consultant on high performance
 windows and appliances
 Dave Hodgkin: builder, designer, co-
 designer for owner-builders, energy
 rating assessor
 Jim Were: energy rating assessor.



The sun streams in on a chill and windy winter's day.

Energy Partners is a founding member
 of the Sustainable Energy Industry
 Association (SEIA) of Australia and
 Trevor Lee is a founding director of SEIA
 and the Immediate Past Chair of the
 Australian and New Zealand Solar
 Energy Society.

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