

# John Pearman House Features

## Design Influences

Frank Lloyd Wright

Walter Burley Griffin

Japanese architecture

Georgian architecture (front)

Natural environment

Buddhist philosophy

Wheelchair access

Project Architect: David Baggs

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## THE FRONT

The house facing the street is wide, with a two-car garage incorporated into the design, and two rooms deep. The front has a Georgian look, but with the standard twelve paned windows greatly enlarged to look like Japanese shoji screens.

## Solar Power

The roof is flat with sloping dark-tiled eaves over the front windows that are in fact solar panels. They have a matte finish to reduce annoying glare for neighbours. The house faces solar north and the eaves are calculated to prevent summer sun from striking the windows but allow winter sun to penetrate and warm the concrete floors (passive solar heating). John generates more electricity than he uses and receives a small income from selling his solar energy to the national grid.



The central section at the front, the loggia, has glass walls and a sloping roof, part of which will also comprise electricity generating tiles. (If installed on office tower walls these tiles could generate all the electricity needed by the city).

In the future solar panels that make hydrogen for heating and cooking will also be installed (not yet commercially available).

PRODUCTS: Solar panels by Cannon. Energy efficient in partially shaded areas.

Glass electricity tiles by Sustainable Technologies in Queenbeyan.

## Fire Hazard Reduction, Security and Privacy

John has installed a water tank on the roof, a small diesel pump and attached a sprinkler system that covers the roof and walls. The system cost less than \$2,000 and John would like to see such systems (an independent water source, motor and sprinkler system on the roof) become mandatory for all houses next to bush.

Downstairs the verandah windows are covered in black steel mesh security screens that keep out insects but don't detract from the view. They open only from the inside allowing human escape but repelling intruders. The mesh is fine enough to prevent cinders from blowing into the house.

All other windows have metal roller blinds attached, operated by remote control. The blinds can be lowered into a privacy position, which leaves spaces between the slats. From the outside the shutters look closed, but from the inside a considerable amount of light is admitted, as well as screened visibility. The house can safely be left unattended with the blinds in this position, allowing the air to circulate and preventing the buildup of mould.

When fully closed the blinds block out light, prevent the loss of internal heat, and stop fires from getting in.

PRODUCTS: [Security screens](#) by Centra Security (Penshurst)  
[Roller blinds](#) from Blockout Shutters (Sydney)

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## **UNDER THE HOUSE**

Ideally the house would be built into the side of a hill, obviating the need for extensive foundation works. A hill not being readily available, the house is built over a sandstone rock platform below road level and rests on substantial arch-shape smooth concrete pillars. The pillar level is designed as sheltered, outdoor living space with direct access to the bushland valley below, combined with utility storage. A sandstone table and benches share the views and breezes with four HDPE rainwater tanks (also part of the fire hazard reduction), water pipes and the composting loo works. The air is cool and the space inviting in hot times.

### **HDPE water pipes**

Water pipes are made from high density poly-ethylene (HDPE) as used in the original Olympic Park buildings. Currently more expensive than poly-vinyl chloride (PVC) but price will lower as it becomes more widely used. PVC is banned in many European countries and Australia is expected to eventually follow suit.

Why ban PVC? Ask any Greenpeace activist. PVC lets off carcinogenic fumes throughout its life and is lethal when exposed to high temperatures. People in office fires die from the hydrochloric gas emissions released from PVC way before smoke or flames get to them.

PRODUCT: [HDPE pipes and tanks](#) check with your plumber

### **Composting Toilet**

The toilet operates on a smell free aerobic system (no flushing required) and is designed to convert the kitchen and body waste produced by up to four humans into clean soil. It operates in much the same way as a garden composting system, with a constant supply of fresh air helping to maintain the decomposing matter at 70°C. There are a few rules to ensure optimal operation: antibiotics play havoc with the system by killing off the microbes and John has had a regular toilet installed for visitors, to avoid the bother of having to restart the decomposition process.

The sealed decomposition chamber located under the house is easily accessed.

PRODUCT: [Composting toilet](#) by Clivus Multrum (based on original Swedish model)

### **Regenerated Bush Backyard**

Six years ago the back yard was an impenetrable mess of introduced trees and vines. The view was of privets and lantana draped in honeysuckle and jasmine.

The view today is of tall Turpentines, Peppermints and Angophoras and a renegade giant Port Jackson fig, with an understorey of mixed ferns and shrubs. In sunlit patches eastern swamp wallabies are often seen grazing on the forbs and grasses. The number and variety of birds and reptiles continues to grow as the weeds are slowly pushed back to the creek edge. John employs an experienced regenerator one day a fortnight to restore the bush.

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## **MAIN HOUSE**

The rooms are not particularly large but the sense of spaciousness is enhanced by three metre ceilings. Windows have been positioned to take advantage of natural air flows and sunlight. The coastal northeasterly breeze enters the dining room and runs through the house

on summer evenings. Concrete floors have been left bare to capture and release sunlight in winter. Fanlights above the bedroom doors allow light into the corridor when the doors are shut.

### **Skylights**

The south facing entrance verandah (sunrise loggia) is brightened with three clear perspex pyramid shaped skylights fitted with louvre slats that have been angled with laser precision to allow winter sun penetration and to block mid-summer rays. The perspex is designed to withstand hail to the size of golf balls. A fourth skylight offers a clear view of the sky above.

PRODUCT: Skylights and lenses by Skydome. Lenses also available for flat skylights.



### **Walls**

Interior walls are made of fly-ash, a waste byproduct of coal power stations. It is a pale grey, highly porous clay substance that can be substituted for crushed sand to make house bricks that are stronger and lighter than Bessablocks. The finish is soft and smooth, if a little dusty.

Exterior walls are made with Bessablocks. John's argument against Hebel bricks is their poor conductivity causes stress cracks over time.

PRODUCT: Fly-ash bricks by Michael Durack, architect and block maker, Qld.

**Bookshelves:** West Australian Jarrah remilled after being burnt in a fire in the Perth marshalling yards (where they were roof beams, painted white).

**Dining room setting:** Kwila (PNG rainforest) timber, designed by Tony Kenway who spent six days in a Zen monastery learning correct sitting before designing the chairs. Kwila is very slow growing, taking hundreds of years to reach mature size. Twenty years ago Japan cut 42,000 hectares in Sarawak for cardboard boxes.

**Door handles:** The door handles are stylishly designed to be user friendly for arthritis sufferers. They should be commonly fitted to aged care facilities, but were surprisingly difficult to find.

PRODUCT: Door handles by Philip Parasi (Australian branch)

### **Kitchen**

**Stone shelf:** a traditional English method for keeping food cool or to slowly ripen fruit was to place it on a stone shelf in the pantry. The system works well in Australia too.

**Breathing cupboards:** Ventilation is necessary to prevent mould from getting into food. John's kitchen cupboards have heavy mesh fronts to allow them to breathe.

### **Two Moons Bathroom**

The name and design relate to a Buddhist teaching. A large round mirror represents the moon. The round window next to it, looking through to the bush, is John's green moon.

## **Greywater recycling**

The system approved by the Dept of Health for recycling greywater (the water used in washing bodies, clothes, dishes, etc) cost \$65,000.00 which John felt was a trifle excessive. The Department is very concerned about health issues although it didn't employ anyone qualified to assess the system John proposed. While they were talking health issues, a cracked sewer pipe next door to John was leaking raw sewage without causing concern.

The bathroom and laundry are combined in one room to make greywater collection easier should it become economically feasible.

## **Bedroom**

**Mattress** made of environmentally unfriendly (except that it is guaranteed to last forever) polyviscose. First designed by NASA for astronauts, it is soft to take your shape but firm to prevent the spine from bowing.

PRODUCT: Mattress by Tempur (Scandinavian) available at large bedding shops.

**Chairs** Sitting posture in normal chairs leads to lower back pain, varicose veins and worse. The best sitting position is akin to riding a horse (or motorbike), with the legs splayed and half straightened (ie perching rather than "C" shaped position). Inspired by USA architect Galen Crantz's book on The Chair, John uses a large exercise ball or a saddle chair.

PRODUCT:

Saddle chair for working at a computer designed by Australian physiotherapist Bambach.

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## **ROOF LEVEL**

Access to the roof is via a metal staircase from the back of the garage. The open air room over the garage is a favourite place for breakfast on sunny winter mornings.

## **Gutters**

John has installed roof gutters designed to reduce if not eliminate the need to clean them out. The main square-bottomed flow channel is covered by a shallow concave channel that has perforated half-spheres every thirty centimetres or so. The idea is that breezes blow away any small leaves that land on the cover, and the rain filters through the perforations to the flow channel below. There are drawbacks. In heavy downpours the water doesn't pass into the flow channel quickly enough and there are overflows. And if there is no wind leaves and dust build up on the cover.

PRODUCT: Self cleaning gutters by Enviroflow

## **Earth roof**

Soil, like water, lags in responding to changes in air temperature. In May it is still warm, in September it is cold. This lag provides excellent thermal insulation for the rooms below. Earth roofs also provide great sound insulation against overhead planes and noisy neighbours' parties.

Half of John's roof surface is covered in a metre depth of soil. The concrete surface was carefully shaped to allow excess water to drain off. It was then "cured" for three months to make it impermeable, and finally coated in a layer of waterproofing membrane.

John is not a cook so he is using a mixture of 75% sand: 25% clay to grow a variety of native heath plants and finds the soil is too nutrient poor to attract weeds. Simply by adding a rich organic component to the soil he could grow vegetables and small fruit trees.

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To build using sustainable materials and systems adds around 15% to the construction costs. Persuade the government to forego its 10% GST, take off 5% by bulk purchasing, and voila.