

Cool change

It's hot in the city but there are many ways to keep your house cool this summer, as **Emma Portelli** discovers

This summer is proving to be a scorcher with maximum temperatures regularly passing the 30 degree mark. And the Bureau of Meteorology's (BOM) forecast of hotter nights than normal has already come to fruition. According to Andrew Watson, of Watson Architects, keeping a house cool starts from the ground up and controlling temperatures plays an important part in a house's sustainability, a speciality of his practice.

Following the theory that it's easier to keep a house cool than it is to cool a hot house Andrew's first step in design is to take advantage of the natural environment. Orientation of the house is an obvious factor and situating the house to avoid the hot summer sun is a basic step, but it's also important to capture naturally occurring breezes. In Brisbane cooling breezes come from the north-east during summer and hot dry winds blow in from the south-west. To avoid both heating from the sun and those dry winds, Watson recommends windows should be kept away from the north-west and west parts of the house. But Watson concedes you can't always choose the ideal situation for your home. Most often you have to make the best of where you are. In the house designed by Watson (pictured below), one of the walls has a north-westerly aspect. The bedrooms were in this section of the house and Watson wanted to open them up as much

louvres up high will allow heat to escape. "Make sure you have cross ventilation so you can have winds and drafts go through from one side of the room to the next. Air movement makes a difference in your perception of how hot or cool you feel and your comfort level. The more air movement you can have, the cooler you become," Watson said.

One way to achieve this is by using bifold doors – now a popular inclusion in most new homes and renovations – which

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are most effective when placed on the north or south walls of a house, according to manufacturers Centor Architectural. Bifolds can open up about 95 percent of the door area, compared to sliding doors which only open up to 50 percent of an area. Placing louvres on the opposite wall then draws the breezes through the room.

Building materials also play a part in the internal temperature of a house. The traditional Queenslander was made of timber and tin for a reason – lighter materials absorb less heat and cool down quicker than dense materials such as brick. Brick does have its uses when it comes to cooling, however. Watson said "creating thermal mass" (in other words, building a brick wall) into the middle of a building can help keep temperatures cool inside. It absorbs the heat radiated by people and electronics to give a sense of coolness. A lot of houses have a brick veneer – a skin of brick on the outside with lightweight timber on the inside – for this reason but Watson said it would be better to have the

lightweight timber on the outside for more effective cooling. "Rather than have the thermal mass on the outside where it absorbs a lot of the heat and radiates it back into the house you have something which is lightweight on

the outside. Though it can transfer some of the heat through, it cools down very quickly and acts as a buffer for the thermal mass," he said.

According to Watson it's not too late to incorporate cooler design aspects into existing homes. Start at the top, by making sure your roof is well insulated and ventilated. The insulation will stop heat



Timber screens provide protection from afternoon sun in this house by Watson Architects

as possible, so he designed a large timber screen to provide shade from the afternoon sun. It also created a small balcony space off each bedroom that allowed air to flow through and ventilate the bedrooms.

Ventilation is another key to keeping a cool house and, according to Watson, building high will keep the air flowing and temperatures down. That means elevating floors to allow air to pass under the house, keeping the floors cool and high ceilings will allow the hot air to rise. Windows or





- ◀ Centor bifold doors open the house up to breezes
- ▼ Windows rated by WERS



trapped in the roof cavity from entering the home and ventilation systems such as whirly-birds suck the hot air out. The colour of the roof and house will also impact on the internal temperature. Dark colours absorb heat, while lighter colours reflect it. Reflective paints are also available and aim to reflect heat off the building, keeping the inside cool. Nippon Paint's Solareflect is one example and claims to reduce surface temperature by 5°C to make the home interior more comfortable.

Shading windows is also important to the coolness of a house. Up to 50 percent of heat comes through the windows but it can be reduced significantly. Firstly, consider the type of glass and casements being used in the window. More than 15,000 window systems available in Australia have been rated by the Window Energy Rating

Scheme (WERS), using a star system that rates the heating and cooling characteristics of the window. The maximum score is 10 stars in each category and, according to scheme manager Mike Palin, the highest cooling rating achieved by any window so far is six.

Installing shutters will keep windows cool. Tracey Thompson from Shutter Flex said placing shutters on the outside of windows is more effective at keeping the heat out than having them on the inside. "The shutter deflects the heat by preventing direct sunlight from hitting the glass," she said. Louvred shutters provide a barrier to the sun while allowing air to flow through a window and, in some cases, can be adjusted with sun movement so the window is protected at any time of the day. According to Thompson the use of shutters

can cut heat by up to 25 percent.

There will be days where the heat and humidity get too much and air conditioning is impossible to resist. By choosing and using air conditioning wisely you can keep your energy use and running costs down. For example, ActronAir's ESP Plus system, which provides zoned ducted air conditioning, has been designed in Australia specifically to suit Australian conditions and recently was announced winner of the 2008 Environmental/Innovative Product of the Year in the COOLworld Industry Awards. The system has been designed with our high temperatures, high humidity and large living areas in mind. It saves energy and running costs by reducing airflow to match zone use while traditional systems continue to pump out maximum airflow

and simply redirect the air, even when one or more zones are switched off. Not only does this waste energy (and cost more), it can create some noisy effects generated by the excess air velocity in the system. ActronAir's ESP Plus automatically senses when zones are switched on or off and intuitively adjusts airflow accordingly. An independent study of the system indicates that annual energy consumption is reduced by up to 61 percent when compared to a conventional system and by 59 percent versus an inverter system for a typical two-storey, four-bedroom brick veneer home. The ESP Plus also reduces humidity, provides smooth, fractional climate control to avoid large temperature swings that can be experienced with some types of air conditioning and it has a sound reduction system.