

THE ODD FROG

secluded studio accommodation

3 McFadyens Lane
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THE ODD FROG DESIGN OUTLINE

The Odd Frog Secluded Studios is an experiment in architecture and Eco-Tourism. It is an attempt to achieve a symbiosis between a tourism experience, an architectural methodology and nature conservation. Sustainability, minimisation of environmental impact, education, and the provision of a profound nature-based tourism experience are the focus of what The Odd Frog is trying to achieve.

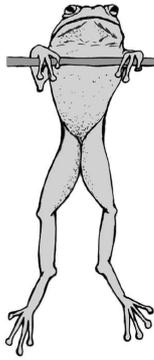
THE STUDIOS

The architectural expression of the Studios is intended to be uniquely Australian. It offers the idea of a simple shelter that integrates into the bush landscape - with open, light airy spaces - breezy, ventilated areas that blend into outdoor deck areas. Simple, natural materials, with references to the outback and farmlands - water tanks, wool sheds and old windmills.

The Studios intend to demonstrate that a quality standard of living can be achieved whilst minimising the detriment to the natural environment.

ORIENTATION & LAYOUT.

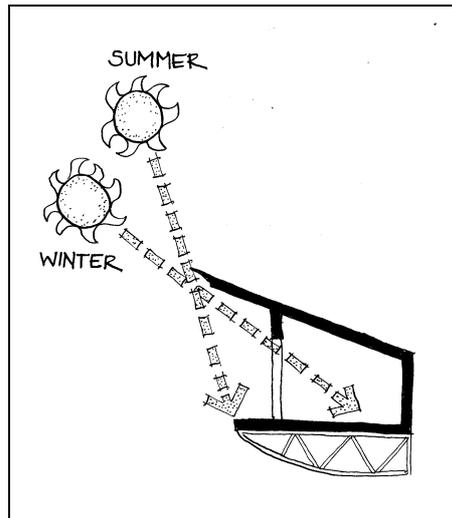
Each of our studios is oriented directly north. Windows and eaves are located and sized so that they optimise the north winter sun, yet are shaded when the sun is higher in summer. Windows to the West, East and South are minimised to reduce heat losses through the building fabric, and in the case of West facing windows, to reduce overheating in summer. They are located to promote cross ventilation through the building - small openings in the windward side of the building funnel breezes out the larger openings on the opposite side. The windows are typically louvred, which enables the user of the space to readily control the flows of air through the building, and unlike other window configurations allow a large surface area of window to be opened to air flow.



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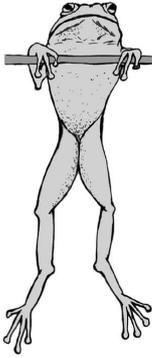
Correct north facing eaves can let in winter sun but block out summer sun.

CONSTRUCTION.

To 'step lightly' on the site, a lightweight style of construction had been adopted whereby the building steps off the site on slender columns. Spans of building members have been maximised in order to reduce the number of contact points with the ground – reducing site excavation. This lightweight style of construction demands heavy insulation, as there is little thermal mass provided by heavy masonry materials. Virtually the entire envelope of the building has been wrapped in a natural wool insulation (from sheep!) – not mineral wool or fibreglass. We have also utilised air cavities to trap air in pockets and slow the transmission of heat. This has been used in various ways including battening out the ceiling spaces with layer upon layer of insulation to create a sandwich of air cavities. The R-Values (a measure of the insulative value of a building envelope) achieved in the studio at least triple the Australian Building Code requirements.

MATERIALS.

All of the materials utilised in the studio construction have been carefully selected after consideration of a range of criteria. Assessment of a material's 'green-ness' is a difficult problem with few definitive answers as to what makes one material more



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environmentally responsible than others. The environmental criteria we examined were:

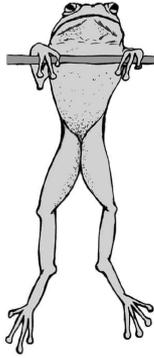
- The embodied energy of the material.
- Is the material a renewable resource?
- Is the material recyclable?
- The quantity and effect of wastes resulting from a material's manufacture.
- The life cycle of the material and the subsequent maintenance required.
- The inherent durability of the material.
- The effect of the material on human health and indoor air quality due to off-gassing.
- Handling of on-site wastage of the material ie. Offcuts.
- The effects of material transportation and disposal.

Every building material has both negative and positive attributes and it was a matter of balancing these along with other simpler considerations such as cost, availability, labour requirements, material workability and aesthetics. Eventually we decided upon a palette of materials that we feel captures the spirit of what we are trying to achieve here. The materials include radially sawn timber, Hoop-Pine plywood, recycled and 2nd grade native hardwoods, corrugated iron, local bush poles, cement stabilised rammed earth (pisé), lightweight steel tension cabling and natural wool.

DESIGN FOR DISASSEMBLY.

The buildings at The Odd Frog are all 'Designed for Disassembly'. The concept of 'Design for Disassembly' revolves around the idea of a building being assembled from a group of compatible, standardised components, that are connected together in such a way that they can be easily disconnected or disassembled. Our buildings rarely utilise glues or nails, rather they are bolted or screwed together, so at the end of a building's useful life, it can be simply un-screwed, or un-bolted to produce the same group of standardised materials and components for re-use or recycling elsewhere.

This approach increases the life-cycle of a building and its building materials, subsequently minimising the overall environmental impact of the building. Likewise, it facilitates simple building maintenance. If a component is damaged, it should be able to be easily 'disassembled' from the building and repaired or replaced with a new component.



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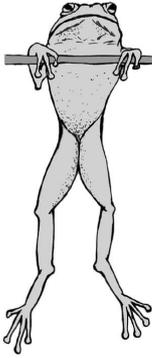
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Design for disassembly is far more environmentally sound than traditional construction methods such as brick veneer, stud and plasterboard construction. When this form of wall is ‘disassembled’, all that remains is a mostly un-useable pile of smashed bricks, crushed mortar, broken pine studs patched with plasterboard adhesive and protruding nails, and a mess of painted plasterboard rubble.



OPERATIONAL ENERGY.

The energy required to operate the studio is an important design consideration. The majority of lighting is designed so that it is suitable for use with compact fluorescent globes, or at worst – low voltage halogen lamps. These choice of globes have reduced wattages which minimise the energy demand of the building. Lighting is arranged with diversity and flexibility in mind, so that lighting can be directed where needed rather than blanketing a space with light. The buildings are also designed to minimise artificial lighting by optimising daylight. This is done by careful room



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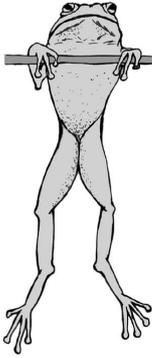
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sizing and positioning of windows. Entry keytags are used that turn the lights off when the studio is unoccupied. Light dimmers have been included so that a guest can reduce the light intensity to create a mood and also reduce wattage consumption. Most of our outdoor lighting is done with use of state of the art LED lamps. These lights use only 1.5 watts each, and have a lifespan of over 100,000 hours... a very long time.

The energy required to heat and cool the buildings at The Odd Frog was very important. Rarely is any form of mechanical cooling required due to the thickened insulation and the optimisation of cross ventilation. A small fan may be required on a few days of the year. Heating is performed using wood fueled combustion heaters. This style of heating has come under criticism of late due to the perceived impact on forests and air emissions. All timber that fuels these heaters has been derived from the 10 acre property from fallen branches, trees or felled pine trees (a weed in a native bush landscape). Likewise all kindling is collected on the property and all newspapers used to start the fires are gathered from past guests. (We refrain from providing firefighters...not only are they an environmental no-no, but most guests enjoy the age old challenge of lighting a fire). There is more than enough natural growth in the regeneration of the 10 acre block to sustain the fuel demand indefinitely. This is a far more sustainable heating approach than using non-renewable, fossil fuel resources such as coal-fired electricity and gas. There has been no creosote buildup inside the flues from using pine.

It is intended that ultimately all of the buildings at The Odd Frog will have their electricity supplied by on-site solar panels. The main residence has been designed to accommodate a grid interactive photovoltaic array that will supply much of the electricity needs of the site. Unfortunately the large capital outlay has prevented this being implemented yet. As a compromise, The Odd Frog subscribes to a Green Power scheme from our electricity supplier. This scheme enables the electricity consumer to choose to purchase power that has been generated by an approved renewable resource ie. Hydro, photovoltaic array, biomass, wind power etc. This doesn't mean that the actual 'green' power travels directly from the supplier down the transmission lines to the consumer. It simply means that the electricity provider has to purchase, on the subscriber's behalf, the amount of energy that the subscriber consumes from a renewable resource (not from a non-renewable, fossil fuel source). This has meant that power companies have had to source greater supplies of renewable energy, which will have a significant impact on issues such as The Greenhouse Effect. This voluntary consumer scheme unfortunately costs the end-user a cent or two more per kilowatt, however it is enabling power suppliers to invest in renewable energy infrastructure, that will ultimately bring down supply costs.



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All hot water used on the site is produced from solar hot water systems. We use two different systems: a Solarhart panel heater system - this incorporates the use of a water storage tank with an electric boost that runs on off-peak 'Green' Power, when solar gain is low in winter; and a Quantum solar heat pump system that runs similarly to a refrigerator in reverse.

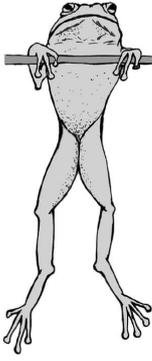
WATER.

Water conservation is a particularly important consideration in the studio operation. All showers have low-flow shower heads. All taps have aerators fitted. All gardens are planted with local native species that have required no additional water. Rainwater is caught in tanks for consumption. All the greywater from showers, baths, vanities and laundering is treated in reed beds and re-used on site and to water a small orchard.

The provision of re-useable, re-fillable liquid dispensers to discharge soaps, shampoos, conditioners, dishwashing detergents and cleaning agents have been used to minimise waste. The packaging materials involved in providing small serves of soap and shampoos can be significant and often these are only partially used before disposal. By using dispensers which are constantly refilled from a bulk source, minimal packaging is required, and refill supplies can be bought in bulk quantities providing a cost saving. All shampoos, detergents, and cleaners are sourced from a supplier specialising in bulk supplies of organic natural products. All products are biodegradable and phosphate free, especially for use within the greywater system.

VEGETATION.

A strategic vegetation regime is being applied to the 10.5 acre allotment in order to promote indigenous bush regeneration, to encourage native animal and bird life and to manage weeds and pests. The property has been registered with Land for Wildlife, which is a voluntary agreement that ensures the property will be managed to ensure the natural integrity of the bush habitat for future years. Significant patches of blackberry and pine trees have been removed to enable the indigenous vegetation to flourish. These weeds are continuously being controlled and removed, with the aim that eventually the native revegetation will become permanently established to prevent further weed ingress. The pines have provided a sustainable source of firewood.



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Over 3000 new trees and shrubs have been planted into the cleared regions of the property. Revegetation of these areas is intended to provide further natural habitat for native birds and wildlife, and due to the selection of indigenous species the rate of growth has been prolific. It is intended that these new plantings, as well as the natural bush on the property should be able to sustainably provide firewood for the future heating requirements of the accommodation.