



Phrases like "capturing the breezes", "designing for natural cross ventilation", "orienting the dwelling for summer shade and winter warmth", are often heard in discussions between architects and their clients. For some the discussion extends further, covering issues such as limiting damage to the natural vegetation on the site, recycling waste from the house, and choosing building materials and appliances that have a low environmental impact.

Designers and their clients have access to a wealth of information to assist them. Government and independent agencies, as well as professional bodies, offer extensive advice on energy efficient design. Systems such as the National House Energy Rating Scheme attempt to provide practical measurements of building efficiency, and many household appliances come with star ratings to identify energy saving products. The Royal Australian Institute of Architects publishes an environmental design guide and presents awards recognising sustainable design as part of its Australia wide awards program.

However, in some quarters there is still a lingering belief that an environmentally sensitive design is incompatible with the comfort normally expected in the family home. This is not so, as the projects featured here clearly demonstrate. All offer environmentally responsive strategies in combination with innovative design, and all are cost effective, resource conscious, comfortable and stimulating to live in.

The strategies that these projects employ range from clever ventilation solutions, to waste water recycling, to solar power generation. The four projects represent a range of diverse Australian environments, from coastal Victoria to northern Queensland, while two are located in new suburban developments, showing how environmentally responsive structures can work in the project housing market. Ecologically sustainable houses are a real, achievable alternative for the future, as these projects demonstrate.

sustainable design

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OVERLOOKING POINT ADDIS BEACH on Victoria's western coast, the site is a natural haven for native plants and animals. Its owner had camped on the land for twenty years, and wished to build a permanent residence there. She commissioned Zen Architects to design a beachside retreat that would reflect her intimate connection with the land while treating it with the utmost respect. As Riccardo Zen puts it, "The intent was to design a sustainable home in a sensitive bush setting with minimal impact on nature, while encouraging the occupants to immerse themselves in the unique qualities of the place: creek, escarpment, wildlife, sea, sky."

The house has been positioned on previously cleared land to minimise disturbance to the local ecology. Trees originally planted by the owner have been trimmed rather than removed and their branches used around the finished house as fences, steps and seating. The building is aligned north-south, with extensive views of the coast on one side and of the hinterland on the other. Kangaroos graze on land to the north and east, and picture windows have been placed to catch them in action.

Climatic conditions and the client's needs shaped the form of the house. Access to northern light was needed to maximise passive solar gains, but the client, an artist, also desired softer southern light to work by. The architects came up with a simple, elegant solution to cater to both requirements: a large, open living area with windows north and south, flanked by two wings of south-facing bedroom-studios. (The western wing is to be built at a later date). Spread out below a high, curved ceiling, the living area is spacious and bright, with views to both sides through large expanses of glass. Its north side curves around a sculpture court, providing an outdoor space sheltered from the wind. Mezzanine sleeping platforms in the bedroom-studios have clerestory windows for light and warmth, while the artist may work below with ample southern light and inspiring views.

This careful organisation of spaces has resulted in an efficient building that draws in solar energy. External and internal brick walls are fully insulated, providing high thermal mass that retains the heat. The large internal volumes and generous windows allow air to circulate through the house, eliminating the need for cooling devices.

Other ecological features were born partly out of necessity, owing to the site's remote location. There is no town water available, so water is collected from the roof and stored in a 20,000 litre tank fitted with a pump. A similar lack of sewerage facilities has seen waste water collected and recycled through a micro treatment plant. Electricity is available, but in limited supply, so lighting has been kept to a minimum, and water is heated by the sun. One feels that this lack of "mod cons" would not have been seen as a restriction by the architect and client, but rather as a validation of their ecologically sustainable ideals.

Inside the house, a natural aesthetic is predominant, with timber featuring strongly. Furniture and fittings are minimal and informal, reflecting the beachside location. In keeping with its environmental ties, many of the house's materials, including flooring, windows, doors, fittings and cabinetry, have been recycled. Exterior claddings of plantation plywood and Zinalume were chosen for their durability and low maintenance, and paints are water-based.

An ideal retreat for an environmentally conscious artist, this house encapsulates the client's strong bond with the land – a bond that's sure to be shared by anyone who experiences the house. **SP**



ARCHITECT

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PRACTICE PROFILE

Committed to innovative and sustainable architecture, with expertise in urban, rural and coastal projects.

PROJECT TEAM

Ricardo Zen, Stephen Hasketh,
Chia-Ling Chen

BUILDER

Joe Tusler

CONSULTANTS

Engineer John Gardner and Associates

PRODUCTS

Roofing Colorbond; polyester insulation and sisalation **External walls** Reverse brick veneer; plywood; Zincalume; polyester insulation and sisalation **Internal walls** Brick; Porters water-based paints **Windows** Recycled timber; sashless double hung **Doors** Recycled timber **Flooring** Suspended slab; recycled timber joists; recycled tongue and groove floorboards **Lighting** Task lighting **Kitchen** By builder and owner – recycled timber island bench; recycled concrete bench with integral sink **Bathroom** By builder and owner; Caroma basins and toilets; recycled timber vanity; traditional cast iron bath **Heating** Combustion stove **External elements** Indigenous planting **Other** Solar hot water collector; waste water micro treatment system

TIME SCHEDULE

Design, documentation
4 months
Construction 8 months

PROJECT COST

Less than \$250,000

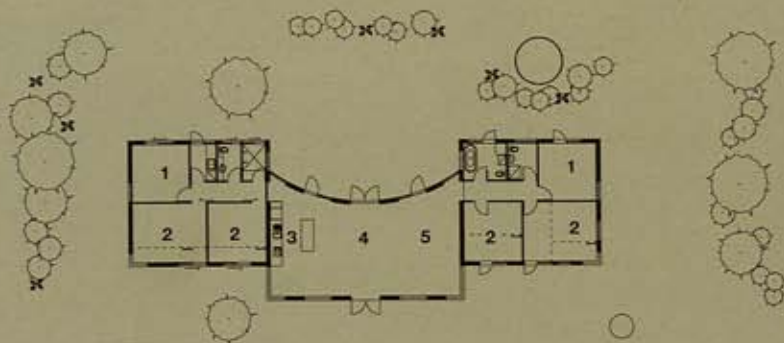
PHOTOGRAPHY

Ian Hill

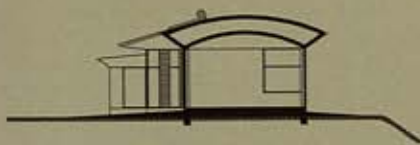
OPPOSITE PAGE, ABOVE:

Looking out from the living area to the northern sculpture court. **BELOW:**

Looking south towards the coast from one of the bedroom-studios.



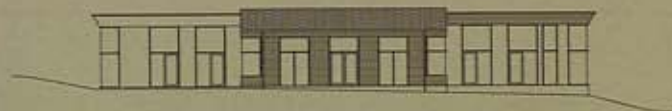
Proposed final plan (including west wing to be built)



Living room section



Mezzanine bedroom-studio section



North elevation



South elevation



- 1 Bedroom
- 2 Mezzanine bedroom-studio
- 3 Kitchen
- 4 Dining
- 5 Living