

Fine use of passive solar design

SWISS owners have brought a continental touch to Mindarie Keys with an imaginative passive solar home, exploiting not only the climate but the beach environment.

The concept makes use of a big central atrium, which is screened from the summer sun by a saw-tooth roof and serves as the main living space indoors.

All other rooms open directly off the quarry-tiled area, including big formal sitting and dining areas, huge bedrooms, a kitchen and luxury bathrooms. The plan form follows very closely the Roman concept of 2000 years ago with the house wrapped round the atrium, at the specific request of the owners.

This mediterranean style, with its blend of parapets and tile roofs, suits the local environment. It makes the most of an outlook to the south from virtually every main room and the view takes in the boat harbour and the ocean beyond.

The residence takes the passive solar concept a stage further than most with its double glazing to all external windows, plus its high ceilings starting at 3m and lifting to 4.5m in the atrium. The roof over this atrium is of sandwich panels with polystyrene between metal sheets — much the same as used for cool rooms.

The benefits of the design can be appreciated in the current heat waves with the internal temperature not rising above 26C when it is a scorcher outdoors. High level, clerestory windows in the atrium are opened at night to allow the sea breeze to cool down interior spaces in readiness for the next day.

Cold-weather comfort is assured with the winter sun streaming through the specially-angled saw-tooth roof and the quarry floor tiles and brick walls soaking up the warmth and acting as thermal banks. This stored heat is then radiated back into the main spaces at night.

Instead of the usual front veranda there is a solar pergola to the north which keeps this outdoor living space in complete shade during the heat of a summer day. But the same space basks in the full warmth of the sun in winter with the louvre blades of the pergola at an angle of 35 degrees.



The passive solar house at Mindarie Keys makes the most of the Perth climate and the beach environment.

All these factors contribute to a high energy saver rating of 80 per cent for the home, as calculated by the Solar Information Centre. A house is regarded as energy efficient with a figure of 60 per cent or better.

Apart from the saw-tooth roof projecting just above the terracotta tile roof ridge, there is nothing to identify this socially-responsible residence built by Tecto Solar Homes. It has a neat and simple facade with its combination of parapet walls and tile roof.

Bathrooms are on the western (side) elevation, the small windows here being angled to exploit the cool sea breeze as well as capturing the harbour and sea outlook.

Though well recessed, the main entry is obvious with its double doors in aqua blue. The cloak cupboard in the foyer has shelving for shoes as well as hanging space for coats.

The foyer relates directly to the central atrium which feels enormous at almost 8m by 6m. Internal windows to this atrium have a twofold purpose, to maximise the solar gain in winter as well as giving all space some part of the harbour and sea view.

Formal areas have floors in polished blackbutt boarding, the honey tones of the timber being emphasised by jarrah perimeter strips. The dining room has a setting for six people but it could just as easily be 12.

Double doors open to the kitchen, another big space at 5m by 4m overall. It has about 7m of bench cabinets, including an island unit with hotplates, and there is extra storage in a wall of cupboards.

Provision has been made in the island unit for the cook to be able to sit at work and perimeter strip lighting ensures that there are no shadows to the work areas.

The master suite has a big bedroom at 6m by 4m, off which is a dressing room and a luxury en suite, tiled to the ceiling height of 3m.

The en suite's focal point is a step-up spa for two and towel rails adjoining the 2m vanity cupboard relate to an angled window which has the water outlook. A wide shower and a toilet are included.

The other two bedrooms are also big — one about 6m by 5m and the second, which has a studio area, about 6m by 4m. These measurements exclude the wall wardrobes with mirror doors.

The main bathroom, accessible directly from the atrium, is in two segments. The first is a powder room with a vanity cupboard and screened toilet. The main area has a banjo vanity cupboard between a conventional bath and a shower recess. While the house is not open for inspection it can be seen by appointment with the architect, Garry Baverstock. People interested in affordable solar homes will have the principles explained to them at a design in Winifred Street, Bayswater, on Sunday, February 9.

The inspection is part of regular courses run by the Solar Information Centre. These are held every six weeks.

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