

STEPPING STONES



Two self-guided geology trails in the city

Finding geology in Perth city

Trail 1

3. Ritter's Pole, Stirling Gardens

This ore obelisk (popularly referred to as the 'rock kebab') is a memorial to State progress. Erected in July 1971, it celebrated jointly the millionth citizen and the decade-long exploration and mining boom between 1960 and 1970. It has elicited a range of reactions! Designed by architect Paul Ritter, this 15 m oil-well drill pipe has 15 different ores threaded onto it, all from Western Australia, showcasing the wealth and diversity of our mineral treasure.

www.publiccartaroundtheworld.com

4. Kangaroos drinking, Stirling Gardens

The boundary walls and floor of the reflection pool adjacent to Ritter's Pole

(where the kangaroos drink) are made of Toodyay Stone, a light-green rock with sparkling surfaces. The rock is an Archean metamorphosed quartz sandstone, now a quartzite, quarried at Toodyay, about 70 km east of Perth. Pale-green fuchsite (a chrome-rich mica) on its surfaces make it sparkle in the sunlight. The flaggy, banded rock easily splits into almost perfectly flat flagstones. It is a highly decorative local stone, used for feature walls (as here), chimneys, and urban landscaping.

Ritter's Pole and kangaroos drinking, Stirling Gardens, St Georges Terrace



6. Tamala Limestone rock face

An exposed rock face of Tamala Limestone, a cross-bedded dune limestone, is visible in the cliff below the war memorial in Kings Park. The rock is made up of sand-sized shell fragments and quartz grains that were blown up along the coast during a glacial period less than 200 000 years ago, and were then cemented by calcium carbonate. Two features here are large cross-beds (indicative of a wind-blown origin) and vertical solution pipes (in the upper right of the photo) that formed where tree roots rotted away, leaving cavities now filled with sand. This rock face can be viewed from afar from the walking trail along Mounts Bay Road or up close in Kings Park. See Trail 2 for buildings made of this limestone.



Perth Mint, Hay Street

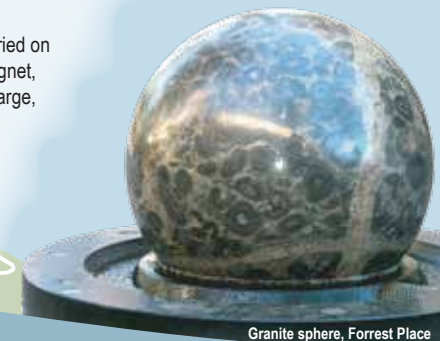
2. Perth Mint

The Perth Mint is one of Perth's most impressive Colonial-era buildings and is registered with the National Trust. Built of Quaternary Tamala Limestone, the Mint opened in 1899, minting gold sovereigns. After the introduction of decimal currency in 1966 the Perth Mint had produced a staggering 855 million one-cent and two-cent coins by 1973. It now mints and markets gold, silver, and platinum Australian legal tender coinage to investors and collectors worldwide. A heritage building, gold bullion and nuggets, precious-metal souvenirs, and a real gold pour (liquid gold poured into an ingot) combine to make the Perth Mint a popular tourist attraction. www.perthmint.com.au

5. Granite sphere, Forrest Place

This floating stone sphere, sculpted from Western Australian orbicular granite, was designed and manufactured in Perth. Water is pumped from beneath the sphere, gently lifting it and allowing the sphere to rotate on a microfilm of water (0.10 mm). Perfectly balanced, the sphere rotates unassisted about its axis, but with a mere push may be sent spinning in another direction.

This rare rock is orbicular granite, quarried on Boogardie Station, near Mount Magnet, some 600 km northeast of Perth. Large, closely spaced, light to dark grey, egg-shaped orbicules of hornblende and plagioclase crystals lie in a granitic groundmass. Large veins of quartz and feldspar cut across the rock. Similar rocks in the region have been dated at 2685 million years. www.floatingstones.com.au



Granite sphere, Forrest Place



Peter Pan sculpture, Queens Gardens

1. Queens Gardens

Dated 1899, these inner-city heritage gardens were part of the gentrification of Perth after the heady gold-rush days of the early 1890s. The gardens are landscaped over a former clay pit — a fine example of sequential land use. This clay pit (with adjoining brickworks) supplied soft bricks for many of Perth's earliest buildings. The deepest parts of the clay pits are now the lakes as the clay forms a natural seal to retain water. The former quarry walls have been contoured to form slopes for spring bulb displays; lake birdlife is plentiful. A reproduction sculpture of Peter Pan in the gardens was gifted to Perth's children to celebrate Western Australia's centenary in 1929.

Queens Gardens, Plain Street

- 5 Geological feature of interest
- St Georges Terrace façades trail (see reverse)
- Railway, railway station

SWAN RIVER

See reverse side for more detail on the Façades of St Georges Terrace

For more copies of this pamphlet and information about publications, maps and datasets published by the Geological Survey of Western Australia contact:

Information Centre
Department of Mines and Petroleum
Mineral House
100 Plain Street
East Perth WA 6004

Phone: (08) 9222 3459
Fax: (08) 9222 3444

www.dmp.wa.gov.au/GSWApublications



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Trail 2 St Georges Terrace façades

Façades of St Georges Terrace

Strength, durability, and beauty are just some of the reasons that polished stones feature in Perth's major buildings. Local and imported granites, multi-coloured marbles, sandstones from Western Australia and afar, local limestone, and metamorphic rocks are all used with great effect for walls, floors, paving, and carved stone features in buildings in the city. A stroll along the Terrace offers a plethora of coloured and polished rocks used in a variety of ways.

Trail 2 looks at the façades of many buildings in the CBD. The walk can commence anywhere and proceed in either direction along St Georges Terrace. Just follow the numbered circles along the route: they show the building address and the rock type used. The photos show the beauty, texture, and usage of the stone. Even street numbers are on the north side of the Terrace.

Rock types used on façades

Igneous rocks

Igneous rocks are formed by cooling of molten magma from deep within the Earth. Rocks that cool slowly have a chance to grow large crystals of interlocking minerals (e.g. granite and gabbro). Rocks ejected and cooled quickly at the Earth's surface, perhaps via a volcano, are fine grained (e.g. basalt). Cross-cutting veins and dykes are also igneous.

Sedimentary rocks

All rocks are weathered or eroded by wind, water, and ice. Weathered particles such as gravel, sand, silt, and clay, are transported to new locations and redeposited in layers along rivers, in deltas, and under the oceans. Over a long period the particles are compacted and solidified into sedimentary rocks, such as sandstone and shale. Sedimentary rocks can be banded or layered, contain fossils (limestone), have a sandy or silty look, or be formed by chemical means.

Metamorphic rocks

Metamorphic rocks form under pressure and high temperatures at various depths within the Earth. The rocks are squeezed, pressed, contorted, and may almost be melted. Metamorphism changes the minerals in the rock and the texture of the rock. Sandstone may be metamorphosed to quartzite, granites may be metamorphosed to migmatites or to gneisses.