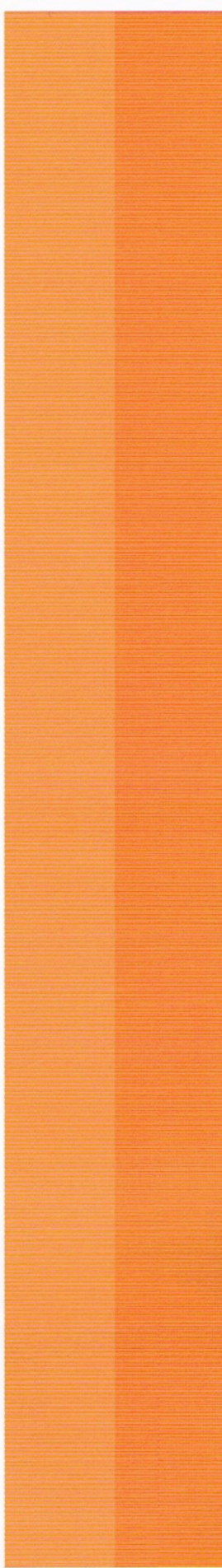


Architects. **Richard Le Plastrier, Peter Stutchbury and Sue Harper**
Review. **Lindsay Johnston** Photography. **Patrick Bingham Hall and Kevin Johnson**

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Birabaahn

Principal architects Richard Le Plastrier, Peter Stutchbury, Sue Harper **Project team** Shane Blue, Richard Smith **Consultants** **Engineer** Professor Max Irvine, Northrop Engineers **Builder** Stronach **Landscape architect** MIM Woodland **Size** 1650sq.m **Time to complete** 18 months **Council** Newcastle University **Materials** **Structural system** Concrete slab and column with galvanised steel structure for roof **Infill walls** Light metal stud framing with plasterboard and ply lining internal; compressed fibre cement sheet external **Roof** Colorbond Custom orb sheeting **Window and doors** Aluminium **Lift door to common room** Renlitia aluminium and steel





01. Named after the spirit eagle of the Awabakal, Birabahn replaces common assumptions of indigenous organic forms and patterns in preference for a more audacious statement of cultural sustainability.
PRH

*"The Spirit of Birabahn is the eagle hawk soaring high and seeing all. The four eagle heads are the guardians watching over the Awabakal people from Sugarloaf Mountain"*¹

YESTERDAY, I STARTED THIS REVIEW OF 'BIRABAHN', the Aboriginal and Torres Straits Islander Centre at the University of Newcastle, seated in the meeting place in the centre of the building, before a wood fire, with the scent of eucalypt wood smoke in my nostrils, above the fire the words – 'Tiriki – the flame of fire, the colour red'.

This morning, I am in the mountains to the west looking across to Sugarloaf Mountain and I just saw a wedged tailed eagle soaring on the thermals along a sandstone cliff – the 'eagle hawk', totem of the Awabakal people, of this place.

In 1993, I was at the International Union of Architects Congress in Chicago when the emotive 'Declaration of Interdependence for a Sustainable Future' was adopted, including the words: "a sustainable society restores, preserves and enhances nature and culture for the benefit of all life, present and future; we are ecologically interdependent with the whole of the natural environment; we are socially, culturally and economically interdependent with all of humanity; sustainability, in the context of this interdependence, requires partnership, equity and balance among all parties; buildings ... play a major role in the human impact on the natural environment and on the quality of life; sustainable design integrates ... resource and energy efficiency, healthy buildings and materials ... (into) an aesthetic sensitivity that inspires, affirms and ennobles ..." ²

What is particularly special about Birabahn, is not just the architecture, but the spirit that brought it to realisation and the ownership and joy in its existence in those who use it. In speaking about 'sustainability' in architecture (or is it unsustainability?) we tend to get absorbed in the gadgetry and to lose sight of the concept that 'sustainability' has cultural and social dimensions – that can 'ennoble'.

Through a limited competition between four teams, paid to prepare a design by the university, under the enlightened patronage of Director of Facilities Planning – architect Philip Pollard – the project was awarded to an intriguing and well-credentialed team consisting of Richard Le Plastrier, Peter Stutchbury and Sue Harper.

"The building enters difficult intellectual territory in its endeavour to embrace a physical manifestation of the rich cultural roots and traditions of the indigenous peoples and, in so doing, has turned away from commonly held 'white fellah' perceptions of Aboriginal preference for organic patterns and forms. Rather, it has audaciously followed a language that speaks of Aboriginal values at a deeper level in terms of the future – of what will be, rather than what has been." ³

Early metaphors of forest, trunks, branches and canopy generated a floating transparent roof and round column support system. Last

minute development at the competition stage introduced the 'master stroke' that envisaged the building as 'island' or 'bridge across to', creating the potential for its essential engagement with the paddock on which it stands and the pond that lies behind it – raised above, but grounded on.

Following the competition, detailed 'partnership' with the indigenous cultural user group, including Professor of Aboriginal Studies John Lester, transposed the design from, what Peter Stutchbury has described as, a 'European building' into a building that more adequately represents indigenous cultural sensibilities to do with itinerary, entry, expression, feelings and 'spirit of place'. The building was 'bent' outwards into the paddock, the column 'trunks' were reduced and retained only along the main corridors, the entry was diversified away from a singular 'European' entrance to a permeable multi-access arrangement on both levels and the rammed earth 'spirit' wall was retained as a main spine that emphasised the pathway into, through and out of the building and its connection to the landscape. The eventual architectural solution emerged through a process of, almost, dreaming and the eagle-like, swooping, feather-edged result is a subconscious consequence of the interaction between the indigenous clients and the participating design team. The outcome is now acclaimed and owned by the Aboriginal community as Birabahn, the spirit eagle hawk of the Awabakal.

"The result is a dramatic, sharp-edged building with spectacular roof forms, robust materials and sometimes confronting detailing that sits into its context with a landscape of natural systems. The social and cultural agendas have been beautifully met with the focus of a meeting place with fireplace in the centre of the building that opens, by means of a gigantic fire station door, onto the adjoining paddock. Well-considered environmental strategies, informed by Ché Wall and Advanced Environmental Concepts, have avoided mechanical air conditioning and include a novel version of the double-roof principle, which allows cross-ventilation to all rooms and light shelf blades that bounce light into the middle of the building." ⁴

The materiality of the building literally 'hangs' on the wildly courageous structure, by Professor Max Irvine and Neil Petherbridge, with outrageous overhangs in steel supporting the corrugated steel roof. Exposed galvanised steel, old-fashioned zinc sheet, flat fibre-cement sheet and raw concrete, work with recycled timbers, plantation plywood, corrugated glass-fibre and polycarbonate, aluminium and glass to achieve maximum architectural expression for minimum cost.



02. Looking back from the footbridge reveals a spectacular double-roof, providing a void over ceiling for thermal control. KJ

Key environmental features of 'Birabahn'

Orientation. The building is fundamentally on an east-west axis and presents itself to the north. Main rooms are to the north side with secondary rooms and support facilities to the south. East and west windows are minimised.

Solar control. The large overhanging roof eaves give protection from high summer sun and cast shadow across the northern facade. Secondary canopies shade other windows.

Double roof. The double-roof configuration provides a void over ceiling level to allow cross-ventilation and dissipation of heat gain from the roof and from natural light panels in the roof. The double-roof void can be closed at the top and bottom eaves in cold weather, controlled by automated louvres.

Daylight. The iconic and effective 'parasol' roof, with large overhangs, presents the same problem as traditional Australian houses with wide verandahs, eliminating valuable daylight as well as sun. This has been overcome with strategically placed translucent natural light panels integral to the roof sheeting, which are combined with translucent sections of upper walling and reflective light shelves that bounce light to the interior spaces.

Thermal mass. The concrete structure, with in-situ ground and upper floors, provides good basic thermal mass, and this is supplemented by the rammed earth 'spirit wall' that runs through the ground floor.

Embodied energy. It has been suggested that there is almost a direct relationship between embodied energy and capital cost – a cost-effective building usually has lower embodied energy (I got this from Professor Roger Fay, University of Tasmania). This is reflected in the cost-effectiveness of this building, complemented by extensive use of recycled and plantation grown timbers and the rammed earth 'spirit' wall. Embodied energy investment in good thermal mass, sun-shading devices and ventilation features is rewarded by reduced utilisation energy consumption with multiple pay-back over a lifecycle.

Disassembly. The robust high thermal mass elements cannot be readily disassembled, but assembly details through the remainder of the building are capable of 'unbolting' and 'unscrewing' for re-use and recycling.

Thermal performance. No measured data is available, but anecdotal evidence suggests that the low ambient range predicted through thermal modelling has been realised and has resulted in user satisfaction with its thermal performance. Occupants can interact with the windows and doors and the roof and cross-ventilation systems are controlled by an automatic building management system.

Energy performance. Actual data for energy consumption over 12 months of operation, using only electrical power from the grid, shows that the building has consumed 50,000kWh of electricity. The building is 1400 square metres, GFA giving 35.7kWh/m²/year consumption. The cost to run the facility was only \$3,000/year. It has only personal heaters, energy efficient lighting and natural ventilation, with some auto-controlled louvres, and no air conditioning. For comparison, other buildings on campus include a fully air-conditioned building at 164kWh/m²/year, a 'Hyb-vent' building (naturally vented combined with air-conditioning) at 83kWh/m²/year and the main air-conditioned library building at 144kWh/m²/year (with long running hours).

Greenhouse gas emissions. The above energy consumption results in 33kgCO₂/m²/year emissions. For comparison, a NSW all electric five-star office building targets 125kgCO₂/m²/year and a current market best practice building 180-235 kgCO₂/m²/year.

Cost. The building was constructed for \$1,625 per square metre – very cost-effective for a building of this uniqueness and complexity of detail, achieved largely by direct use of materials, frugality of finish and, possibly, minimisation of structural elements relative to the jobs they do.

In 2000, I wrote into the RAI A Education Policy criteria for graduating architecture students, under the heading 'Environmental Studies', that graduates should have, on the one hand, "an understanding of passive systems for thermal comfort, lighting and acoustics and their relationship to active systems" and, on the other hand, "an awareness of the cultural and spiritual dimension of place". This is a building from which any architect or student could usefully begin to understand these technical and more ethereal dimensions to architectural sustainability. It is my guess that this is a building that will be viewed internationally as a demonstration of another step forward in the development of an uniquely Australian architecture inextricably connected to culture, people, climate and place.

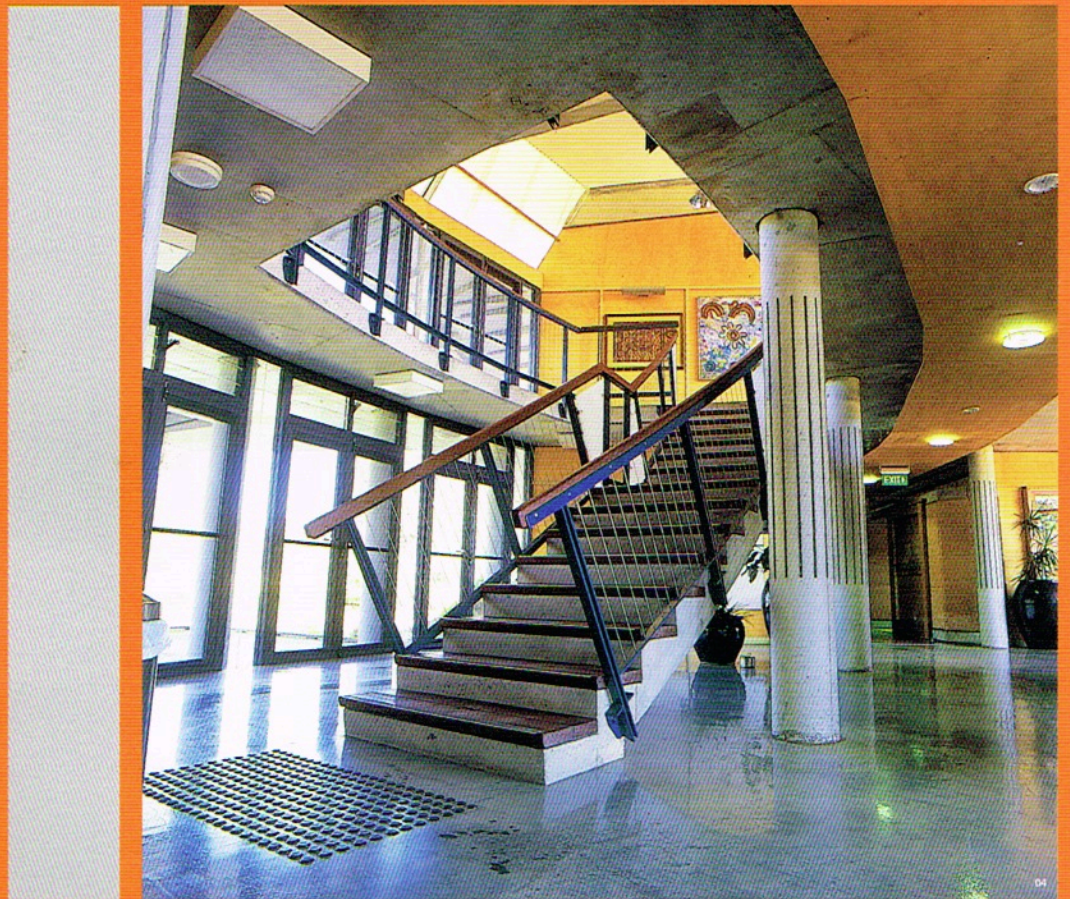
Footnotes

1 Inscription in 'Birabahn' to floor painting by artist Mandy Davis of Tobwabba Art, Forster and five others.

2 UIA 'Declaration of Interdependence for a Sustainable Future', BDP/RAIA Environment Design Guide, GEN 1, August 2001.

3 RAI A NSW Chapter Architecture Award Citation 2003, RAI A NSW Architecture Bulletin, July/August 2003, p.21.

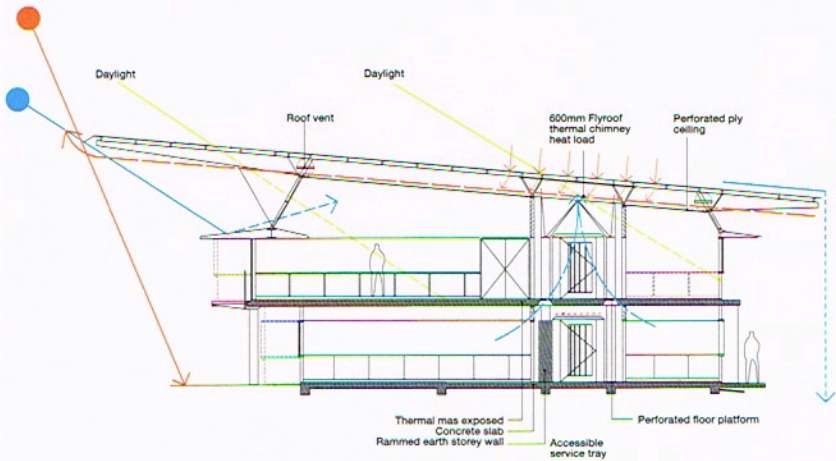
4 sOp. Cit., RAI A NSW Chapter Architecture Award Citation 2003.



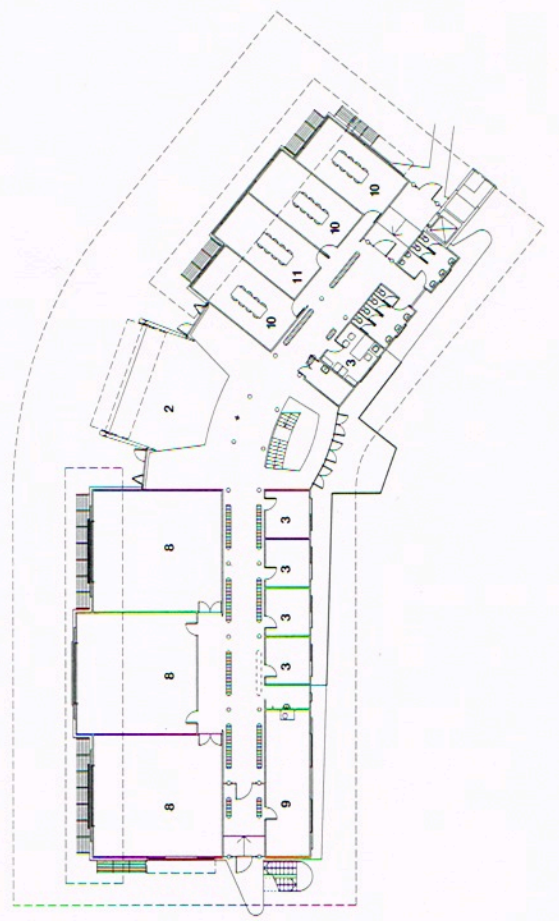
03. Though shaded from direct sun, external translucent panels bounce light back into the building interior. PBH

04. Concrete and inexpensive timber of frugal finish achieves a robust and occasionally confronting directness. KJ

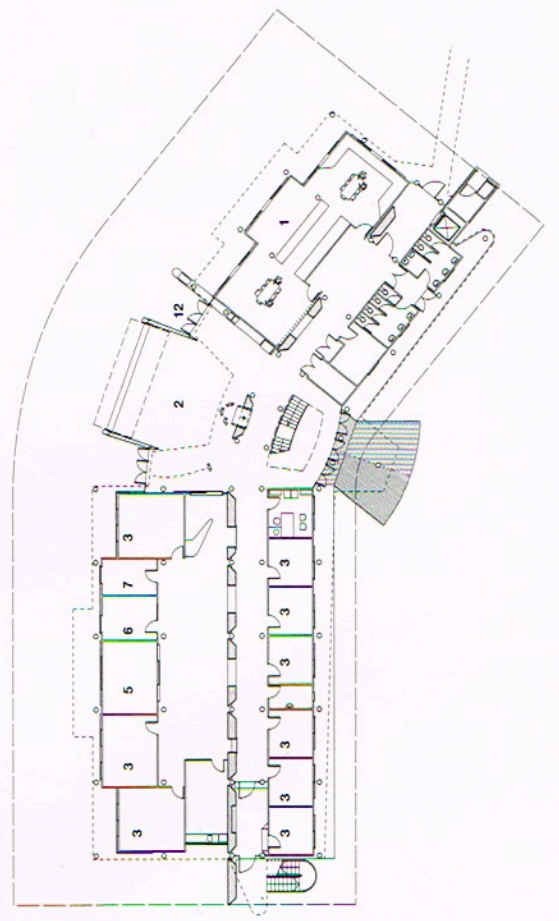
05. The hearth as central meeting place. KJ



Level two. 8 Teaching/lecture room 9 Postgrad centre 10 Tutorial room 11 Computer room 12



Level one. 1 Reading/Audio visual 2 Common room 3 Office 4 Staff room 5 Meeting room 6 Executive room 7 Resource room BBQ



Floor plan.



06. Distinctive columns echoing tree trunk, branch and canopy line all main corridors. PBH