green

sustainable architecture and landscape design

Refresh
Seven steps to cleaner indoor air

Sure Thing
The case for
solar hot water

Low-cost Tricks
Eco renovation
on a budget

Architects at Play
Building a sustainable lifestyle

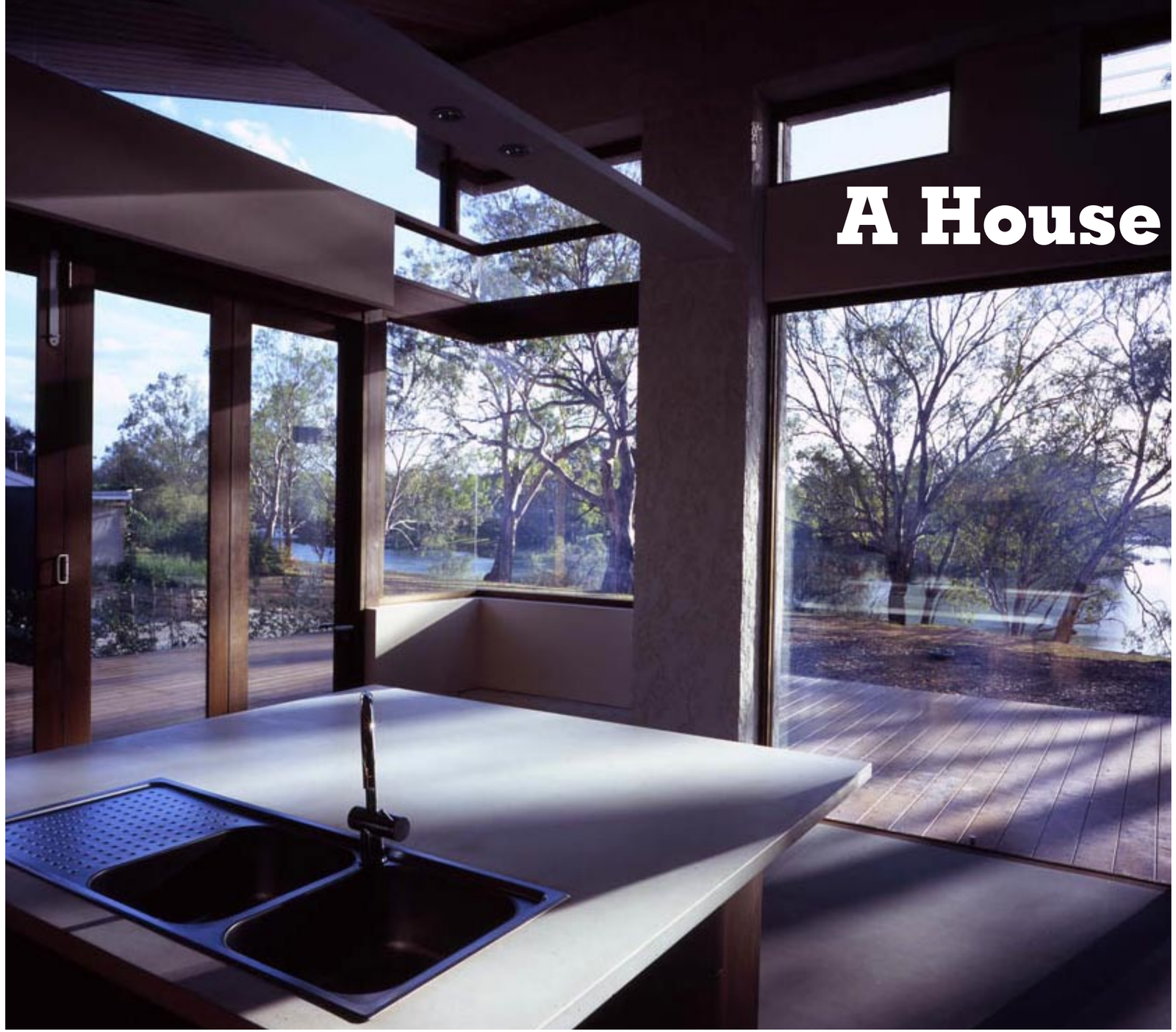
Aust $9.95 Mar-May 2009 NZ $11.95
www.greenmagazine.com.au
03
9 771834 806007

Plus: Red Light – A one-of-a-kind garden • **Balancing Act** – An Italian Workshop

Text: Melissa Rymer | Photography: Scott Haskins

A House by the River

A stunning new home on the banks of the iconic Murray River is a testament to Luke Middleton's powers of persuasion. Melissa Rymer sheds light on Mildura's newest and most glamourous residence.



The stunning orientation of the kitchen shows the Murray River in all its glory.

Architects have been talking about "sustainable design" since the 1970s. In architecture school the term often coined for it was the "nuts and berries" subject, referring to the "hippyish" aesthetic of mud brick houses and other principles of passive solar design. Many of these principles have until recent times been largely ignored.

Contemporary architecture, in particular domestic architecture, is often geared towards the luxury end of the spectrum. As a broad sweeping generalisation, it could be said that clients in this category are usually more interested in the aesthetics and functionality of the design and less so in its environmental footprint and overall sustainability. This is where practices like EME Design Group are working very hard to alter the thinking that sustainable design can be dismissed or trivialised as part of a "greeny" phenomenon but must instead become an integral part of the design process.

Luke Middleton, the principal at EME Design Group, is someone who is very, very passionate about sustainable design, so much so that his enthusiasm is contagious. The very name of his practice, "Ecological Motivated Environments", is a clear indication of the strong environmental ethos behind all their projects.

The River House was built for a couple who are long-time residents of Mildura, a Victorian north-west border town on the Murray River. The site is spectacular; in fact they had been waiting for several years for it to come on the market. It faces east towards the Murray River, is surrounded by a cluster of magnificent towering gum trees and is within close proximity to the town.

Kate and Lloyd Thomas initially engaged a Feng Shui master to assist in the preliminary siting and design for their new home. They were conscientious about finding the right architect for the project and had admired some of EME's other projects. They were immediately drawn to Luke, both as a person and for →

This impressive rear elevation captures the open spirit of the house **(this page)**. A gently curved wall and a place to sit in the bathroom **(opposite page)**.

The textural quality of the rammed earth walls complement the natural grain of the timber panelling **(left)**. The serene Japanese style courtyard is an important element in creating the positive flow of energy through the house **(right)**.

his ability to think laterally. Lloyd admits that when they embarked on the design process, they thought they wanted a 50-square two-storey home, but eventually downsized to a more modest single storey and 29 squares. They attribute this shift to Luke's patient but methodical approach to working through their expectations of what they thought they needed to what they actually required.

Mildura is notorious for its climatic extremes, so it was critical for EME Design Group to design a home that would enable many of Luke's innovative ideas of sustainability to come to fruition. Many architects and their clients tend to over-use glazing, in the belief that more glass is equal to more light and greater expanses of views. While on the face of it this may be true, expanses of glass also create a myriad of problems including excessive heat loss in winter and overheating in summer. In order to maximise the passive solar design of this building, Luke worked very hard to persuade the clients to use glazing more sparingly, framing views for dramatic effect, capturing winter sun and minimising direct exposure to the west and the hot afternoon summer sun.

The structural walls of the house are made from rammed earth, which has an excellent thermal mass, making it an ideal material for this harsh climate. The floors are masonry and have an underfloor heating system (substantially powered by the solar system), which helps maintain a constant temperature in the cooler months. The exterior west-facing walls are a massive 400 mm thick insulated rammed earth, with minimal glazing, and the internal walls are also a substantial 300 mm, all key elements that contribute to the building's thermal performance.

One of the most innovative elements of this home is the design of a "Labyrinth" cooling system, which Luke designed with input from an engineering expert. In fact since nothing like this has previously had a residential application, Luke made a point of working on site at least once a month with the builder as they developed the system. It works by using small vents that have been built into the walls. With the help of small fans, these vents suck out the hot air and replace it with air that has been cooled by the thermal mass of the building. So far the bulding is performing brilliantly, 50% better than predicted by sophisticated energy rating software for both summer and winter.

The building has been intelligently designed, working on consolidating space, and building furniture into the space to make rooms feel less cluttered. The house has minimal lighting, obviously relying heavily on natural light during the day, and using fluorescent lighting for dramatic effect, bouncing it off objects, walls and surfaces.

The design of luxury homes and sustainability in design are all too often at opposite ends of the spectrum. Typically the brief for a luxury home involves multiple bedrooms and bathrooms, massive amounts of glass and therefore monumental heating and cooling costs. Materials are usually selected without considering their environmental impact. Therein lies the challenge for many architectural practices – to educate the clients, to challenge them to really think about what they need, or why they think they need it. This can become a lengthy and often challenging process.

In the past, many an architect would have subscribed to the doctrine that you give your clients what they want; however, in this era of climate change and diminishing resources, this conservative attitude to design and construction clearly has shifted.

This is where practices like EME Design Group step up to the plate: they will not rest until they have found sustainable solutions to the many challenges that designing a new home presents, in this instance one in a climatically extreme area like Mildura. The end result of this project is a very happy one; the clients are delighted with their new home, and have become enthusiastic ambassadors for sustainability and thermal performance and all matters that relate to the design of their stunning home.

Specs:

Designer
EME Design Group
www.emegroup.com.au

Builder
Paul & Sharon Dean

Engineer
Keith Long & Associates Pty Ltd

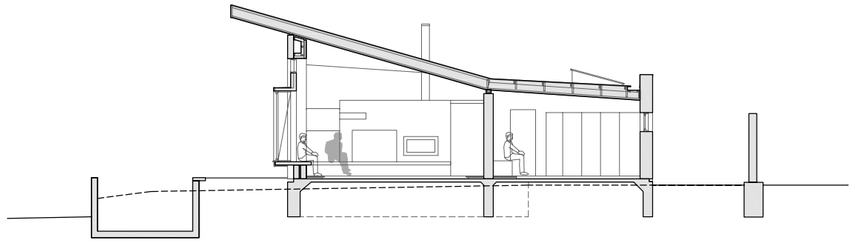
Labyrinth Design
EME Design pty ltd, Cundall

Cooling
Labyrinth fans & cooling back up
– John Devilee Refrigeration Pty Ltd

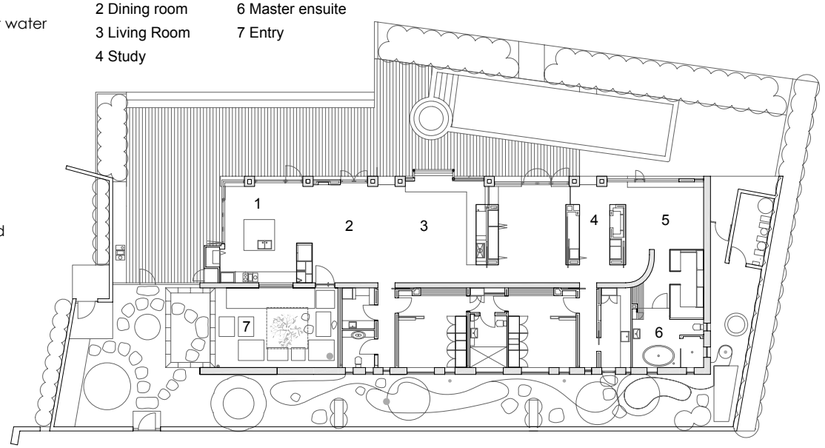
Heating
Heating (in slab), solar panels and storage & hot water
Aquatherm Pty Ltd

Lighting
Concept: EME Design pty ltd
Consultant: Martin Butcher Lighting Design.
www.mbld.com.au
Supplier: LPA Pty Ltd
www.lpaust.com.au

Materials
Rammed Earth: Earth Structures Australia Pty Ltd
www.earthstructures.com.au
Masonry Frame structure: Natural finish Sand and cement render with application texture.
Ceiling: Radial cut mountain ash shiplap boards lime washed www.radialtimber.com
Fascia: Stained Laminated pressure treated cypress pine - LTS.
Windows: Double glazed low e glass Cedar Timber windows.
Floor: Limestone, natural wool carpet.
Bench tops: Concrete – Rutso.
Decking: Spotted gum Nullarbor Timber
www.nullarbortimber.com.au



1 Kitchen
2 Dining room
3 Living Room
4 Study
5 Master b/room
6 Master ensuite
7 Entry



This passageway connects the rooms of the house, but there are cleverly concealed doors so the spaces can be transformed into private zones **(this page)**. This west facing elevation shows the view to the street, and the limited glazing to minimise the effects of Mildura's extreme climactic variations **(opposite page)**.