

# Lewisham House



James and Priscilla moved into their freestanding Federation house in Lewisham on Australia Day in 2009. Over the following year, they set about making a range of improvements to the property to address environmental issues. In the middle of a drought at the time, water tanks were the first cab off the rank, followed by a permaculture garden.

Insulation in the roof was a key improvement, along with solar panels and a super-efficient gas hot water system. Thankfully the front of the house was in a great state to start with, so major works were not required. But in the usual fashion, the back of the house was a collection of poorly-constructed rooms and DIY extensions, so that had to go...

In July 2011, James took six months off work to do the 'owner-builder' thing. Playing a full-time role as project manager and builder's labourer, he worked alongside John Watson, an experienced builder.

While the extension only added 2-4m to the length of the house, the starting point was to demolish the back half of the house, and rebuild from scratch. (James & Priscilla lived in the sealed-off front half of the house during the renovation.)

The renovation had a strong environmental focus, mixing traditional wood frame construction with more unusual elements, including a rammed earth wall and reverse brick veneer wall. The house was also designed to be extremely low VOC throughout, from the building materials to finishes.

There is no airconditioning in the house, and it's not needed. A pre-existing ducted underfloor gas heating system has been extended to the full house, which keeps things warm in winter. Via the combination of thermal mass, extensive insulation and double-glazing, heating bills should be reasonable.

Chickens now live happily in the back garden, and the next step is to construct a native garden paradise at the back.

Visit the blog for our house, for more on sustainability:  
[lewishamhouse.wordpress.com](http://lewishamhouse.wordpress.com)

## Key details: original house

<b>Water saving</b>	<p>3 x Colorbond water tanks (5100L, 3100L &amp; 1500L), installed by Tight Spot Tanks (<a href="http://www.tightspottanks.com.au">www.tightspottanks.com.au</a>)</p> <p>Tanks connected by 25mm pipes to form a single system</p> <p>Grundfos Highlift Automatic sump (in-tank) pump</p> <p>Manual switch-over to mains water</p> <p>2 x charged lines connected to downpipes, with first flush diverters and leaf guards</p> <p>Smartflo gutters installed (<a href="http://www.smartflo.com.au">www.smartflo.com.au</a>)</p> <p>Connected to one toilet and washing machine</p> <p>Received rebates from Marrickville Council, Sydney Water and Australian Government</p> <p>2 x Galcon 9001 irrigation timers</p> <p>Irrigation system, 19mm polypipe feeding side and front gardens</p> <p>Irrigation spikes providing sub-surface water to garden</p> <p>New water efficient shower head</p>
<b>Garden</b>	<p>Permaculture garden (<a href="http://en.wikipedia.org/wiki/Permaculture">en.wikipedia.org/wiki/Permaculture</a>)</p> <p>Gardening on nature strip</p> <p>6 x Colorbond raised garden beds (purchased from <a href="http://www.tankworks.com.au">www.tankworks.com.au</a>)</p> <p>Native stingless bees (obtained from <a href="http://www.sugarbag.net">www.sugarbag.net</a>)</p> <p>Backyard chickens</p> <p>2 x Aerobin compost bins (<a href="http://www.aerobin400.com">www.aerobin400.com</a>)</p> <p>1 x worm farm</p> <p>50L BioActive Micro Compost Tea Brewer (obtained from <a href="http://www.groundgrocer.com">www.groundgrocer.com</a>)</p> <p>Soil testing done of garden (testing by <a href="http://www.swep.com.au">www.swep.com.au</a>)</p>

<b>Solar power</b>	<p>1.6kW PV solar system</p> <p>8 x 205W Pluto Suntech solar modules</p> <p>SMA Sunny Boy 1700 inverter (max 1.85kW)</p> <p>System installed by Green Solar Group (<a href="http://www.greensolargroup.com">www.greensolargroup.com</a>)</p> <p>Gross feed-in tariff</p> <p>New bi-directional meter installed by Energy Australia</p> <p>Theoretical pay-back period of 6 years (too early to tell actual figures)</p>
<b>Energy saving</b>	<p>Efergy wireless energy monitor (provided as part of solar panel solution)</p> <p>New 5-star efficient Electrolux fridge</p>
<b>Insulation</b>	<p>Autex's GreenStuf R3.5 bulk insulation installed as part of government programme (<a href="http://www.autexindustries.com">www.autexindustries.com</a>)</p> <p>AIR-CELL Retroshield attached under roof (<a href="http://www.air-cell.com.au">www.air-cell.com.au</a>)</p>
<b>Hot water</b>	<p>New continuous gas hot water sytem, 6.9 star Bosch 26eco+ (<a href="http://www.bosch.com.au/content/language1/html/6179.htm">www.bosch.com.au/content/language1/html/6179.htm</a>)</p>

### Key details: extension

<b>Construction techniques</b>	<p>Majority: wood-frame studwork walls, clad with Weathertex Primelock Federation Smooth weatherboards</p> <p>Use of treated pine minimized wherever practical</p> <p>Reverse brick veneer wall, for thermal mass (<a href="http://lewishamhouse.wordpress.com/2012/02/25/contructing-a-reverse-brick-veneer-wall">lewishamhouse.wordpress.com/2012/02/25/contructing-a-reverse-brick-veneer-wall</a>)</p> <p>Bricks recycled from demolition of original extension</p> <p>300mm thick rammed earth wall for thermal mass, constructed by Rammed Earth Solutions (<a href="http://www.rammedearthsolutions.com.au">www.rammedearthsolutions.com.au</a>)</p> <p>Brick piers, with raised wooden floors (150mm kauri boards)</p> <p>Modwood decking (<a href="http://www.modwood.com.au">www.modwood.com.au</a>)</p>
<b>Windows and doors</b>	<p>Western red cedar custom windows and doors, with double-glazing (moving glass) or triple-glazing (fixed glass), created by JM Joinery (<a href="http://www.jmjoinery.com.au">www.jmjoinery.com.au</a>)</p>

	3 x Velux VSE 780x1400 electric opening skylights
<b>Lighting</b>	<p>Superlight ECO12 4x3W LED recessed downlights throughout</p> <p>Superlight GEN 3 LED Turbostrip in kitchen</p> <p>Eco-friendly feature pendant light by David Trubridge (<a href="http://www.davidtrubridge.com">www.davidtrubridge.com</a>)</p>
<b>Insulation</b>	<p>All insulation substantially in excess of BASIX requirements.</p> <p><b>Roof and ceiling:</b> 9mm Polyair Multi R4.0 Greenstuf batts</p> <p><b>Walls:</b> R2.5 Greenstuf wall batts (fitted into stud walls) R1.6 Air-cell Permishield wall wrap (underneath cladding)</p> <p><b>Underfloor:</b> R1.5 Greenstuf underfloor insulation rolls</p>
<b>Paint and finishes</b>	<p>Haymes Ultra Premium low-VOC paint used throughout (including kitchen cupboards)</p> <p>Tung oil floor finish (Feast Watson Floorseal)</p> <p>Joinery treated with Organoil danish oil (interior) and Feast Watson Woodshield (external)</p> <p>Interior of kitchen cupboards and bookshelves shellacked</p>
<b>Kitchen</b>	<p>Kitchen constructed by local craftsmen Ian Thomson &amp; Francis Boutry (<a href="http://www.ianthomson.com.au">www.ianthomson.com.au</a>)</p> <p>Solid kauri benchtops (untreated)</p> <p>Kitchen carcasses made of Wisa birch eco-ply (sourced from <a href="http://www.bruynzeel.com.au">www.bruynzeel.com.au</a>)</p> <p>Cabinet doors made of solid kauri with ply inserts</p> <p>Energy and water efficient Miele dishwasher</p> <p>Floor duct under fridge, with heat ducted into cool cupboard (see below)</p> <p>Cool cupboard constructed in walk-in pantry, with underfloor duct to draw in cool air, and chimney through roof; system driven by heat from fridge</p>