

AQUA2026

Walking Tour of The Rocks

1pm, 5th July 2026

The walking tour will introduce you to the Sydney sandstone, both as a 'big river' sedimentary deposit, as well its properties that has led to its use as a building stone.

The route and content is based on the UNSW Earth Science course GEOS1211 Earth and Environmental Science 'The Sandstone City' field class, taught by Andy Baker (UNSW) from 2021-2024.





How to get to the start?

Walk, or take a L2/L3 Light Rail or a train to Circular Quay Station.
 Light Rail from Central Station takes 15 min and costs \$2.30
 Walk to the MCA from the station (270 m, 4 mins)

Tell me about the tour?

It is about 1 km return walk to the Argyle Cut.
 We will be on paved footpaths. There are a few steps. Public toilets are well signed. We will walk through a busy tourist area with numerous shops, cafes and bars.

Going to the icebreaker afterwards?

The 396 bus from Circular Quay Stand B goes directly to the venue (22 mins, travel to Anzac Parade before Doncaster Avenue, \$3.14)

1 Introduction to the Sydney sandstone

Location: Museum of Contemporary Art

(built: 1952, from sandstone from Maroubra)



2

Sandstone buildings, The Rocks

Location: The Rocks

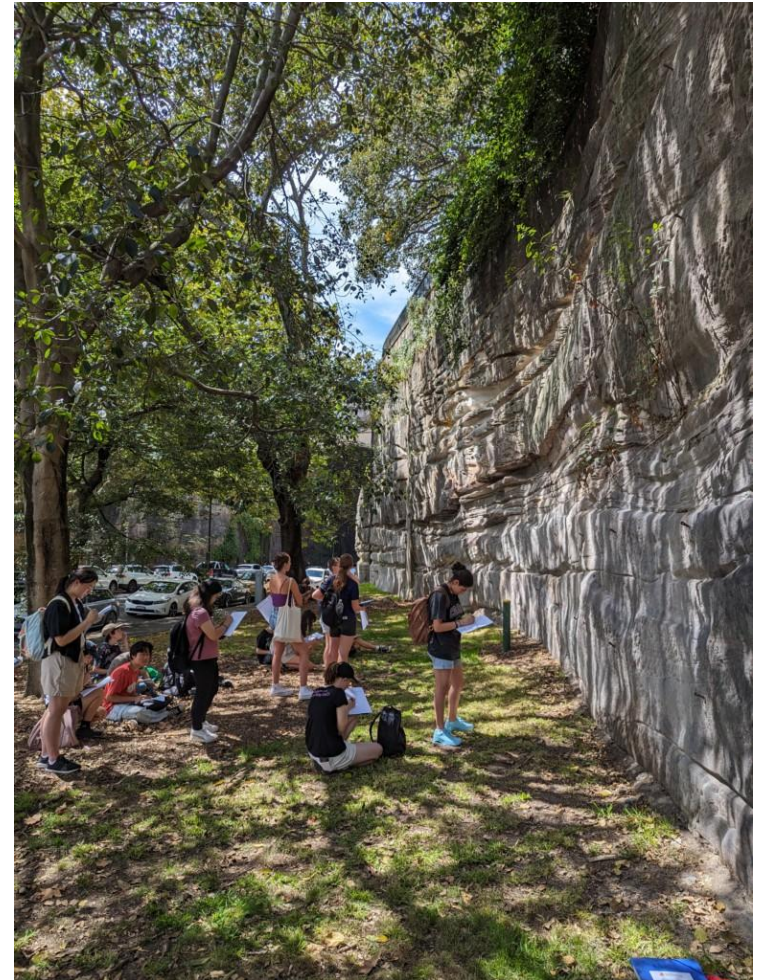
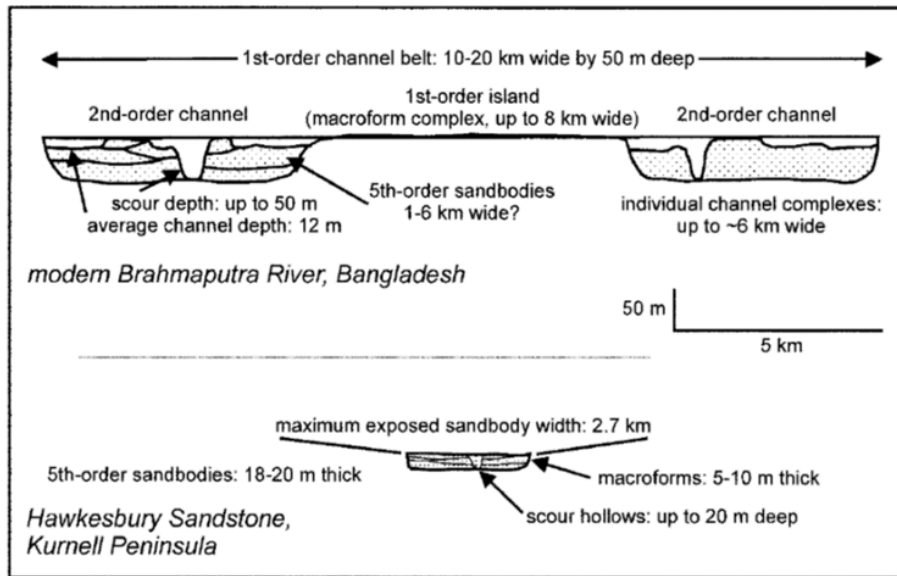


Vernon, 2020. Ferruginous banding in Sydney sandstone, Australian Journal of Earth Sciences, 68, 498-514



3 Sedimentary Geology and 'Big Rivers'

Location: Argyle Cut and Watson Road Reserve



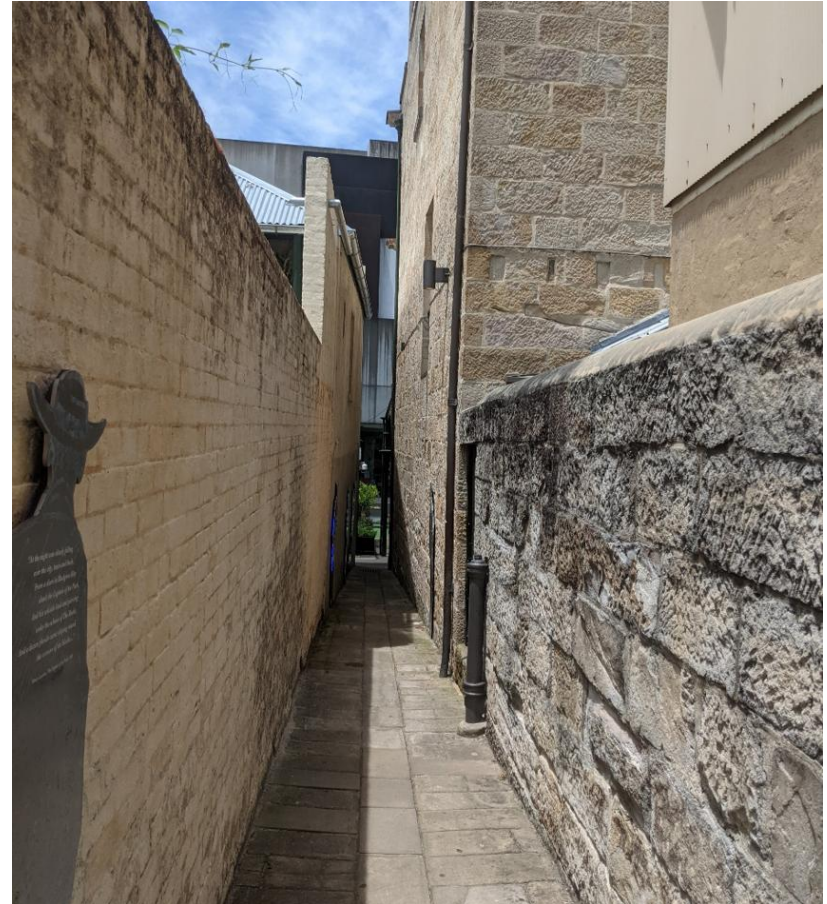
Miall, A. & Jones, B., 2003. Fluvial Architecture of the Hawkesbury Sandstone (Triassic), near Sydney, Australia. *Journal of Sedimentary Research*, 73, 531–545

What is the Hawkesbury Sandstone?

If you live in Sydney, you are likely to see some sandstone every day. Maybe in road or rail cuttings. Maybe as a building stone or a decorative stone. Most of this sandstone will be the Hawkesbury Sandstone.

The Hawkesbury Sandstone is widespread within the Sydney Basin of New South Wales, with deposits approximately 225 km long and 75-100 km wide. It was deposited in the Triassic, around 220 million years ago. It records the environmental history in its sediments. The scale of sedimentary features, especially the scale of cross-bedding, suggests the river was a large braided river, probably the size of the Brahmaputra today.

The Botany Basin (the location of the Centennial Parklands fieldtrip on Tuesday) is situated on the Hawkesbury Sandstone, meaning that where the Botany Sands are present, there is Hawkesbury Sandstone underneath.



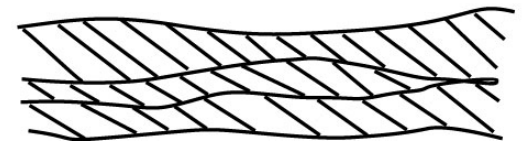
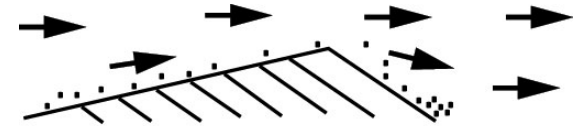
Why is it important: 1

The Hawkesbury Sandstone contains a record of Earth history. For example, the sedimentary structures can be analysed to understand the depositional environment.

The cartoon shows cross-bedding, a structure that can inform how sediment was transported in a river.

To form cross-bedding, sand is transported as sand-dune like bodies (sandwave). Sediment is moved up and eroded along a gentle upcurrent slope, and redeposited (avalanching) on the downcurrent slope. If this process continues, and if there is more sediment deposited than eroded, there will be a buildup of cross-bedded sandstone layers.

The inclination of the cross-beds indicates the transport direction and the current flow. The style and size of cross bedding can be used to estimate current velocity, and orientation of cross-beds allows determination of water flow direction.



Why is it important: 2

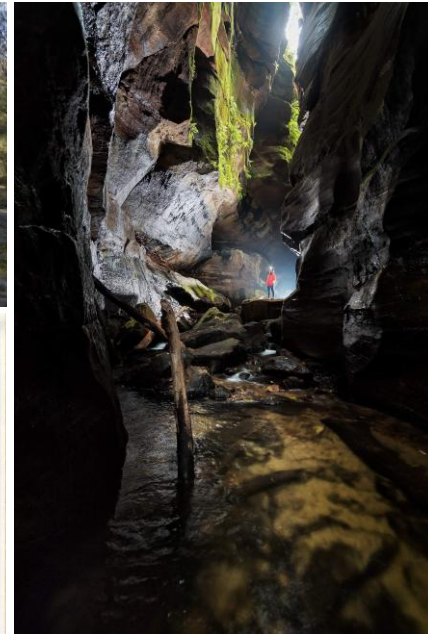
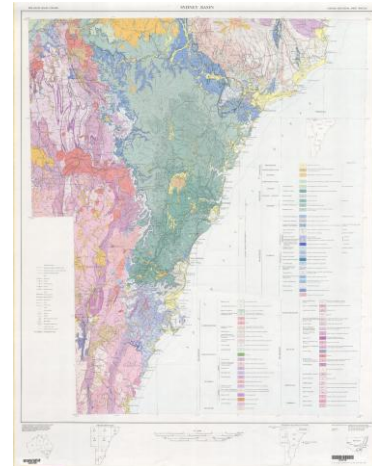
Sydney is surrounded by national parks, significant tourist attractions.

The predominant geology of these national parks is Hawkesbury Sandstone, and this is a major influence on the bio- and geo-diversity of the national parks.

The Sydney Basin 1:500,000 scale geological map shows the extent of the Hawkesbury Sandstone (you can download the image file from Geoscience NSW here)

<https://search.geoscience.nsw.gov.au/product/243>

Although mostly sandstone has been deposited, there are also some interbedded mudstones and shales. Where these occur, you can find different vegetation, often endangered communities.

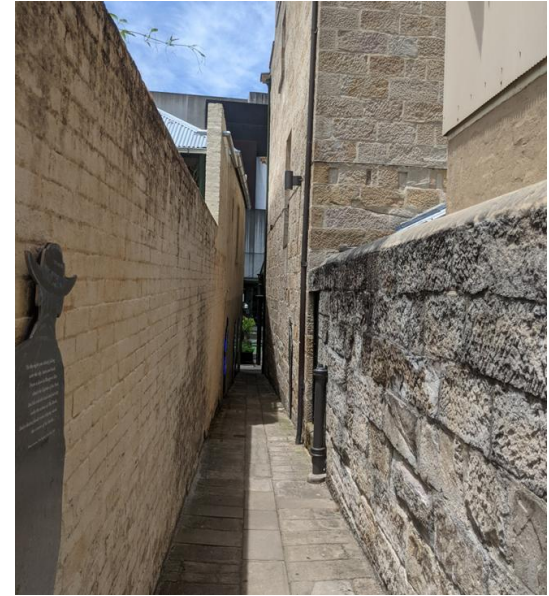


Why is it important: 3

The Hawkesbury Sandstone has economic value as a building stone and decorative stone.

When Europeans arrived in what is now known as Sydney, they used the local geology as a building stone. Today, you can see historical buildings constructed of Hawkesbury Sandstone, especially in The Rocks.

One distinctive feature of the Hawkesbury Sandstone is the coloured banding is often found. This ferruginous banded sandstone can be found through Sydney, used as a decorative stone – look for it in sandstone facades, sandstone walls and as decorative features. A good example is the new Barangaroo Reserve on Sydney Harbour.



References

Miall, A. & Jones, B., 2003. Fluvial Architecture of the Hawkesbury Sandstone (Triassic), near Sydney, Australia. *Journal of Sedimentary Research*, 73, 531–545 <https://doi.org/10.1306/111502730531>

Vernon, RH 2020. Ferruginous banding in Sydney sandstone, *Australian Journal of Earth Sciences*, 68, 498-514 <https://doi.org/10.1080/08120099.2020.1819876>

