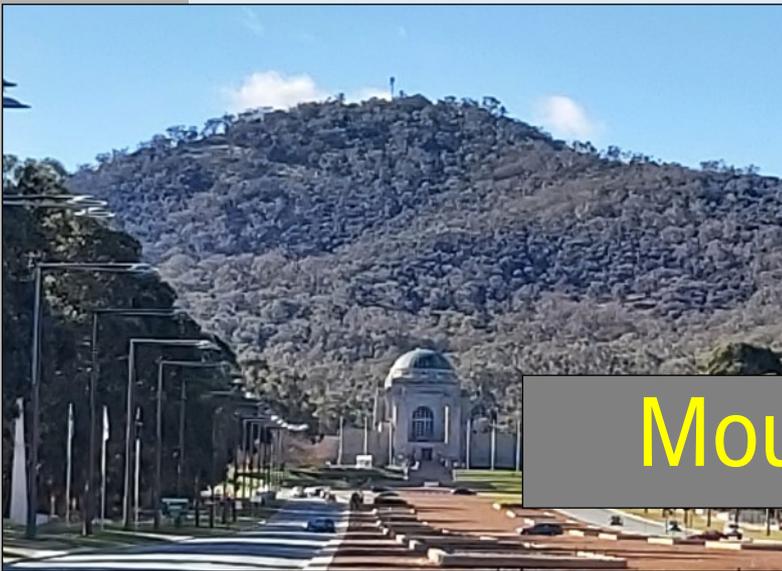


Landscapes around Canberra

*- a geological
excursion for
students of
all ages*

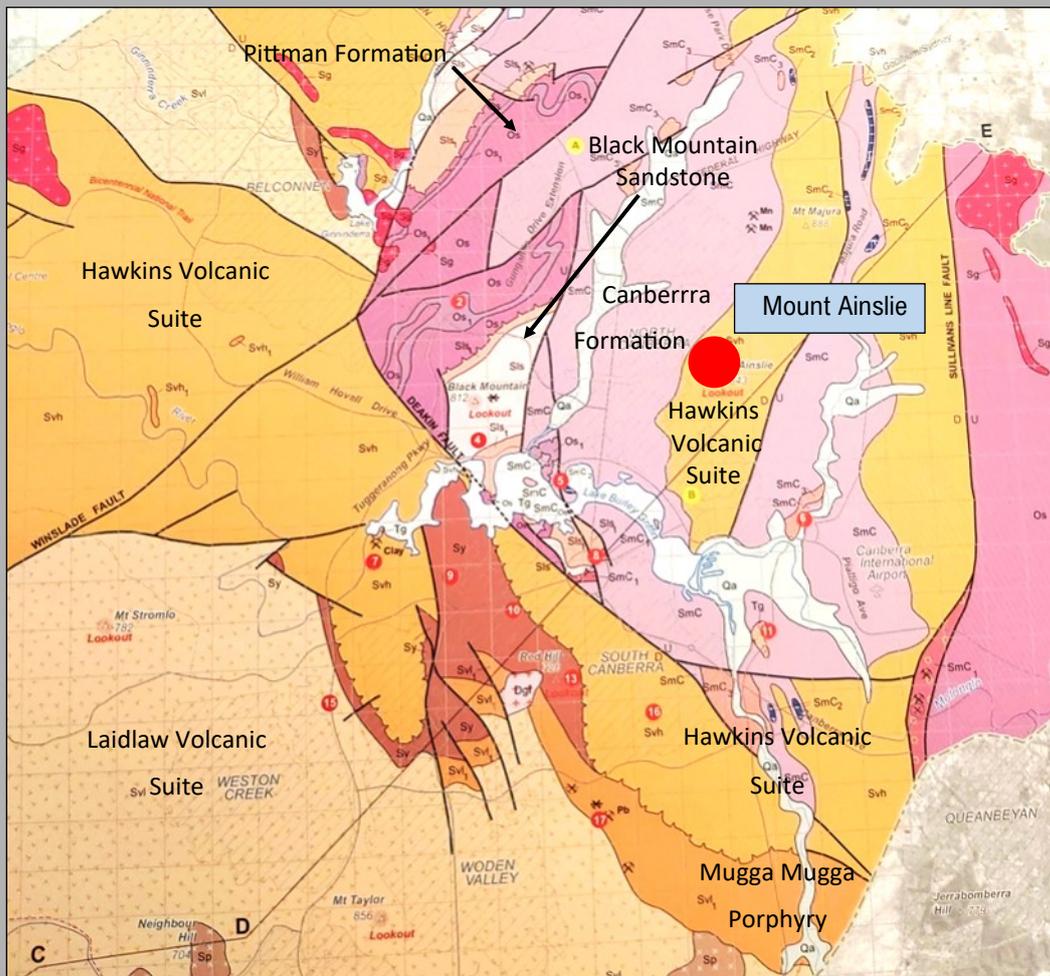


Mount Ainslie

Rock outcrops around
Canberra tell us about the early
history and evolution of the
region's landscapes.

Canberra region landscapes

The landscapes around Canberra had their origins over 400 million years ago during the Paleozoic geological era on the margins of the Gondwana supercontinent. Since those formative years the landscapes have been shaped and deeply eroded to reveal the rocks we now see at outcrops around Canberra.

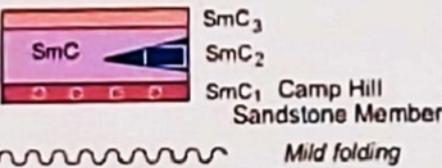
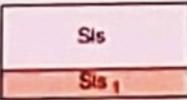
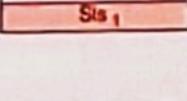
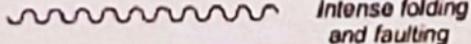


Simplified geology extract from — Geological Map of the ACT, 2008.



This publication was compiled for the ACT Division, Geological Society of Australia, by Douglas Finlayson.

Geology Map Legend

Era	Late Silurian	Laidlaw Volcanic Suite including Deakin Volcanics		Sv1 ₂ Shale and volcanoclastic sediments Sv1 ₁ Rhyodacitic lava Sv1 Rhyodacitic ignimbrite
	423.0 Ma	Yarralumla Formation		Sy Shale, limestone, volcanoclastic sediments and calcareous hornfels
		Hawkins Volcanic Suite		Svh ₁ Limestone Svh Dacitic ignimbrite
	Early Silurian	Canberra Formation		SmC ₃ Tuff, ashstone SmC ₂ Limestone, calcareous hornfels SmC ₁ Sandstone and grt SmC Shale, siltstone
		Black Mountain Sandstone		Sis Quartz sandstone
Paleozoic		State Circle Shale		Sis ₁ Shale, siltstone
	443.8 Ma			
	Late Ordovician	Pittman Formation and Adaminaby Group		Os ₁ Black graptolitic shale and chert Os Sandstone, siltstone, shale

The Canberra region is in the southeastern part of the Lachlan Orogen (or Lachlan Fold Belt), a geological province that stretches from near South Australia to the Australian southeast Tasman Sea coast.

During the Paleozoic era this province was subjected to major orogenic (mountain building) events, the Benambran Orogeny Phase 1 (444-440 Ma) and Phase 2 (431-428 Ma) and the Tabberabberan Orogeny (about 400—370 Ma).

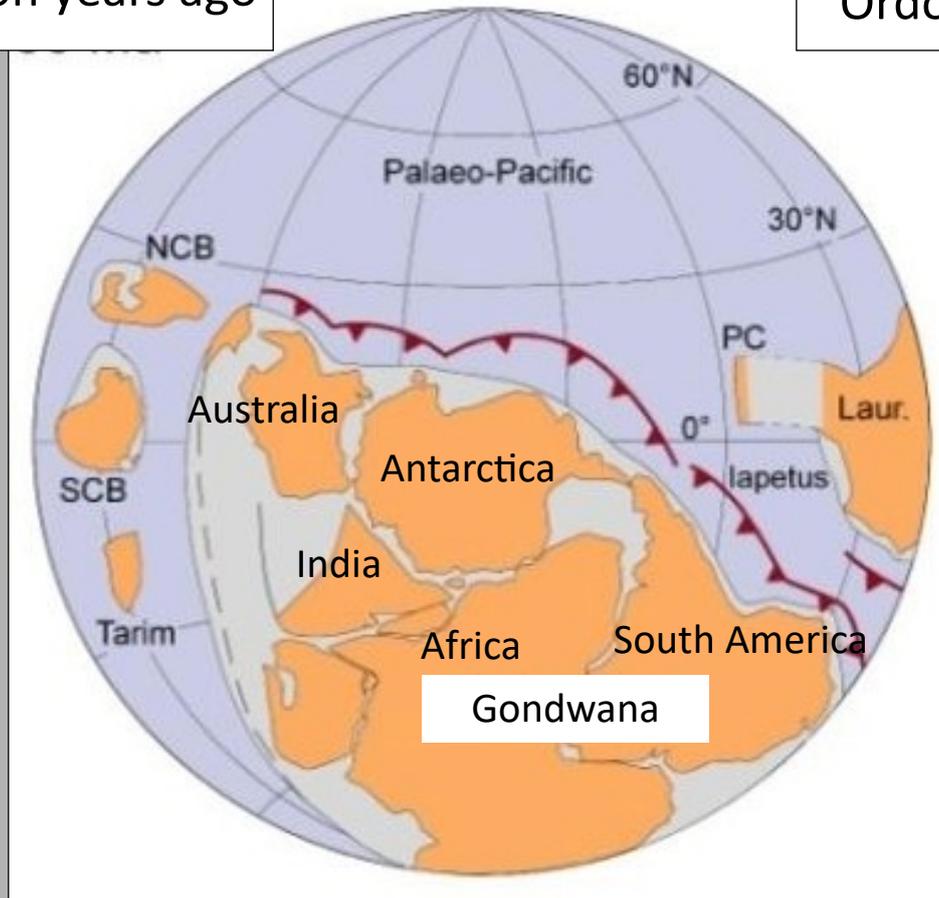
Ma = million years ago

Where has Australia been in the past?

Paleogeography

480 million years ago

Ordovician



From — Li and Powell, 2001.

During the early part of the Paleozoic era Australia was part of the Gondwana supercontinent that also included India, Antarctica, Africa, and South America.

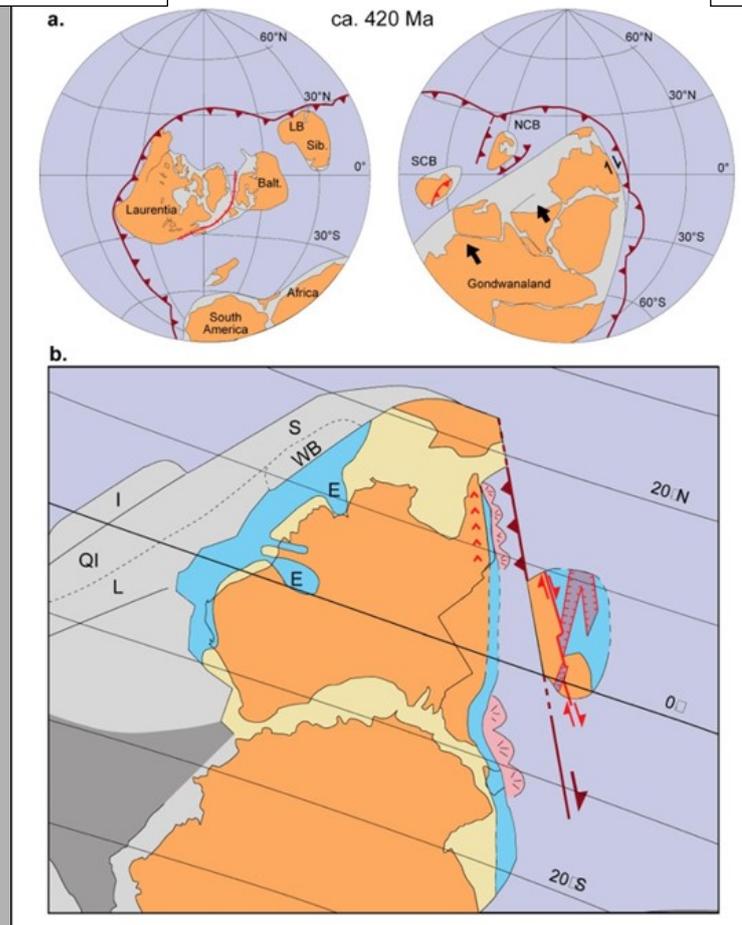
Australia was surrounded by warm waters north of the Equator. The Paleo-Pacific Ocean lithospheric plate was colliding with Gondwana and there were subduction zones, with associated volcanoes and earthquakes, dipping under its Australia-Antarctica-South America margins, much like the tectonic processes happening today under Japan and Indonesia.

Where has Australia been in the past?

Paleogeography

420 million years ago

Silurian

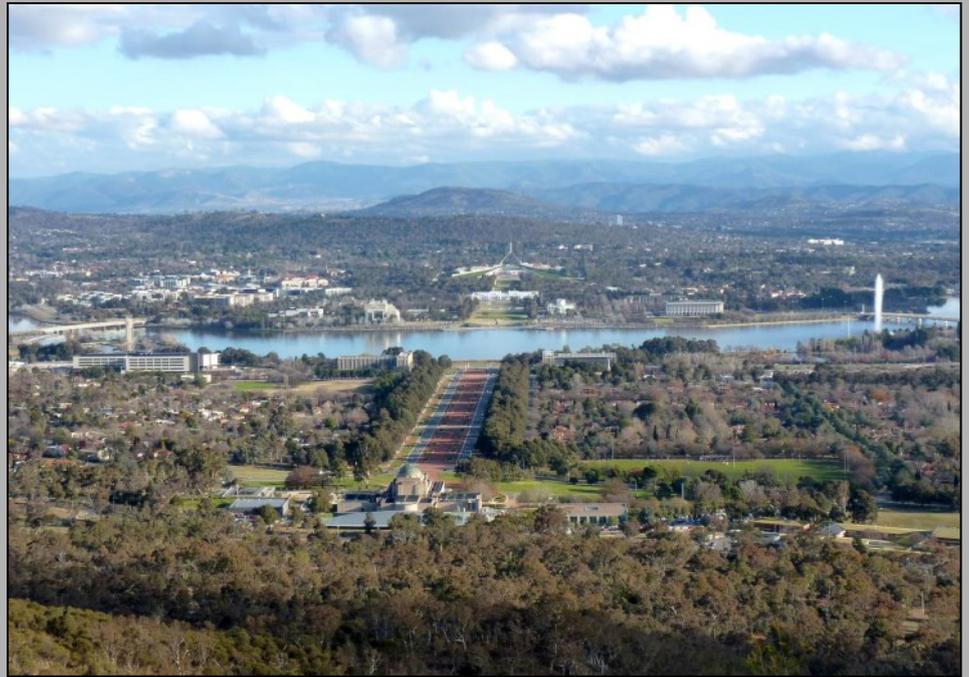


From — Li and Powell, 2001.

During the later part of the Paleozoic era, during the Silurian geological period, Australia was still part of the Gondwana supercontinent and still at tropical latitudes with the Paleo-Pacific Ocean lithospheric plate colliding with Gondwana with consequent subduction zones, volcanoes and earthquakes.

Mount Ainslie

The view from the summit of Mount Ainslie must be on the “to do”list of just about every visitor to the national capital of Australia. The planning axis from the summit towards Parliament House and Red Hill was an integral part of the design accepted for the city put forward by Walter Burley Griffin in 1912.



Mount Ainslie provides the backdrop for the Australian War Memorial and other memorials along Anzac Parade.



Canberra City Planning

Although they had never visited Australia, a sketch of the possible view from Mount Ainslie was submitted by Marion Mahony Griffin as part of Walter Burley Griffin's entry in the 1912 competition for the design of Australia's capital city.



Australian National Archives



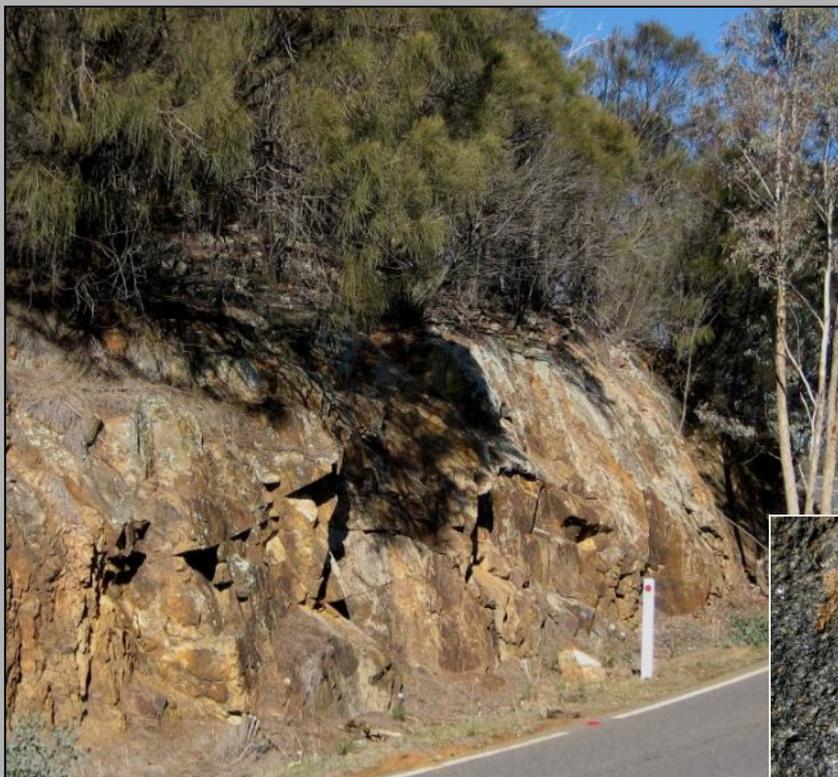
Australian National Archives

Access

The Mount Ainslie Volcanics are exposed on the road to the summit of Mount Ainslie from Fairbairn Avenue. They are grouped within the Early Silurian Hawkins Volcanic Suite erupted in the period 428-424 Ma during the early part of the Tabberabberan Tectonic Cycle (about 428—385 Ma).

A quarry on the lower slopes of the mountain exposes the most common rock type in the Mount Ainslie Volcanics, a massive, jointed, fine-grained, dacitic ignimbrite which is greenish grey when fresh, weathering orange-brown.

The quarry and summit road outcrops represent excellent exposures of the major rock type of the Mount Ainslie Volcanics. Core samples have been drilled from the outcrops on the summit road for dating purposes.



Outcrops

Outcrops of the Mount Ainslie Volcanics are exposed at the summit car park.

The exact location of the centres of volcanism within the region are unknown.



They are also exposed at the rock type section in the disused Mount Ainslie South Quarry near the houses along Cobby Street in the suburb of Campbell.



Building Stone

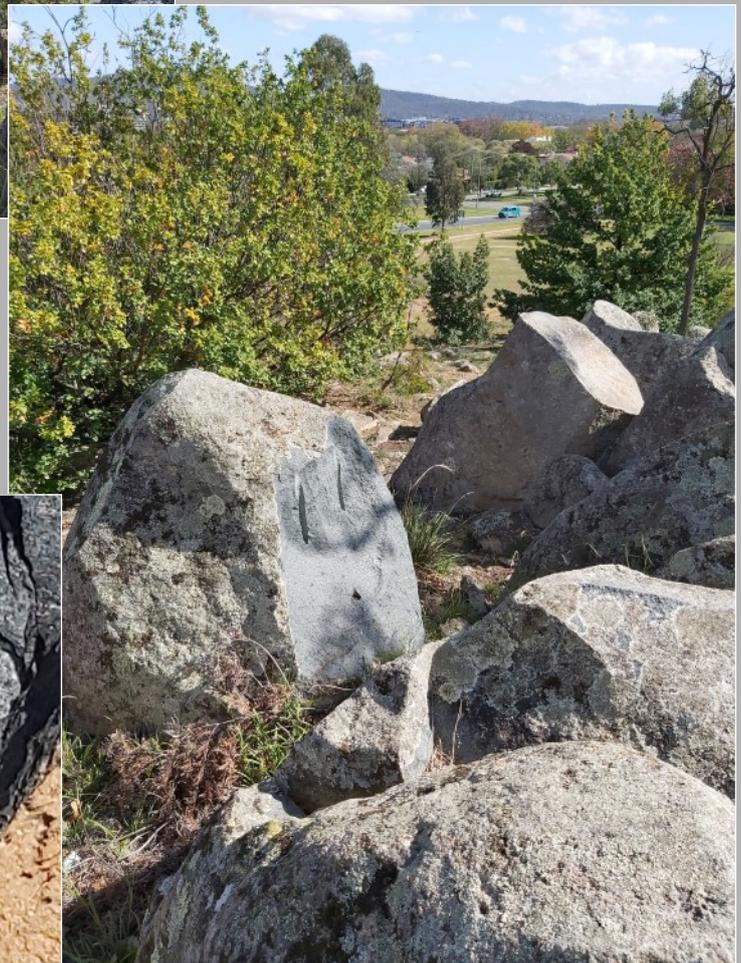


The Mount Ainslie Volcanics from Mount Pleasant were used in the construction of St Johns Anglican Church, Reid, during the period 1841 to 1845.



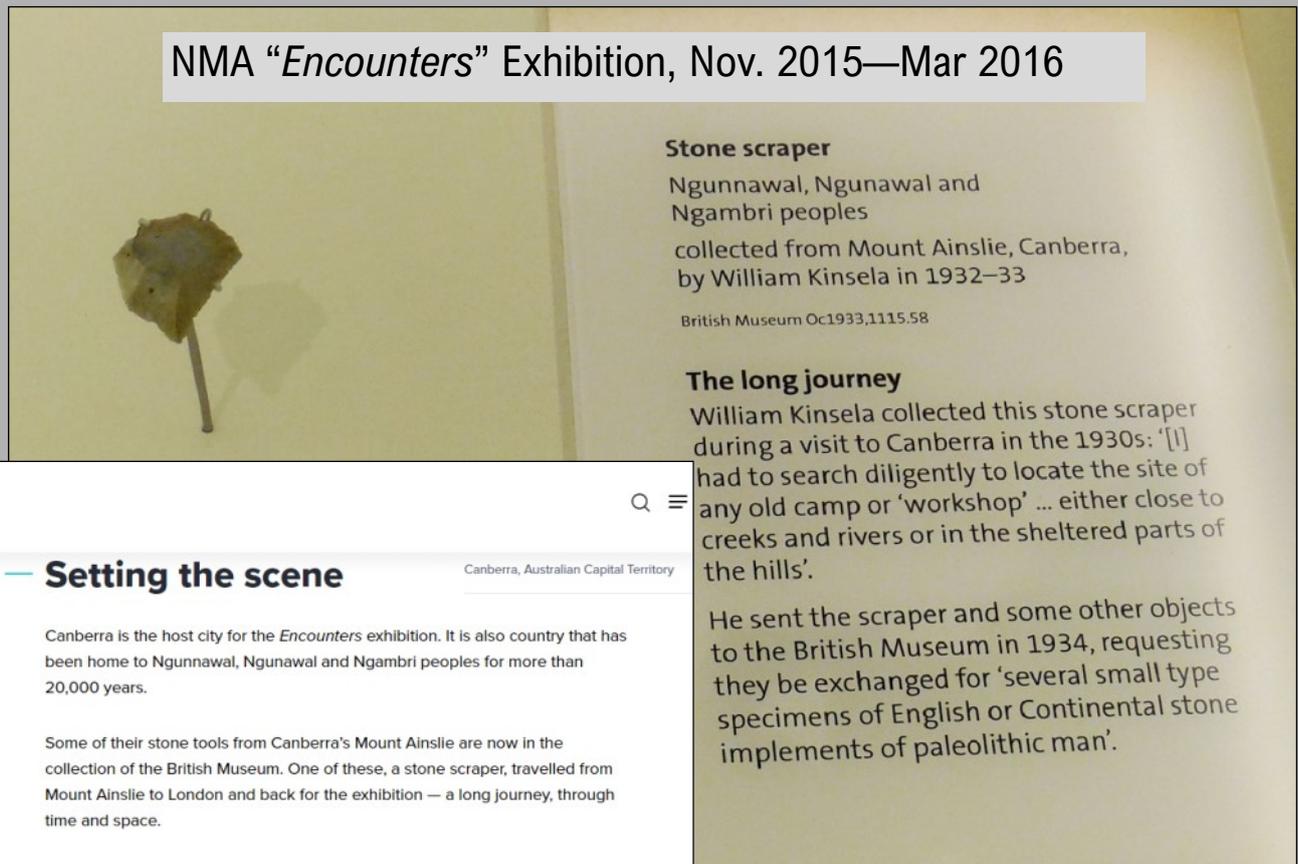
Outcrops near the city

There are also outcrops of the Mount Ainslie Volcanics quite near the city centre at the corner of Limestone Avenue and Quick Street.



Aboriginal Heritage

In 1932-33, aboriginal stone tools were found on the lower slopes of Mount Ainslie and sent to the British Museum for its collection. The scraper was not an igneous rock type from Mount Ainslie.



national museum australia

— **Setting the scene** Canberra, Australian Capital Territory

Canberra is the host city for the *Encounters* exhibition. It is also country that has been home to Ngunnawal, Ngunawal and Ngambri peoples for more than 20,000 years.

Some of their stone tools from Canberra's Mount Ainslie are now in the collection of the British Museum. One of these, a stone scraper, travelled from Mount Ainslie to London and back for the exhibition — a long journey, through time and space.

Ngunnawal, Ngunawal and Ngambri people continue to live and travel through the Canberra region, preserving their culture by maintaining connections to land and through artistic expression.



Stone scraper

William Kinsela, an active collector of Aboriginal artefacts, acquired this stone scraper during a visit to Canberra in the 1930s, searching close to creeks and rivers and in the sheltered parts of hills.

He sent the scraper and some other objects to the British Museum in 1934, with a request that they be exchanged for 'several small type specimens of English or Continental stone implements of paleolithic man'.

The custodians of the Canberra region reflect on the meaning of country today.

Adrian Brown, Ngunnawal man, 2014:

Stone tools are all over the Canberra regions. They are pieces of country. We leave them where they lie so they will continue to be part of Ngunnawal country.

Enjoy your excursion around Canberra



Further information on all geoheritage sites around Canberra can be downloaded from the Geological Society of Australia web site—

***<https://www.gsa.org.au/Public/Geoheritage/>**
and look for ACT Sites and Maps on the pulldown menu.*