



Down the track

A review of older projects

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Two projects

Blue Mountains geology (“Layers of Time”)

Little Bay Heritage Site (Miocene estuary)

BLUE MOUNTAINS PROJECT

Involved were:

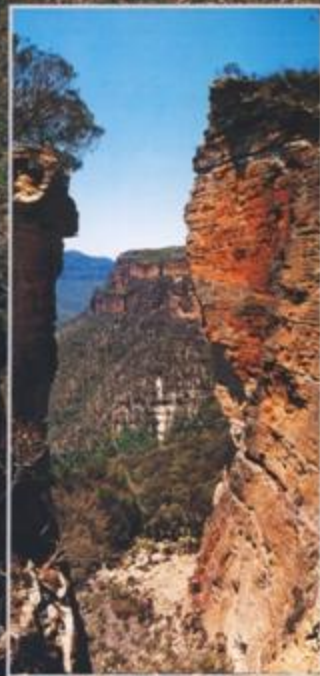
- ❖ NSW Department of Minerals and Energy (Geological Survey)
- ❖ National Parks and Wildlife Service
- ❖ Earth Resources Foundation, Sydney University
- ❖ Geological Society of Australia

Aims:

- ❖ Booklet on Blue Mountains geology (*Layers of Time*)
- ❖ Setting up of plaques at selected sites of geological interest
- ❖ Preparation of teaching aid for use in high schools

LAYERS OF TIME

The Blue Mountains
and their Geology



The story of how the
mountains formed...
with commentaries
on 36 places of scenic
and geological interest.

MINERAL
RESOURCES



The University of Sydney



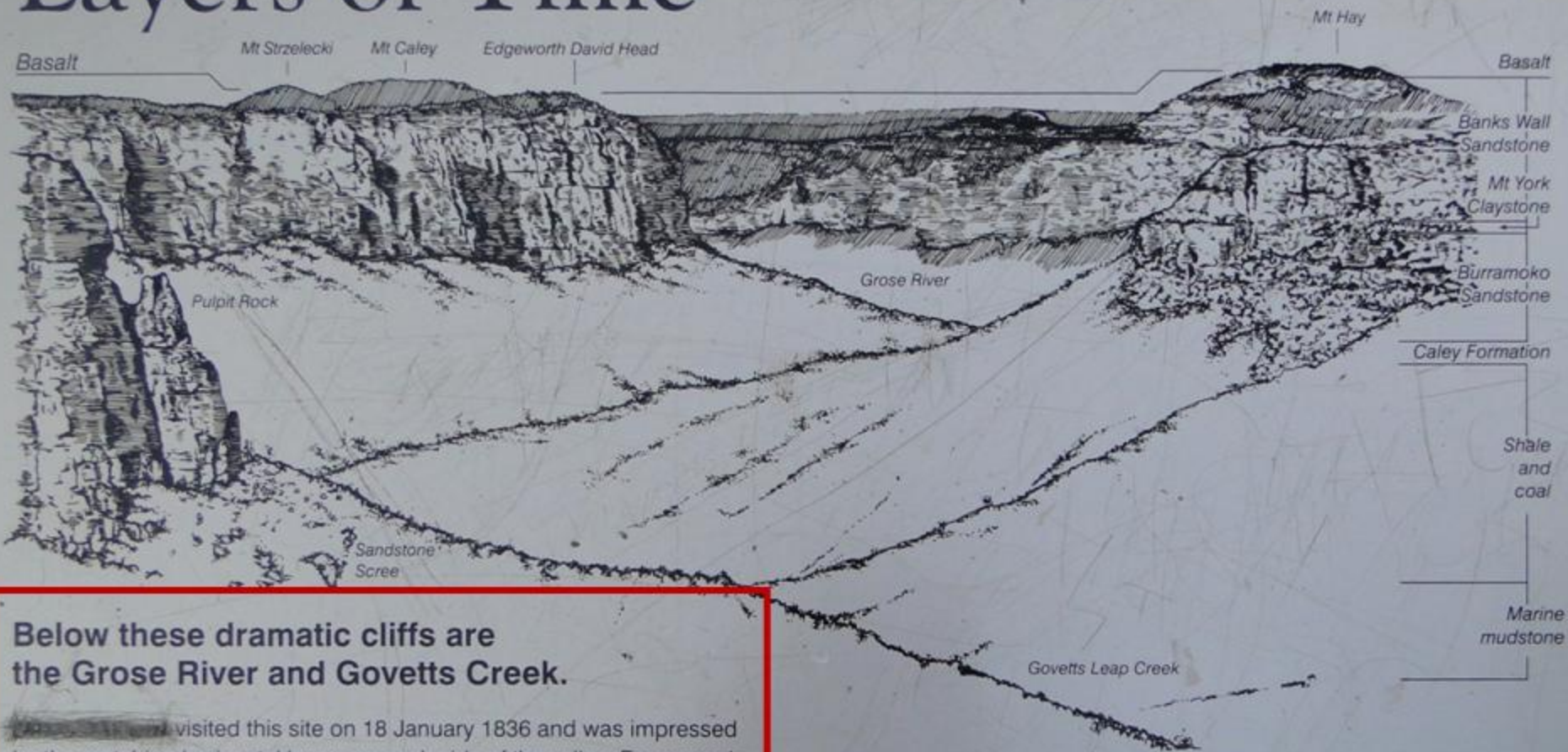
LAYERS OF TIME

The Blue Mountains
and their Geology

Plaques erected at the following sites:

- ❖ Hartley
- ❖ Govetts Leap
- ❖ Scenic World (Skyway)
- ❖ Echo Point (Three Sisters)
- ❖ Wentworth Falls Lake
- ❖ Wentworth Falls

Layers of Time



Below these dramatic cliffs are the Grose River and Govetts Creek.

... visited this site on 18 January 1836 and was impressed by the matching horizontal layers on each side of the valley. For example, the layer of red shale halfway up the cliff is clearly indicated by the bank of vegetation which grows there.

The vast gorge was shaped by streams eroding through the uppermost basalt layer (the youngest rocks in the area). Remnants of this layer exist on the top of Mt Hay and Mt Banks. The eroded rock particles have been carried out to sea by the Grose and Hawkesbury Rivers.

The striking vertical sandstone cliffs above the steep slopes have come about because of the layers of softer shales and coal below them. The shale erodes more readily as it expands and contracts in wet and dry weather. This results in undercutting of the cliff face, which fractures vertically and collapses in large blocks.

For more information about how the Blue Mountains formed, look for 'Layers of Time' book at the National Park Shop.

BLUE MOUNTAINS NATIONAL PARK



Below these dramatic cliffs are the Grose River and Govetts Creek.

~~James Cook~~ visited this site on 18 January 1836 and was impressed by the matching horizontal layers on each side of the valley. For example, the layer of red shale halfway up the cliff is clearly indicated by the bank of vegetation which grows there.

Hanging Swamp at Wentworth Falls Lake



How can a swamp occur on a steep hill?

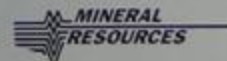
At several places in the Blue Mountains there are wet patches of swampy vegetation which act as reservoirs to help streams flow all year.

The swamps form after water percolating down through the sandstone reaches a shale layer. The water then flows sideways along the layer and may come out at the surface. The combination of water and weathered shale supports abundant plant growth and good soil development. In some cases plant growth is so luxuriant that thick layers of plant material build up, forming peat, which helps to hold the water.

When all of these occur together on a slope the swamp is called a hanging swamp.

Here the hanging swamps area can be seen as areas of low vegetation on the other side of the lake where there are lots of grasses and reed-like plants. Most of the medium to large trees are outside the swamp.

On a historical note, the lake was built to supply water for steam trains.



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...steers

... here once a
... to encourage
... animals.

... supervises
... tools and



Interested in volunteering?
• contact Manly Council Bushland Officer on 9976 1608 OR
• meet the team here on the 1st Saturday of every month
9am-11noon — weather permitting.

Community & Council working together
enhance Manly's unique biodiversity

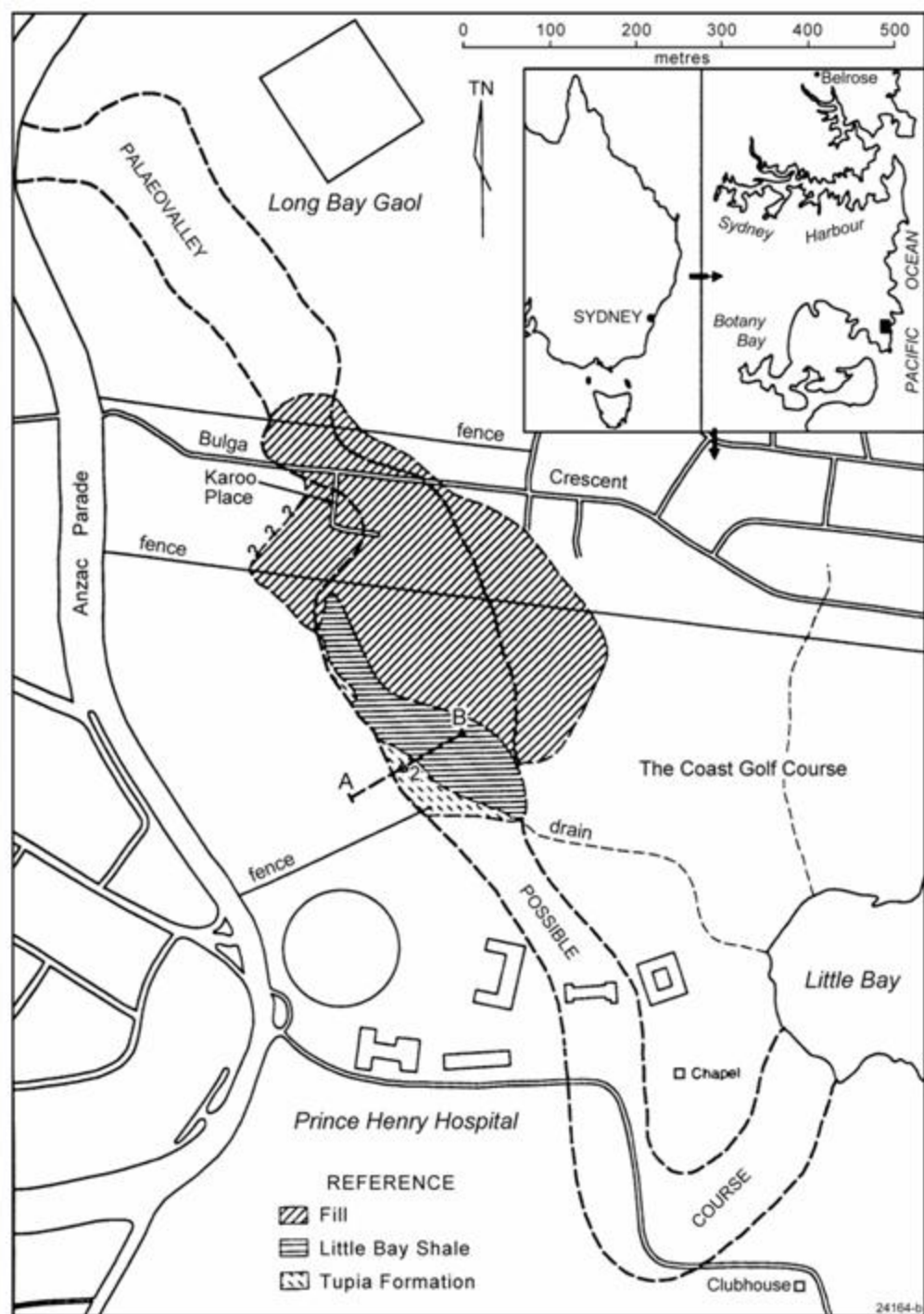












Little Bay Geological Site



- Tupia Formation (sand wash with sandstone boulders)
- Little Bay Shale (estuarine mud)
- Hawkesbury Sandstone (bedrock)
- Weathered Laterite Crust
- Sandstone Boulders



Source of information
Pickers, J.W., Marshall, M.R., Percival, A.D. & Price, M.S., 1992. Middle Miocene palaeogeography at Little Bay, near Narrabri, N.S.W. Australian Journal of Earth Sciences 34, 509-518.

About 20 million years ago, a river eroded a deep channel into the sandstone which lies underneath this area. This channel became partly filled with estuarine muds which contain important scientific evidence. Some of the leaf fossils in the mud are mangroves, which grew in the shallow tidal river water. The layers of mud reveal information about the height of the sea at this time. The top layer indicates that the sea level then was 28 metres higher than now. As the water receded, sand and sandstone boulders rolled down or washed into the channel and buried the mud, filling the upper part of the channel, so that only a shallow depression remained.

Subsequent changes in climatic conditions have created a crust of laterite, a rust-red soil type, which has covered the early sandstone and the sand which filled the channel. Because there has been little erosion in this area, this geological evidence has survived undisturbed and is an important study area for today's scientists.

Little Bay is significant to indigenous Australians as a gathering site for ceremony and these geological deposits provided them with a source of clay and ochre which could be used for body decoration.



Can there be
LIFE
after
DEATH?