04

Location: Halls Gap, Grampians National Park, Victoria

Owner/Trustee: Koori communities from South West Victoria and the Wimmera, including the Kirrae Whurang, Goolum, Gunditjmara and Kerrup-Jmara communities.

Architect: Gregory Burgess Pty Ltd Architects

Engineer: P. J. Yttrup and Associates Pty Ltd

Builder: The Victorian Department of Conservation and Environment using local contractors and Koori labourers

Date of Construction: 1990

written by: Susan Ferguson | **design:** Peter Walker

Brambuk Cultural Centre

Halls Gap, Grampians National Park, - Victoria

Brambuk, meaning "white cockatoo" is a place where visitors can experience, through the building, the richness of Aboriginal culture. The $1million project was funded by the Victorian State Government and developed over some ten years by a committee comprising five Aboriginal communities from the western district of Victoria and other tourism and government bodies. The 800m^2, two storey building is located in the valley between Baronia Peak and the Wonderland Range, south of Halls Gap in the Grampians National Park - the richest site for Aboriginal art and artifacts in Victoria.

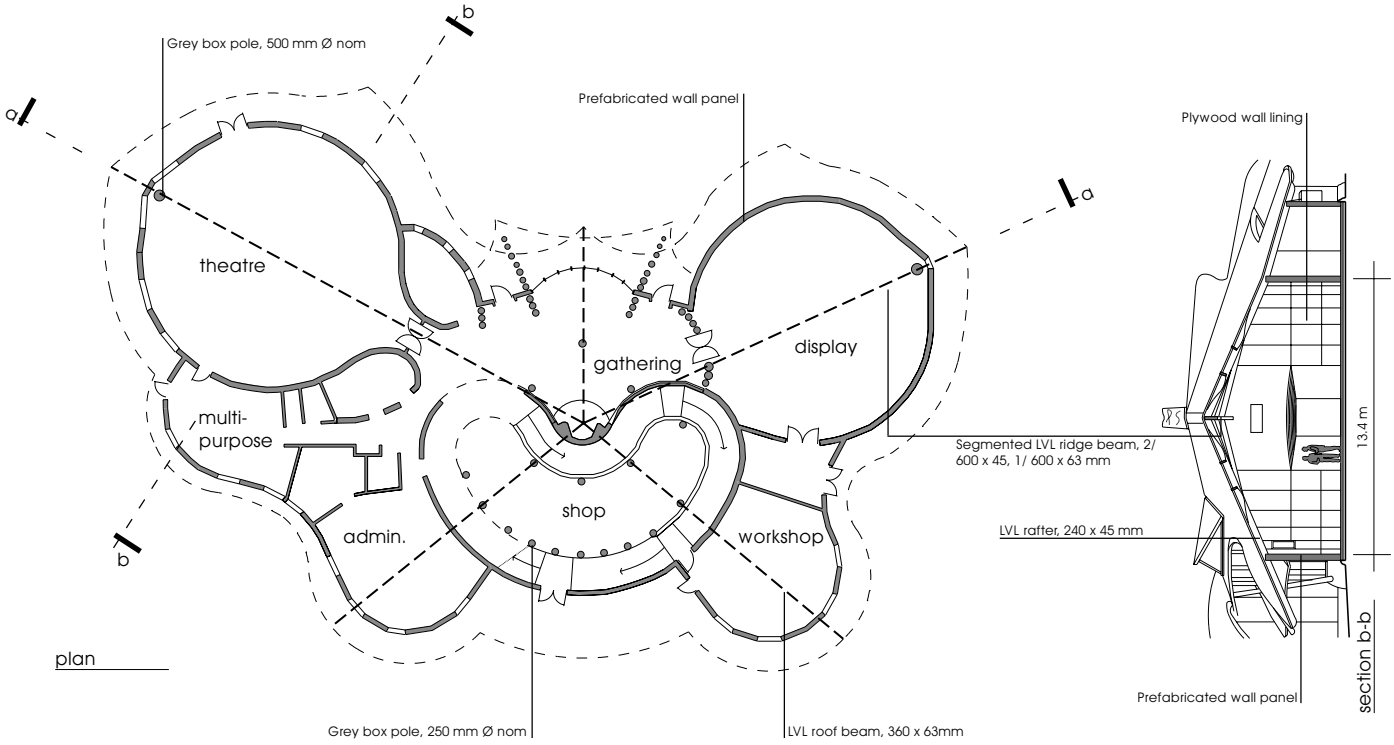
The aim of the project was to focus attention on Aboriginal art and activities in the Grampians and encourage protection of sites and culture through greater public appreciation. As expressed by architect Greg Burgess, "the Brambuk group stressed the need for a place for living culture rather than a museum of past culture... a place for gathering and creation in a real sense to engender pride in Aboriginality."

main image
the undulating roof of the brambuk living cultural centre
photo - courtesy of the Timber Promotion Council

• **Description** - Brambuk is set apart from the nearby visitors' centre and carpark and encircled with earth berms, which make a protected ceremonial ground and garden setting for the building. Sensuous, curved walls dominate the plan form which is based on overlapping geometries centred on the vertical axis of a massive stone fireplace and chimney that supports five of the axial ridge and roof beams.

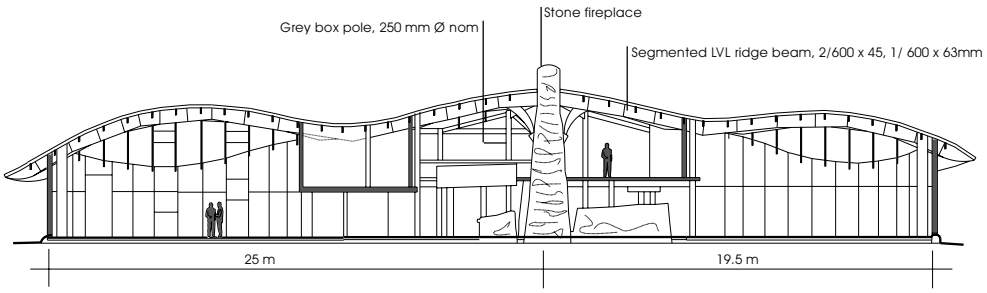
A gathering space/foyer area on the ground floor contains a display area, workshops for visitors and resident artists, a theatre with full projection facilities, a retail shop and managerial offices. On the first floor, a café overlooks the earth berms to the hills beyond. The foyer and café are linked by the spiralling ramp that winds around the shop, starting and finishing at the chimney.

The forms and elements of the building reflect many influences and can be interpreted in many ways. It is a fusion of organic and holistic architecture. The undulating roof as the sweeping wings of the Cockatoo or the Emperor Moth, or as a harmonic of the surrounding hills; the curved ramp as the serpent; the massive stone fireplace as a cosmic axis or the traditional fireplace; and the circular forms as echoes of 8,000 year old Aboriginal stone buildings found in the region.



plan

section b-b



section a-a

top right
earth berm surround with view to hills beyond
photo - courtesy of Timber Promotion Council

above left
ground floor plan

above right
section b-b (through theatre)

bottom left
section a-a (cut along main beam structure)

• **Structural Description** - Local sandstone was used for the base of the walls and lower floors of the central area. The display area floor and the walls of the main gathering space are of consolidated earth.

Twenty four 200 mm diameter Grey Box poles, many with bark intact, encircle the hearth and carry parts of the roof structure as well as the spiralling ramp which winds its way up through the building. The principle roof structure is supported on the massive undulating segmented **ridge beam** which, like a backbone, runs between two large timber posts at the extreme ends of the building, where the major space of the theatre and display room are located. The segmented ridge beam is constructed from short lengths of straight material (**LVL**) **lapped** and nailed to form the complex curve of the roof profile. Nail **gusset** technology, derived from industrial building practice, thus provides a role in the organic expression of the building.

The ridge beam supports one end of the series of inclined 360mm x 63mm LVL rafters, that form the roof profile. Segmented timber stud walls support the other. Prefabricated in 1200mm wide panels, the walls were designed as a tilt-up system that deploy Radiata Pine framing, and a plywood skin that also functions as the interior wall lining. The external cladding is Cypress Pine boards, steamed to fit the curve and fixed horizontally in a lower band and vertically above. All of the curved timber elements, including the Victorian Ash handrails of the spiralling ramp, were steam bent on site.

The rafters carry a timber board ceiling, insulation and the sheet metal roof.

above
interior of theatre space (under construction)

top right
the grey box poles of the central space

middle right
central stone hearth

bottom right
spiralling ramp around hearth with axial beams above
photos - courtesy of the architects

below (top to bottom)
- detail of lvl ridge beam, gusset plate with nail rings, grey box poles - rafter connection

far left
external cypress cladding
photo - J. Abell

near left
brambuk cultural centre under construction showing undulating ridge beam and prefabricated stud wall system
photo - courtesy of the engineer

• Engineering practice in timber - Throughout the 19th century, large curved elements in public and ecclesiastical buildings were mechanically laminated from three or more layers of timber. The dome profile of the Melbourne Exhibition Building [01] deployed this technology, as does the Brambuk Cultural centre built over one hundred years later.

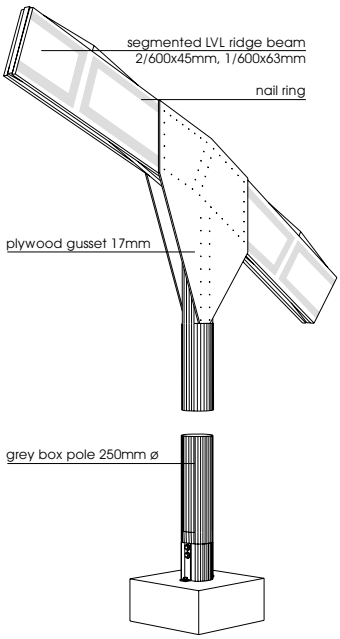
At Brambuk, the ridge beam of the curved, winged profile of the building is built up of three layers of LVL, a contemporary material, vertically laminated on site with rings of mechanically driven nails. No effort was made to conceal these connections. Indeed it is a characteristic of the architecture that is celebrated and affects the organic quality of the building.

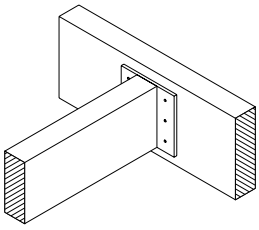
• Prefabrication and workability - Timber can be easily worked, the tools are not expensive and building can be achieved using a minimum of resources - a hammer, drill and nail gun. It is a material that is accessible to a wide range of people and can be sawn, reworked or replaced without a heavy cost penalty. In a way, it is a democratic material.

As buildability was an important issue at Brambuk, a remote site - timber was used because it was a standard, readily available material that could be manufactured as frames in a workshop nearby and erected on site using rudimentary carpentry skills.

The invisible but highly practical use of a simple 1200mm wide timber stud panel system, therefore, enabled the organic curves of the wall that supports part of the roof to be prefabricated by contractors and erected on site by Koori labourers. At the same time, Brambuk is a highly complex structure. As no two elements are the same size or shape, it was a building that could not easily be documented or shop drawn. Because it was built in timber, it could be formed and shaped on site.

To achieve the smooth curve of the exterior wall, the cladding was steamed. This is a technique that has been used for centuries, particularly in boat building. Steaming softens the cellular structure of timber so that the material becomes plastic and can be bent. When the curved panels were fixed in place on site at Brambuk, the Cypress dried and regained its strength.





• Durability - As an architect, considerations in specifying a material for sustainability must extend beyond application, to service or how long will it last; the material must then be detailed so that it will last as long as possible. At Brambuk, the architects specified Australian White Cypress. It is a Durability Class 1 material that is highly termite and fungus resistant.

Durability is currently measured by how long the timber will last in the ground. In terms of decay, the worst environment for a piece of timber is 300mm either side of the ground line. Decay is caused by fungus. Fungus requires air and water to proliferate - too far underground there is no air and far enough above ground the air dries the timber out regularly so there is not enough moisture. Durability classes are therefore determined by how many years it takes for the decay to break down a standard testing piece, buried to a shallow depth in the ground.

Durability Class 1 material lasts at least 25 years in the ground and is defined as a highly durable material. It was selected for use as external cladding at Brambuk for this reason. Although the frame is pine, it is isolated from the ground and the architects have specified a highly durable exterior cladding that will provide excellent weather protection.

• references

Johnson, R. 1990, 'Brambuk Living Cultural Centre', Architecture Australia, Nov, pp 26-28.

Spence, R. 1988, 'Brambuk Living Cultural Centre', Architectural Review, Oct, pp 88-89.

Taylor, J. 1990, 'Environmentally Sensitive Architecture: Brambuk Living Cultural Centre', Landscape Architecture, Aug.

• glossary

gusset plate: plates, often steel or plywood, fixed by nails, bolts or other means to connect timber members in a truss or other frame structure

lapped (lap joint): a joint made by placing one member partly over another and fixing the overlapped portions

LVL (laminated veneer lumber): a structural lumber manufactured from veneers laminated into a panel with the grain of all the veneers running parallel to each other

nail ring: a generally rectangular pattern of nails used to join timber elements

ridge beam: a beam located at the highest part of the roof to support the upper ends of the common rafters

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