

Wildlife warrior's dream becomes reality

While this was by no means an owner builder project, it is encouraging to see alternative materials, like straw bale and rammed earth, being used successfully in a commercial environment.

BY LYNDA WILSON

'Wildlife, habitat and people all depend on each other – a healthy environment requires an investment in humanity and the support of a caring global community. This is what nature intended.' Steve Irwin's principles are evident in the Australia Zoo Wildlife Warriors Worldwide Australian

Wildlife Hospital (AWH) in Beerwah Qld, inspired by the memory of Lyn Irwin (Steve's mum).

AWH began operating in March 2004 – working from a converted avocado packing shed, the ultimate example of recycling. There were only three staff members – vet Jon Hanger, manager and vet nurse Gail Gipp, and vet nurse Vicky Carlsson. Until quite recently, Gail used to sleep on site to care for critical patients, a role that has now been taken over by night nurses.

Specialising in the care of koalas and sea turtles, the hospital also receives all wildlife species, from as far as Mackay in North Queensland to Lismore in NSW. As the need for their services grew, it became obvious that the building was no longer suitable for the 20 full-time staff and 80 volunteers, who were dealing with over 5000 animals a year.

Dreaming big

With a personal donation of \$1 million from Steve Irwin, plans for a large state-of-the-art environmentally friendly hospital began. The Australian Government generously contributed

'My job, my mission, the reason I've been put on to this planet, is to save wildlife.'

Steve Irwin

\$2.5 million, with the rest of the costs met by a small number of sponsors, including major sponsor, Australia Zoo, and the results of fundraising efforts.

The first sod was turned in October 2007. Prolonged heavy rainfall meant that work didn't really progress until February 2008. By September, the building was

ready for use – thanks largely to the dedicated work of a large number of people and businesses that supplied or donated products and services. The official opening was held on 15th November 2008, Steve Irwin Day.

At 1300 square metres, it is one of the largest wildlife hospitals in the world and possibly the biggest straw bale building in Australia. Large picture windows feature in the internal viewing areas, to allow visitors to get 'close to the action.'

The 'brains trust' for the design of the building consisted of Gail, Jon, Wildlife Warriors' first CEO Michael Hornby and architect Andrew Webb of WD Architects. In line with their conservation ethos, the hospital was designed to have minimal environmental impact and to make maximum use of passive solar principles: shading in summer, warmth from the sun in winter, maximum natural daylight and cooling breezes.

Natural choices

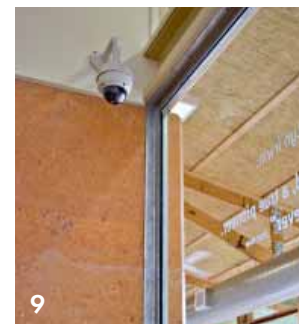
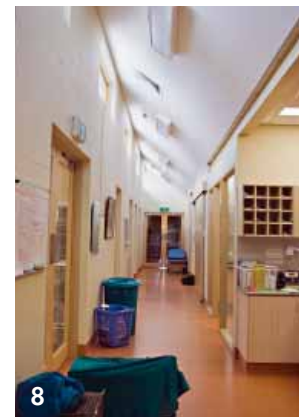
A steel shed design had been initially considered, but Gail had been keen to promote sustainability. Andrew was brought on board to transform the functional needs into an exemplar of sustainable design. Straw bale and earth are two of the most sustainable building materials when coupled with good climate responsive (and function responsive) design. Why not start with the best and only compromise when you have to?

Resource and materials usage was kept low, with as much as possible sourced locally. Natural, low-embodied energy, low-toxicity, renewable materials were the first choice. *ecospecifier* online knowledge base was used extensively to evaluate product choices.

Budget affected a few of the decisions that were made, but without abandoning the basic principles: the balance of rammed earth vs. concrete block and straw bale vs. sandwich panel, the use of plasterboard rather than *Ortech Durra Panel* or fibre cement, and the level of automation including active systems that could be incorporated.

Straw bales were chosen for the external walls for a number of reasons: excellent insulation properties, no glues or chemicals, and they are not highly processed. They were sourced from Robert Blanche in Nanango and the walls were built by Frank Thomas of Yesterday-Today-Tomorrow Strawbale Constructions.





1. Functional design and layout.
2. Comfortable staff area.
3. Animal themed entry doors.
4. Solomit strawboard ceilings
5. Easy access to the entrance.
6. Public viewing of nursery area.
7. Shaded visitors entrance.
8. Clerestory louvred windows.
9. Internal rammed earth walls.



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- 10. Rammed earth 'heart' – the theatre has large viewing windows.
- 11. 'A true pioneer' – dedicated to Lyn Irwin.
- 12. Louvred windows along with ceiling fans maximise the natural ventilation.
- 13. Quotations are etched onto the viewing windows, providing additional inspiration.
- 14. An outdoor shaded seating area is popular with visitors and conference attendees.
- 15. The outdoor koala enclosures are only a short distance from the main building.
- 16. Coved vinyl skirtings in the operating theatre allow for easy cleaning of floors.

Thermal mass has been incorporated internally with the use of rammed earth and concrete block walls, as well as a 25 percent fly ash concrete slab.

Fly ash is a reclaimed material from power station chimneys. Many regard it as 'filler' although there is compelling evidence that it makes a higher quality concrete, as well as having a lower embodied energy than pure Portland cement. See 'Making Better Concrete: Guidelines to Using Fly Ash for Higher Quality, Eco-Friendly Structures' by Bruce King (ISBN 9780976491101) for more information.

As much as 87 percent of construction waste was recovered for recycling each month. This was sorted into bins, and then collected and processed by Veolia Environmental Services.

Ongoing benefits

The rammed earth 'heart' of the building (completed by John Oliver of Rammed Earth Constructions, based in nearby Maleny) creates the walls of the operating theatre and nursery, areas where it is especially important to maintain a constant temperature.

Plasticure admixture and *Earth Binder* acrylic sealer from Tech-Dry were used with the rammed earth walls. Medical areas that require frequent floor cleaning also have coved vinyl skirtings, using *Primo Premium* and *Optima* from Tarkett (very low volatile organic compounds - VOC) and laid down with no-VOC water based adhesives.

Due to the high traffic and usage requirements of the building, three coats of lime render, made with high quality slaked lime putty (from Lime Industries in Western Australia), have been applied to the straw bale walls. This provided continuity in materials; when more was needed they could be sure of getting the same quality (manufactured to Australian Standards), as well as fitting into a conventional building contract schedule because it cures predictably.

Apart from the straw bale walls themselves, *Solomit* strawboard panels, ceiling tiles, bulk insulation and reflective sarking add to the insulation properties. Fibreglass batt ceiling insulation of R3.5 has been applied to most areas. *Ecohousing* roof panels (R4.2) and wall panels (R3.5) have been used for the wards and food preparation areas on the north side.

Low VOC paints, flooring, cabinetry and adhesives were chosen, and materials, fixtures and finishes were selected and detailed for longevity. For example: *Wattyl Interior Design i.d.*, *Porter's Ultra Flat Acrylic* and *All Purpose Clear Sealer*, *Porter's Mineral Silicate* on straw bale walls; *Intergrain UltraDeck* on external timber joinery; *Ecowoodoil* on external structural timber; MAPEI flooring adhesives; E1 and E0 graded cabinetry boards (zero emissions).

No timber from rainforests or other sensitive ecosystems was used; sourcing was from sustainable plantation, engineered structural timber, Forest Stewardship Council certified, Community Based Free Trade certified and local farm forestry. For example: *Finlayson's Envirowood* (plantation *Araucaria*) windows and doors; FSC-certified solid core doors; plantation pine trusses.

Solid timber doors and windows were chosen for their energy-efficiency and low-embodied energy credentials. They have been neatly fitted into smooth, rounded straw bale wall openings. Frank Thomas says there is no 'secret' to this finish: 'It is basically just years of experience, high quality rendering tools, good work and patience to get it to this near perfect state. Clearly a smooth and straight finish like this is more time, labour and material intensive but it can be done with skill, care and patience.'

Summer performance has been great. There is extensive use of opening windows for natural ventilation. The varied levels of temperature control required in different rooms, and the sensitivity of many rooms to temperature, meant that airconditioning was required to augment the natural ventilation.

The building employs 'mixed-mode' ventilation: a combination of operable windows, ceiling fans and airconditioning invertors to give flexibility, maximise natural ventilation use but still provide a high level of temperature control as required for the various functions (mammal, bird, reptile, nursery, infectious diseases, operating theatres, public and conference areas).

Energy efficient automated lighting (controlled by a Clipsal C-Bus automation system) means that lights



From top: Water tanks capture rainfall from the large roof area; visitors reception; solid timber posts and pergola outdoors.



are not left on when there is no-one in the room, saving huge amounts of electricity each year. Efficient natural lighting of major use areas reduces the need for electric lighting. Energy efficient T5 fluorescent lamps have been used throughout except for surgical and examination lights.

Due to budget constraints, solar power has not yet been incorporated but it is something that will be pursued when funds become available.

Two 90,000-litre rain water tanks collect 1,500 litres of water for every 1mm that falls, and is used to flush some of the toilets but mostly for wash-down of enclosures and site irrigation. Water efficient plumbing fixtures and fittings have also been incorporated, such as 5 star Dorf taps, 3 star Dorf shower heads, and Caroma Smartflush toilets.

Exclusive The Owner Builder Readers Promotion – WIN a Wildlife Warrior gift pack

Call Australia Zoo Wildlife Warriors on 07 5436 2026 to find out how to become a Wildlife Warrior and help save wildlife. All new membership enquiries made by 30 September 2009 that mention the codeword WILDLIFE will go into the draw to WIN a Wildlife Warrior gift pack. The pack includes a copy of the beautifully compelling book 'Koalas: Zen in Fur' by Joanne Ehrich, and a one year subscription to 'Warrior Times Worldwide' – the official and exclusive newsletter for Australia Zoo Wildlife Warriors members.

For more information about Australia Zoo Wildlife Warriors and the Australian Wildlife Hospital, visit

www.wildlifewarriors.org.au

Fulfilling a promise

This is a modern and contemporary medical facility that has been designed with the health and safety of the animals, occupants and the planet in mind. It is continuing the dream started by Steve Irwin to provide the 'biggest and best' wildlife hospital facilities, and has been designed in such a way that it will meet their ever-expanding needs for years to come. It is also providing study and research opportunities for a new generation of true Wildlife Warriors.

'Save one, save the species.' ■



• **Wildcare Australia**
Emergencies 07 5527 2444

(24/7), www.wildcare.org.au

- **Australia Zoo**
07 5436 2000, www.australiazoo.com.au
- **WD Architects**
07 5485 2720, www.wdarchitects.com.au
- **Yesterday-Today-Tomorrow Strawbale Construction**
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- **Rammed Earth Constructions**
07 5494 2154,
www.rammedearthconstructions.com.au
- **Tech-Dry**
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- **Major construction sponsors**
WD Architects, Readymix Concrete, Orrcon Steel, Caroma, The Eaton Electrical Group, Walton Construction Queensland, Finlayson's Envirowood, Forbo Floorcoverings.

Australia Zoo Wildlife Warriors Worldwide Australian Wildlife Hospital

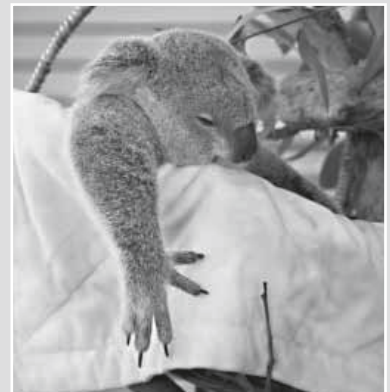
www.wildlifewarriors.org.au

24/7 Rescue Hotline
1300 369 652

The Australian Wildlife Hospital is the major project of the charity Australia Zoo Wildlife Warriors Worldwide. Australia Zoo donated the land on which the Hospital was built at no cost and provides major financial support of \$2 million a year.

There are seven vets at the AWH, which goes to show just how busy they have become (unfortunately). Over 350 local carers help with the rehabilitation of patients in their own homes. More than 80 volunteers work at the hospital, providing a regular commitment of anything from once a month to 2-3 times a week.

Wildcare Australia works closely with the Hospital providing training workshops for carers and volunteers.



How can you help?

- **Donate** online or by phone on 1800 334 350.
- **Tour** the Hospital – book through the Australia Zoo Tour Desk. 07 5436 2002.
- **Host** a conference at the Hospital Conference Centre. 07 5436 2097.
- **Business sponsorship** of a koala enclosure – \$5000/year. 07 5436 2097.
- **Donate** an item on the Hospital wish list. 07 5436 2097.