Couran Cove / South Stradbroke Island QLD
Architects / Origen Architects; Daryl Jackson Architects
Review by Lindsay Johnston
Photography by Leo Meier

Ecotourism

Couran Cove is one of the few tourist destinations whose ‘eco-resort’ label is justified by its environmentally sensitive development.

Darren Reid

● **Ecologically sustainable development is an inclusive project** that goes beyond the footprint of the individual building. Conversely, tourist developments located in beautiful and sensitive locations – a given for most non-urban tourist facilities – will lay claims to being 'eco' without further credentials of sustainability. The Australian National Ecotourism Accreditation Program (NEAP) has been developed by the Ecotourism Association of Australia. Assessment involves a comprehensive evaluation of core and advanced level strategies for sustainable tourism, including such criteria as environmental impact and planning, construction materials, site landscaping and rehabilitation, energy consumption, water supply and waste disposal, recycling, cultural engagement, protection of flora and fauna, minimisation of packaging, transportation to and within the development, use of local labour and products, focus and interpretation of natural areas, educational programs, community contribution and a particular focus on 'best practice' initiatives. The current system is based on self-assessment, and there is some way to go with validation of submissions made by operators and monitoring.

One exemplary development that has achieved Advanced Ecotourism Accreditation is Couran Cove, on 150 hectares of South Stradbroke Island off the Gold Coast of Queensland. The brainchild of athletic legend Ron Clarke, it is a 'five-star' resort that exhibits wide ranging environmentally sympathetic strategies without compromising user comfort. Architects for the development were Daryl Jackson Architects for the main resort buildings and waterfront marine apartments, lagoon villas and lodges and the surf club; and Graham Osborne of Origen Architects for the bush-located eco cabins and Wilderness Lodge. The project has been the recipient of a collection of awards, including the RAIA Queensland Chapter Beatrice Hutton Award (Commercial) and Building of the Year, and a Commendation in the National Awards.

Natural remediation The issues addressed by this development show a sturdy commitment to a 'green' agenda from the outset and are well recounted in the book *Never Say Never* written about the project. A development on an island isolated from mains utilities and accessible only by boat heightens the sensibilities to self-sufficiency and economy. Fundamental problems that have been ingenuously solved include treatment of extensive acid sulfate soils that leached poison into the waterways killing plants and wildlife, using a world first technique developed locally; eradication of a severe mosquito problem without recourse to chemicals, using solar powered mosquito traps and introduction of larvae eating fish; and rehabilitation of native flora supported by an on-site nursery with 150,000 indigenous plants.

Energy supply The needs of a resort of almost 600 units of accommodation and a guest population of more than 1000 people, without a mains supply, led to installation of an LPG gas fired power station with a bank of generators producing electricity. Reticulated gas mains run throughout the resort giving LPG for back-up water heating and cooking. A large wind turbine was included in the original energy plan, but it is reported that lower than anticipated demand for energy has resulted in this being postponed. A novel computer-based energy management system controls all the resort's major loads and the TV screen in every guestroom offers daily data on target and actual energy consumption, greenhouse gas emissions and water consumption. The LPG is delivered by boat to a large storage tank on the island. It is claimed the efficient energy system saves $1m per annum in operational costs and that greenhouse gas emissions at the resort have been reduced to 30 percent of that of a conventional resort of similar scale. (I calculate greenhouse gas emissions per unit of electricity at 1kWh = 0.55kgCO2 compared to about 1.0kgCO2 for coal fired mains electricity.)

Water supply Following remediation of the acid sulfate soils, the high water table across the site was able to yield an abundant supply – it is claimed the island can yield sufficient water to support 5000 people for one year with no rain. Water is thus 'mined' from the underlying aquifer and pumped to a raw-water storage tank from where it is treated by a nanofiltration plant, using reverse osmosis with minimal chlorine and minimal energy demand. Treated water is then stored in clean water tanks and reticulated through the site. Water consumption targets displayed on the TV monitor in each room are about 150 litres/person/day, with the incentive to use less.

Waste water A vacuum sewer system is used throughout the site, overcoming minimal falls, avoiding the need for deep trenches and minimising environmental

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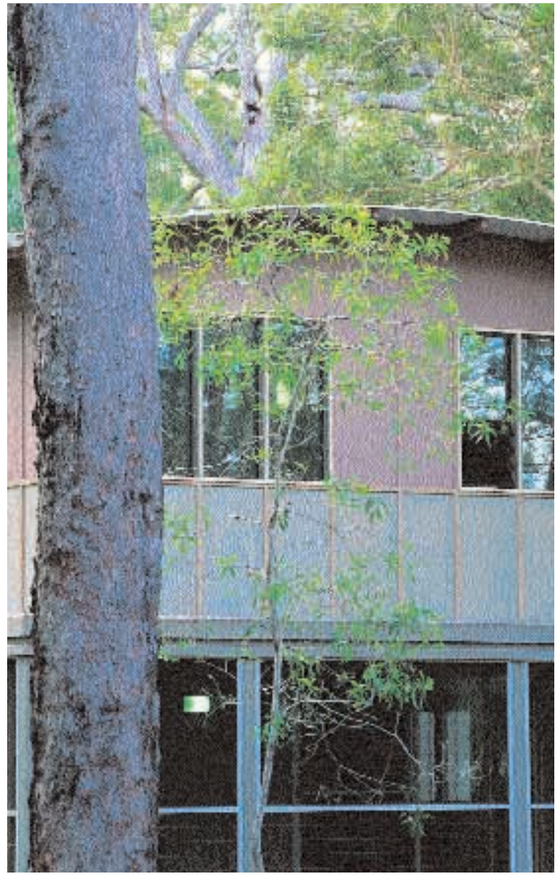


opening spread: The sensitively sited eco-lodges, at the edge of Frog Pond, are secluded away from the island's main activities.

this page: Designed by Graham Osborne of Origen Architects, the lodges are purposefully camouflaged by their form and external colour scheme.

impact or disruption of established vegetation. All wastewater is brought to a treatment plant and subject to a four-stage process consisting of filtering out solids, enviroflow biofilter, dynasand denitrifying and UV disinfection. Treated water, which has been 'borrowed' from the ground, is returned to the ground through drip irrigation. Sludge is removed from the island and disposed of to municipal waste treatment works on the mainland.

Waste recycling An impressive waste recycling facility is tucked away in the bush with extensive worm farms (vermiculture) in large moveable racks for compostible food and other scraps; paper compacters for baling cardboard; glass, plastic and aluminium recycling; and a protected bund area for sorting waste that has not been correctly placed in the numerous recycling bins across the resort. Each guestroom has a recycling bin for food waste and glass/aluminium. Regrettably health regulations demand individual wrappers for butter and preserves, but shampoo and conditioner are provided in re-useable containers. A non-smoking environment across the resort minimises the cigarette butt problem.

On-site transport The resort is stocked with 800 bicycles of all shapes and sizes for transport of guests – it is 2.5km from one end of the site to the other. Housekeeping staff use peddle tricycles and a guest 'train' from the lagoon to the beach is battery electric powered. A few conventional vans are in evidence for service staff – are they LPG converted?

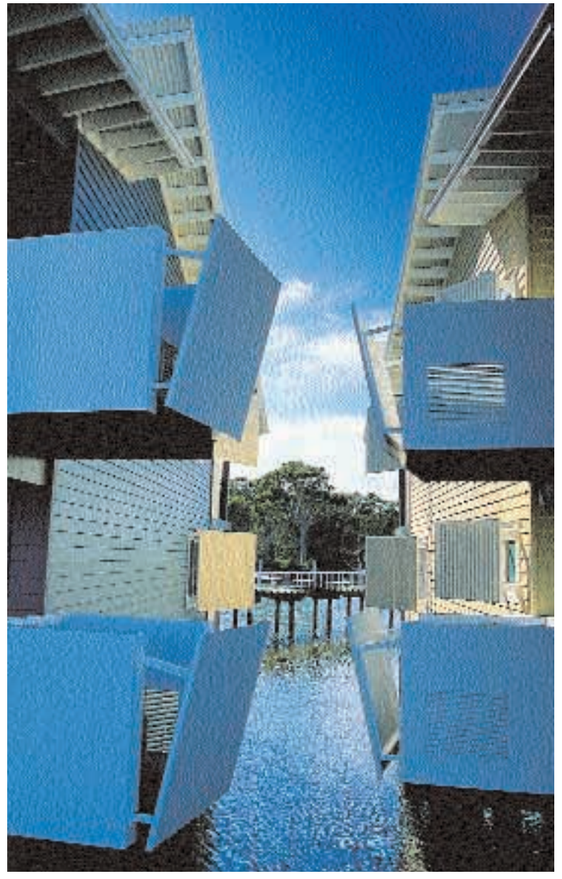
Waterfront Apartments These apartments, by Daryl Jackson Architects, have a stunning visual presence and sit on stilts above the water accessed by a boardwalk spine with village ambience. The language speaks of beach huts and Queensland boarded vernacular, with a palette of colours – pale yellow, blue grey, red rust, grey green – and white roofs and trims. The low morning and evening sun reflected through under the buildings allows them to float. Not withstanding dramatic freestanding parasol roofs to the balconies, the east and west aspects get strong sun penetration. Windows are fitted with internal shutters, which would have been more effective on the outside. Construction of these one- and two-room apartments is all timber with excellent attention to elimination of sound transmission through party walls and floors. Some of the major structural timbers are recycled from old buildings – a low embodied energy solution perhaps diluted by the conventional hotel room specification of the interiors. What initially appear to be angled 'sun control' screens to gable windows on closer scrutiny face in all directions and are in fact privacy screens between adjacent dwellings. Air conditioning is provided in these rooms and dramatically increases the daily electricity consumption displayed on the TV. (Electricity 'eco' target for our 54 sq.m one room suite = 9.14 kWh/day, we used 1.8 kWh, but this blew out when we had to switch on the AC. LPG 'eco' target = 20 MJ/day, we used six MJ. I calculate the 'eco' target GGE at 42.42 kgCO2/sq.m/year – a NSW home is about 82kg/sq.m/year.)

Lagoon Villas and Lodges Also by Daryl Jackson and Partners, these villas and lodges are less convincing, with clipped eaves in parts, occasional small horizontal canopies to windows and large random sunscreen devices of vertical corrugated iron. Closer scrutiny suggests that these sun control devices are more a stylistic vocabulary, as they do not appear to respond to different orientations and leave critical windows exposed to the sun.

Eco Lodges The lodges, by Graham Osborne of Origen Architects, speak a different language. They are much less assertive and their bush setting is reflected in the gentle colours selected by Sally Osborne, who lectures in colour theory and is completing a Masters degree on the subject. They are lightweight timber framed and float above the forest floor, again on poles, 'hand placed' among the trees thus avoiding removal of sensitive vegetation. They are clad externally and internally with 'eco-ply' and have sprung curved corrugated steel roofs. Cross-sectional natural ventilation obviates the need for air-conditioning, and interior materials and finishes are eco-sensitive with bamboo timber floors and worktops, and milk based paints. Solar water heaters on the roofs have gas back up. (Electricity 'eco' target for the smaller 65 sq.m lodge for four people = a much lower 2.57 kWh with no AC. LPG 'eco' target = 20 MJ/day for cooking, back-up water heating and space heating. I calculate the 'eco' target GGE at 14.95 kgCO2/sq.m/year – excellent.)

Associate Professor Lindsay Johnston is Deputy Dean of the Faculty of Architecture, Building and Design, University of Newcastle, NSW. *Never Say Never* by Ron Clarke (1999) is available from the Couran Cove Environmental Research Trust.

Project Summary Couran Cove **Architects: Main buildings, Broadwater Villas, Waterfront Lodges and Marine Apartments** Daryl Jackson Architects **Eco-cabins and Wilderness Lodge** Graham Osborne, Origen Architects **Engineers** Sinclair Knight Merz, Bruce Lemcke Engineering **Services** Lincolne Scott **Quantity surveyor** Rider Hunt **Energy** Integrated Energy Services **Hydraulics** Funnell Hydraulics **Landscape** EDAW Landscape Architects **Remediation** Neumann Contractors **Builders** Watpac



these pages: The waterfront apartments, and lagoon villas and lodges, all by Daryl Jackson Architects, provide waterfront accommodation in the heart of Couran Cove. The language of 'beach huts and boarded vernacular' responds to the siting and contrasts markedly with the subdued eco-lodges.