

The Spring Hill “Enviro-Cottage” Project

SPRING HILL
ENVIRO
COTTAGE

Delivered by



Designed by

Steendijk

Built by

E. W. Ford
Master Builder

The Spring Hill “Enviro-Cottage” Project has revitalised a traditional Queensland worker’s cottage in Spring Hill, Brisbane. The objective has been to turn one of Brisbane’s oldest traditional residential properties into a showcase of sustainable development and environmentally friendly living. The project has delivered the latest available design methods and technologies to ensure the highest possible efficiencies of water, energy, heating and lighting. The project has sympathetically restored the original worker’s cottage and added a cutting edge new “solar pod” extension to the rear.



Design Considerations

Architect Brian Steendyk

Heating and Cooling – Passive solar design ensures heating, lighting and cooling utilises the sun’s heat and light, both directly and indirectly. The building itself traps and stores the sun’s heat to warm the “Enviro-Cottage” in winter, as well as stops the sun from heating the house and encouraging cooling air movement in summer.

Orientation – Rear “solar pod” and internal courtyard used rather than a simple lift and extend, opening the main living area to the northern aspect. This also minimises the building depth to encourage cooling summer breezes. Kitchen/dining double height space with glass ceiling, allows northern light to penetrate rear living spaces in winter. External sun louvres provide shading of thermal mass in summer. Western aspects protected by use of fencing, masonry and cortens steel sheeting.

Thermal Mass – Polished concrete floors in living room, kitchen/dining room and block walls provide thermal mass to collect and redistribute heat during winter and extract heat from rooms in summer.

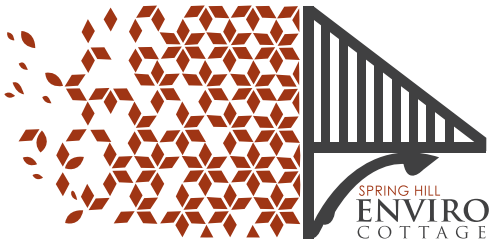
Ventilation – Louvres strategically located, draw natural cross ventilation and expel warm air in summer. Doors and windows placed on different sides of each room, so cooling breezes will blow through. Ceiling fans included to help

circulate air. Whirlybird is re-used to extract roof space heat. Rear of original house and front of new “solar pod” can be completely opened through use of sliding stackable doors. Laundry/garage space allows cross ventilation through open timber battens to aid clothes drying. Double height dining area acts as a thermal chimney, drawing out hot air generated in the kitchen.

Windows – Thermal low-e glass used in all new windows and glass doors, ensuring less trapped winter heat is lost during evenings. North facing windows of “solar pod” are large permitting solar access in winter, but large eaves and cortens steel screens provide shade in summer. Minimal use of south facing windows. East and west facing windows are well shaded by front verandah, cortens screening and screen fins.

Shading – Shading is most effective when it stops heat before it hits the glass windows and doors. Metal screening and large eaves provide shading for large areas of glass and thermal mass. External sun louvres over dining room glass ceiling provide sun control – permitting sun penetration in winter and shading the glass in summer. Bamboo provides additional privacy and western sun protection.

Insulation – High performance Higgins insulation included in wall cavities, roof and ceilings. Light coloured insulating roof paint and other light coloured external wall paint designed to reflect heat, to help keep the house cool.



External Construction Materials

- ❖ G.James Glass & Aluminium supplied and installed dark commercial bronze anodised aluminium windows and doors glazed with Solect (Low-E laminated) green glass.
- ❖ Aneeta frameless windows provide excellent ventilation options.
- ❖ Breezway louvres encourage cross ventilation, and with aluminium blades, added sun protection and privacy options.
- ❖ Other areas of new construction have used Eco-Ply, cortens steel solar screens and recycled Australian hardwoods from the Alligator River Bridge from The Salvage Company.
- ❖ Rockcote EcoStyle, zero VOC, people-safe paint applied by The Natural Painting People on external walls.
- ❖ Energy Star insulating roof paint from Astec Paints used on all tin roofs.
- ❖ Ceilings insulated with Higgins Earthwool CarbonZero, Formaldehyde free ceiling rolls R3.0 and Higgins Earthwool 75mm thick wall batts R1.5.
- ❖ Long-life, non-toxic termite protection used from GranitGard.
- ❖ Ozone EcoPool delivered by Majestic Pools & Landscapes utilising tank water refills and backwash return filter, and variable speed pump from Astral Pools / Hurlcon.
- ❖ Welded security screens from Prowler Proof.
- ❖ Edible garden in front yard designed by Northey Street City Farm, drought tolerant Empire Zoysia grass from Arcadia Turf and bamboo garden from Bamboo Down Under.



Internal Construction Materials

- ❖ USG Powerscape Health used as an alternate to plasterboard. Recycled content 95%, low embodied energy.
- ❖ Concrete slab polished by McGinn Concrete to provide no/low maintenance flooring and thermal mass function.
- ❖ The Salvage Company supplied reclaimed Australian hardwoods for floors, wall linings, ceilings, kitchen cupboards, bedside tables and wardrobe fittings.
- ❖ Original "Enviro-Cottage" floorboards left in place and restored by Wildwood Timber Floors using non toxic Whittle Wax.
- ❖ Rockcote EcoStyle, zero VOC, people-safe paint used by The Natural Painting People throughout internal areas.
- ❖ Block walls used at rear of dining room, kitchen and lounge room to supplement thermal mass effect of concrete slab.
- ❖ Environmentally sensitive Kitchen and Bathroom Joinery using E0 and recycled timber materials provided from Greener Kitchens + Bathrooms.
- ❖ Retractable Flyscreens in cottage bedrooms from Fly Free.
- ❖ Multi-functional, space saving furniture design used in front study/bedroom in the form of a foldaway wall bed from Bed Space Design.
- ❖ Solar clothes line in garage from Versaline.

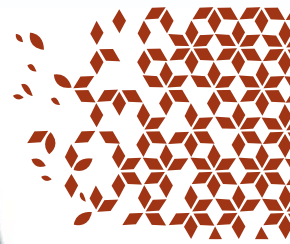
“Enviro-Cottage” Water System

- ❖ Tanks – 23,000 litre Atlantis underground matrix rainwater tank, 4,000 litre under-garden overflow tank, 4,000 litre greywater output tank and 2,000 litre greywater input tank.
- ❖ The “Enviro-Cottage” is plumbed to deliver recycled greywater for toilet flushing, laundry and garden use. The NovaGrey system from Water Gurus produces grade A+ output water for reuse.
- ❖ The filtered rainwater is used for showers, basins and kitchen use, and as a backup source if there is no recycled greywater available.
- ❖ The plumbing throughout has used cross-linked polyethylene pipe manufactured in Australia and supplied by Auspex.
- ❖ Blue Mountain Mesh gutter guards are used from Rain Harvesting.
- ❖ Water pumping equipment includes two Davey RainBanks, installed in series, to provide the most appropriate grade of water available for each use.
- ❖ The harvested rainwater is passed through a Davey filtering system and then a Steriflo UV disinfection system to ensure the water is safe to drink.
- ❖ High star rated and high quality Grohe taps and Villeroy & Boch sanitary-ware from Argent selected for low maintenance and water efficiency purposes.
- ❖ Slade Brothers Plumbing has provided all plumbing services to the project to ensure the “Enviro-Cottage” is as water self-sufficient as possible.



“Enviro-Cottage” Energy System

- ❖ 3kW PV system from eco-Kinetics installed on roof of solar pod, using a Sunny BOY 4000TL inverter.
- ❖ Energy consumption controlled through use of:
 - Passive solar design and no requirement for mechanical heating and cooling, only ceiling fans from Universal Fans;
 - SolarLord evacuated glass tube solar hot water system with 450 litre storage tank in laundry area;
 - Lighting using Philips LEDs – total wattage of full lighting system about 900 watts;
 - Miele kitchen and laundry products selected for reliability, longer life and high energy and water star ratings.
 - Energy efficient Sony TV which turns itself off.
- ❖ Electra Technologies has provided all electrical design and installation services to the project to ensure the “Enviro-Cottage” is as energy self-sufficient as possible.



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www.envirocottage.com.au

Architecture

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Fly Screens and Security Screens

Prowler Proof
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Landscaping & Plants – Edible Garden

Northey Street City Farm
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Retractable Fly Screens

Fly Free Retractable Insect Screens
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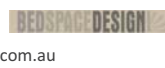
Audio Visual / Media Equipment

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Foldaway Wall Bed

Bed Space Design
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Lawn

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E troy@arcadiaturf.com



Solar Clothes Dryer

Versaline Clotheslines
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E info@versaline.com.au



Bamboo

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Furniture

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Lighting

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E lightingsalesdesk@philips.com



Solar Hot Water

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Bathware and Tapware

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E showroom@brettss.com.au



Garage Door

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Bathware and Tapware

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Building Services

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E brisbane@universalfans.com.au



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E info@rainharvesting.com.au



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Electrical Services

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Insulating Roof Paint

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E mail@astecpaints.com.au



External Louvre System

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W vental.com.au
E michael@doveindustry.com.au



Kitchen

Greener Kitchens + Bathrooms
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W greenerkitchens.com.au
E druce@greenerkitchens.com.au



Floor Sanding and Polishing

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W wildwoodflooring.com.au
E sales@wildwoodflooring.com.au



Kitchen and Laundry Appliances

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Floor Sanding and Polishing

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E info@whittlewaxes.com.au



Kitchen and Laundry Appliances

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