

# SOLAR-PLEXES

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New homes are being designed to make best use of the sun.

WOODMAN, spare that tree, touch not a single bough ...

This could be the initial thought of an ecologically minded architect in assessing a site for a solar home.

There are criteria for picking the best possible block for such a concept, be it passive or active solar. But it is also a fact that just about any block can be adapted to create a comfortable living environment by using the sun to best advantage.

All becomes so much easier and more efficient if the site has the backyard, or at least a side boundary, to the north.

With curtains that can be left open in the day, the winter sun can penetrate deeply indoors, as much as 3m in a single-storey home.

Floors and walls absorb the heat by day and act as thermal banks, radiating the warmth back into the spaces well into the night.

Blocks that face north to the street have a problem in that curtains have to be closed during the day for privacy and this inhibits the solar benefits.

Currently, about half of sites in new estates are generally suitable for solar homes with north to the back or side.

But the smart land developers can increase the acceptance level to 80 per cent with innovative planning, including the reintroduction of the grid while retaining the cul-de-sac.

With the initial assessment of any solar site, consideration has to be given to keeping as much of the native flora as possible, to help harmonise the home with the area and to avoid unnecessary visual pollution. Most people would rather look at trees than buildings.

The next consideration is to shape the house not only for the best orientation, but to sculpture the masonry mass to create breeze traps and sheltered outdoor living spaces.

All the time there has to be consideration of the owners' brief, according to long-time solar guru Garry Baverstock,

of Ecotect Architects. There are the accommodation requirements and the style of architecture they hope to bring to the project.

A common myth about climatic sensible design is that it interferes with the overall aesthetics of the home. This has been put down to only a small number of solar homes having been built.

Today's architects can enliven the aesthetics to suit any style and lifestyle, often creating a timeless sculptural mass that can be appreciated from any angle.

The next step is to ensure planning efficiency with rooms of correct proportions. Generally it is best to have living spaces to the north to maximise the winter warmth and bedrooms to the south for a cool night's sleep in summer.

There has to be careful assessment of the amount of glass and shade factors to optimise the collection of winter warmth and to have complete shade in summer. The positioning of doors and windows can encourage good cross-ventilation, extremely important in cooling the house in summer. Properly handled, cross-ventilation avoids the need for air-conditioning.

In Perth, the minimum temperature at night in February is about 19C and, with good ventilation, the passive solar home can be chilled to within 2C of that figure at night.

By shutting the house during the day and using ceiling fans for air movement in summer, a climate-sensible design can stay between 22C and 26C most of the time, and peak at 28C only in a heatwave.

Insulation in the walls and roof can be like icing on the cake, and can be the only feature that adds to the construction costs of the efficient solar design. It becomes very cost effective, paying itself off in just a couple of years.

And if all the principles are studiously applied to a passive solar concept, including hot water, the savings in energy costs can be between 60 and 90 per cent in Perth's cool temperate climate.

"FLOORS AND WALLS ABSORB THE HEAT BY DAY AND ACT AS THERMAL BANKS"



Top: Exposed trusses enliven a big kitchen where much is made of timber.



Right: The louvred pergola keeps the outdoor living area in shade in summer and bathes the whole area in warm sunshine in winter.