



Rock around campus



5 University Square [Campus map location D7]

This fully accessible trail is one of a planned series of walks around the University of Liverpool. The aim is to introduce the rocks and man-made materials used in the buildings and paving around the campus.

To help you, in this leaflet you will also find:

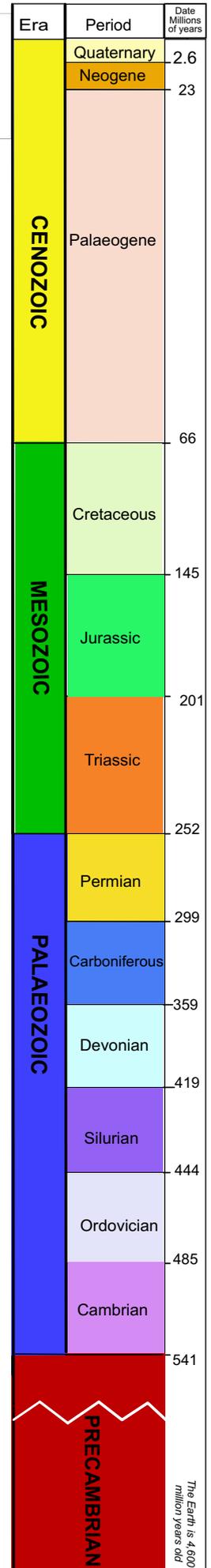
- a map showing the names of buildings around University Square;
- a glossary of terms;
- a geological timechart.

This is a self-led guide and you need to get close to the buildings so that you can see the fine details. Allow an hour to complete the trail.

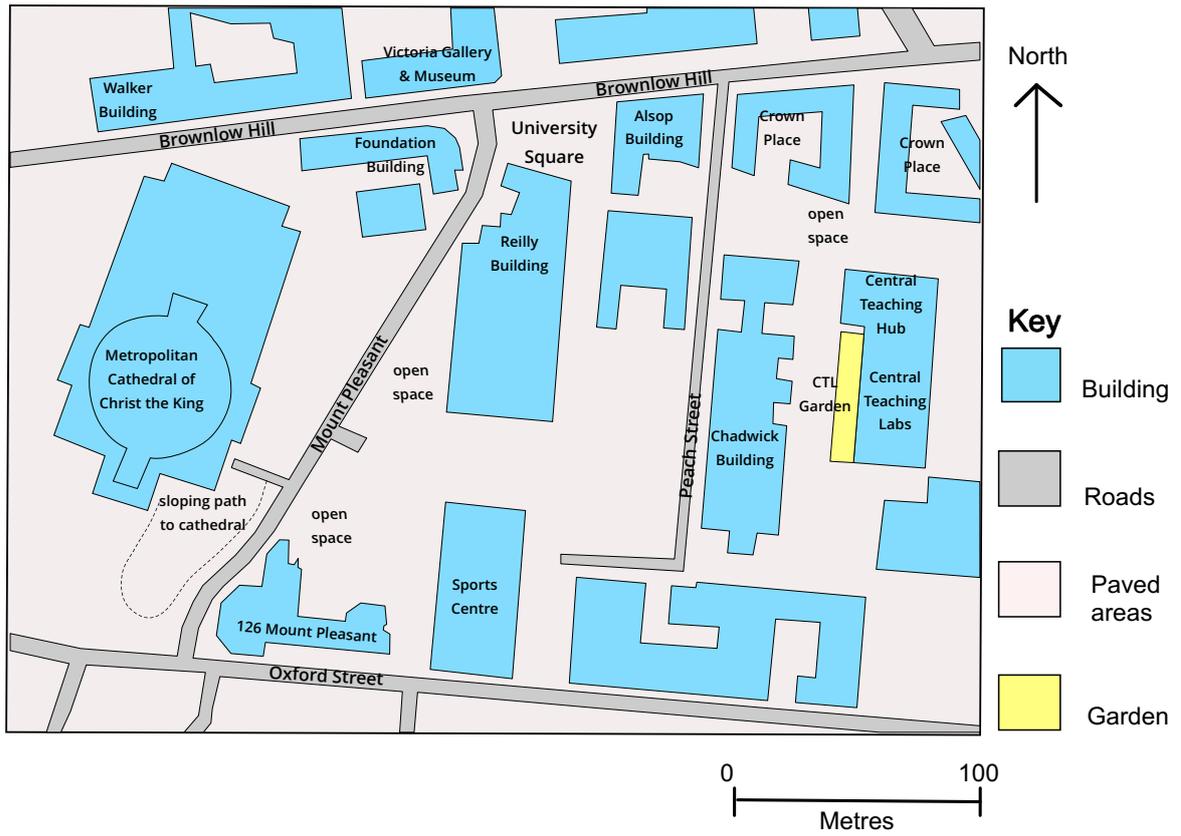
There are three types of rock: **igneous** (crystallized from molten rock); **sedimentary** (derived from the breakdown of other rocks) and **metamorphic** (rocks changed by heat and/or pressure). Man-made materials are also derived from Earth materials. Examples include **bricks** (baked clays); **concrete** (a mixture of sand, gravel and limestone); **glass** (a mixture of sand and limestone); mortar (a mixture of sand and limestone); **metals** (lead used in flashings, copper used in wires and lightening conductors, iron used in drain pipes and railings) and **alloys** (mixtures of metals for example bronze used in statues).



University Square



Map showing the names of the buildings near University Square



Start near the telephone box in University Square. Look at the large slabs of rock engraved with the name of the square (photo A). These rock slabs are made of an igneous rock called granite that formed when molten rock crystallized deep in the Earth's crust.



Now look at the paving stones. Most of the paving stones are buff-coloured granite (photo B) but grey granite slabs are used in places (photo C). Some of the buff-coloured paving stones show veins or bands where crystals of a different size or colour have formed (photo D).

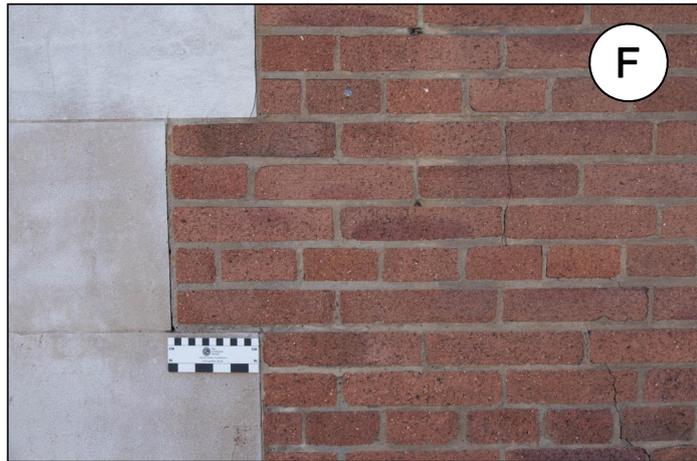


You should notice that the buildings surrounding the square all look different because they are made from different materials.

The *Reilly Building*, the main building in University Square, is a Grade II listed building and is the older part of the Students' Union (Liverpool Guild of Students). It is made from bricks and blocks of a white sedimentary rock (photo E). This sedimentary rock is known as Portland Limestone (Jurassic).



Brickwork in this building shows an unusual pattern known as English Garden Wall Bonding (photo F). Steel is used for the metal windows and balcony railings on this building.



Look at the blocks of limestone (photo G) and see if you can recognize the shell fossils in the rock. Most are fragments, but you may spot some whole oyster shells. Rainwater is a weak acid which attacks the alkaline limestone and gradually weathers it (or eats it away). The shells are less susceptible to the acid attack and stand proud of the surface.

Go to the left of the Reilly Building towards the 'bridge building' (the Alsop building). Look at the change in the pavement where block paving or brick paving is used instead of granite paving stones (photo H). The bricks provide a decorative method of creating a hard surface and the main benefit of bricks over other materials is that individual bricks can later be lifted and replaced.



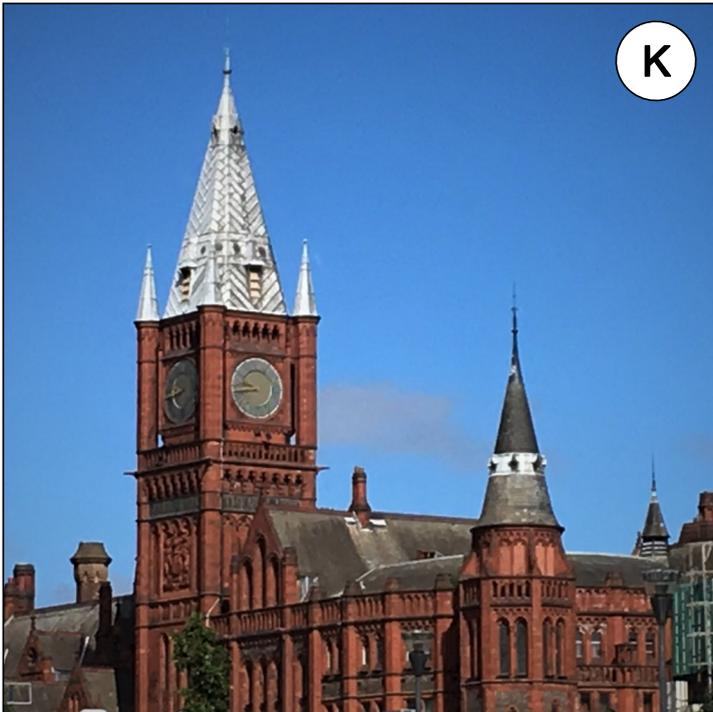
Look at the view along this brick paved area. Notice the use of curved concrete in the seating areas (photo I).



Also look the details shown on this side of the *Reilly Building*. The Portland Limestone is hard enough to resist weathering but soft enough to be carved and shaped by stonemasons. Notice the limestone carvings and how the limestone blocks have been shaped around the windows (photo J).

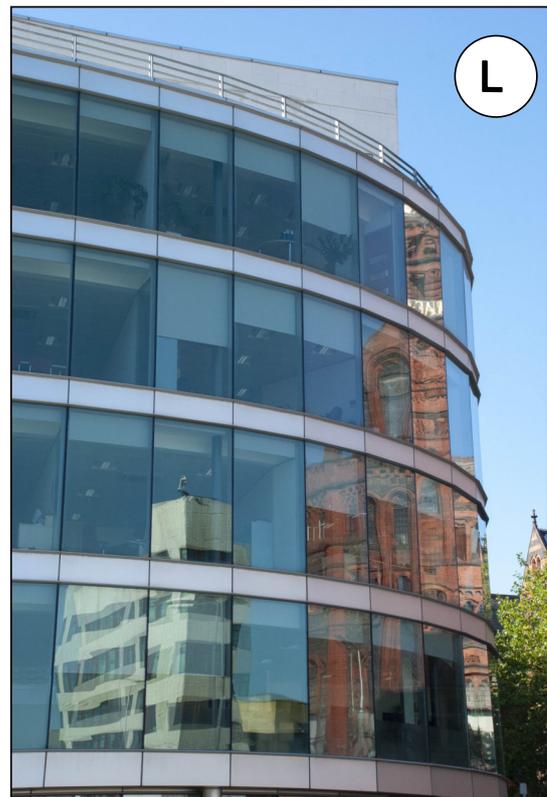


There are two options next. You can either return to the middle of University Square or continue under the bridge building away from the Reilly Building to reach the Crown Place plaza. [Progress to Rock around Campus 4 The Central Teaching Hub].



By returning to the centre of University Square another Grade II listed building, the *Victoria Building*, can be seen across University Square on the opposite side of Brownlow Hill. The *Victoria Building* (photo K) is made of different types of brick although blocks of sandstone (a sedimentary rock) are at the base of this building. It was an original part of the University of Liverpool and the inspiration for the term “red-brick university”.

The *Foundation Building*, which is opposite to the Victoria Building, is made of limestone and floor to ceiling glazing, which mirrors or reflects the view of the red-brick building (photo L).



Cross Brownlow Hill at the pedestrian crossing and continue into the Quadrangle [Progress to Rock around Campus 1 The Quadrangle] to look at the finer details of the *Victoria Building*.

Glossary of terms

Bonding: is developed in brick masonry by the mortar filling between layers of bricks and in grooves when bricks are laid adjacent to each other and in layers in walls.

Cast iron: a hard, relatively brittle alloy of iron and carbon which can be readily cast in a mould. It has a higher carbon content than steel.

Cladding: material that is attached onto another on a building to provide a skin or outer layer.

Crystal: a mineral solid with a regular atomic structure, often having a regular shape.

Facing stone: stone that has been cut and shaped and used as a decorative facing material rather than as load-bearing part of the building.

Feldspars: rock forming minerals that are common in igneous rocks; includes plagioclase and orthoclase.

Fossil: any preserved remains, impression, or trace of any once-living thing from a past geological age. Examples include bones, shells, exoskeletons, leaf impressions, tracks and trails.

Granite: light coloured, crystalline igneous rock with large crystals of quartz, plagioclase, orthoclase and mica.

Limestone: a sedimentary rock composed primarily of calcium carbonate (CaCO_3) in the form of the mineral calcite.

Mica: a shiny silicate mineral with a layered structure.

Mineral: a natural solid material of fixed chemical composition with an orderly internal atomic structure.

Orthoclase: a type of feldspar mineral rich in potassium.

Paving slabs (or stones): naturally-occurring igneous, sedimentary, or metamorphic rocks which can be cut, shaped, or split into blocks or slabs for use as paving materials.

Plagioclase: type of feldspar mineral.

Quartz: a mineral composed of silicon and oxygen atoms.

Stonemason: a person who cuts, prepares, and builds with stone.

Weathering: is the breakdown of rocks at the Earth's surface, by the action of rainwater, extremes of temperature, and biological activity. It does not involve the removal of rock material.