A Country Park Geology Trail – 2 km/1.2 miles

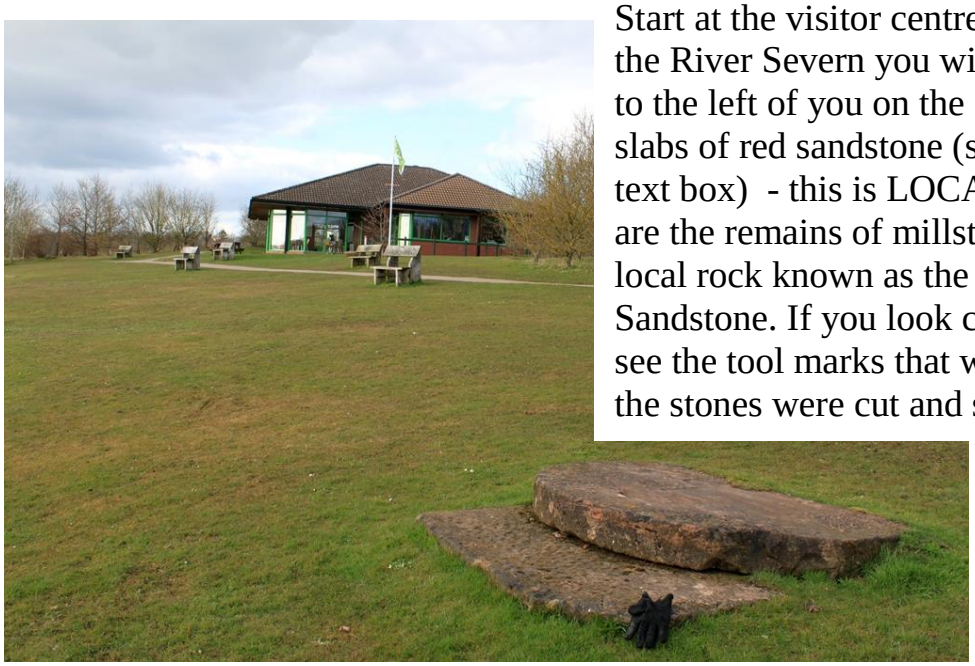
The Wyre Forest and surrounding areas are underlain by rocks belonging to an age that geologists call the Carboniferous (see GEOLOGICAL TIME SCALE text box). During this time at about 320 million years ago, Britain was part of a continent in the tropics of the southern hemisphere. The landscape was one of rivers and streams with extensive flood plains, swamps, deltas and shallow lakes.

GEOLOGICAL TIME SCALE (start of periods in millions of years ago)
Quaternary 1.6
Neogene 23
Paleogene 65
Cretaceous 142
Jurassic 205
Triassic 248
Permian 290
Carboniferous 354
Devonian 417
Silurian 443
Ordovician 495
Cambrian 545
Precambrian 4600

When the rivers were in flood much silt and mud were deposited and in the river channels considerable volumes of sand accumulated (see SEDIMENTARY ROCKS text box). These formed some of the rocks that you will see on this trail.

SEDIMENTARY ROCKS
Sedimentary rocks are made up of particles deposited in layers. They usually form beneath the sea, in lakes and rivers or in deserts. The particles may become cemented together by specks of mud or new minerals such as iron or calcium carbonate. Over millions of years the sediments become rock.

FOLLOW THE MAP ON THE BACK PAGE. The location letters do not exist on the ground.



Start at the visitor centre. Looking towards the River Severn you will see a little way to the left of you on the grass some large slabs of red sandstone (see SANDSTONE text box) - this is LOCATION A. These are the remains of millstones cut from a local rock known as the Alveley Sandstone. If you look carefully you will see the tool marks that were made when the stones were cut and shaped.

SANDSTONE
As the land is eroded small particles of rock are carried away by wind and water to be deposited on river beds, in deserts or on the sea bed. Sand sized particles may accumulate to a thickness of many metres. Over time the sediment is buried, compressed and cemented into a hard rock called sandstone.

LOCATION A

With your back to the visitor centre move ahead a short distance to the main track. Turn right and join the Riverside Trail (blue waymarkers) and continue downhill for approximately150m to the bench with the waymarker. Note the bare ground on your left. This is LOCATION B. Walk on to this ground and look carefully at the rock fragments that are exposed beneath your feet. You will see small fragments of black coal, brown ironstone and grey shale (see COAL text box). These are all sedimentary rocks and were formed in the river deltas and coastal lagoons of the Carboniferous Period. The fragments you can see are the uneconomic remains of the coal mining operation that look place on this site and which were tipped as colliery spoil.

COAL results from the accumulation of great thicknesses of vegetation over long periods of time. This vegetation became compacted as it was buried beneath a cover of clays and sands. Water and gases were driven off and the residue was progressively enriched in carbon and transformed into coal. The peak time on the Earth's surface for the formation of coal was the Carboniferous Period.

LOCATION B

Return to the track. Follow this downhill to the river bridge and then down the steps to the riverside. At the base of the bridge support (LOCATION C) you will

see large blocks of a dark grey rock. These are of the igneous rock dolerite (see IGNEOUS ROCKS text box). It formed beneath volcanoes from molten rock known as magma, which was being forced upwards from deep within the Earth's crust. The boulders have come from the quarries on Clee Hill where these intrusions happened at the end of the Carboniferous period.

IGNEOUS ROCKS are formed when molten material (magma) rises from deep within the Earth. As it cools it solidifies to form igneous rock. When magma is forced into spaces in existing rocks it is known as an intrusive igneous rock. Examples are granite and dolerite. When the magma reaches the surface and forms a volcano it is known as an extrusive igneous rock. Basalt is an example.

LOCATION C

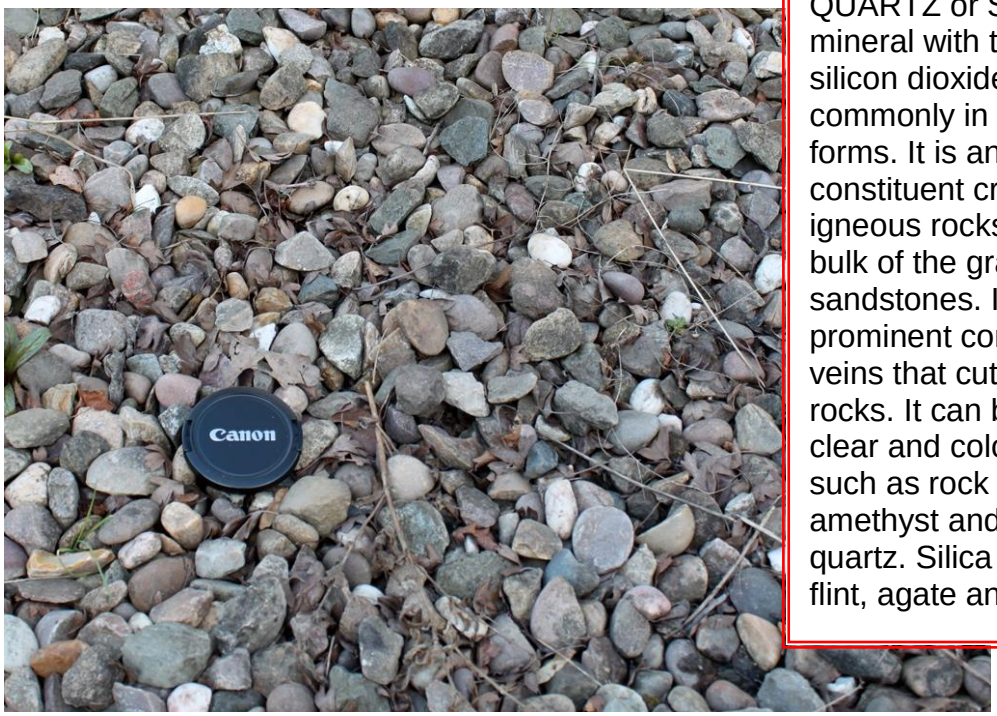
Now walking southwards downstream, follow the Riverside Trail. Having passed through the gate, you will see stretching into the distance, the floodplain of the river (see FLOODPLAIN text box). It is only 60m wide. This is LOCATION D. On the opposite bank of the river there is no floodplain at all. This narrow steep-sided valley of the River Severn is the result of rapid downward erosion of the land surface by torrential floodwaters from melting ice at the end of the last Ice Age.

LOCATION D

A FLOODPLAIN is formed when a river starts to erode the land surface in a horizontal direction. As the river changes its course over time this flat area becomes more extensive. Alluvium is deposited on the flat land in times of flood. A geologically young river will have a narrow or non-existent floodplain.

Go through the next gate and continue on the Riverside Trail. Cross the small wooden footbridge. To the right and by the side of the track you will see an area of grey, brown and white gravel. This is LOCATION E. This gravel has been used to assist with trackside drainage. It is gravel sourced from quarries adjacent to the

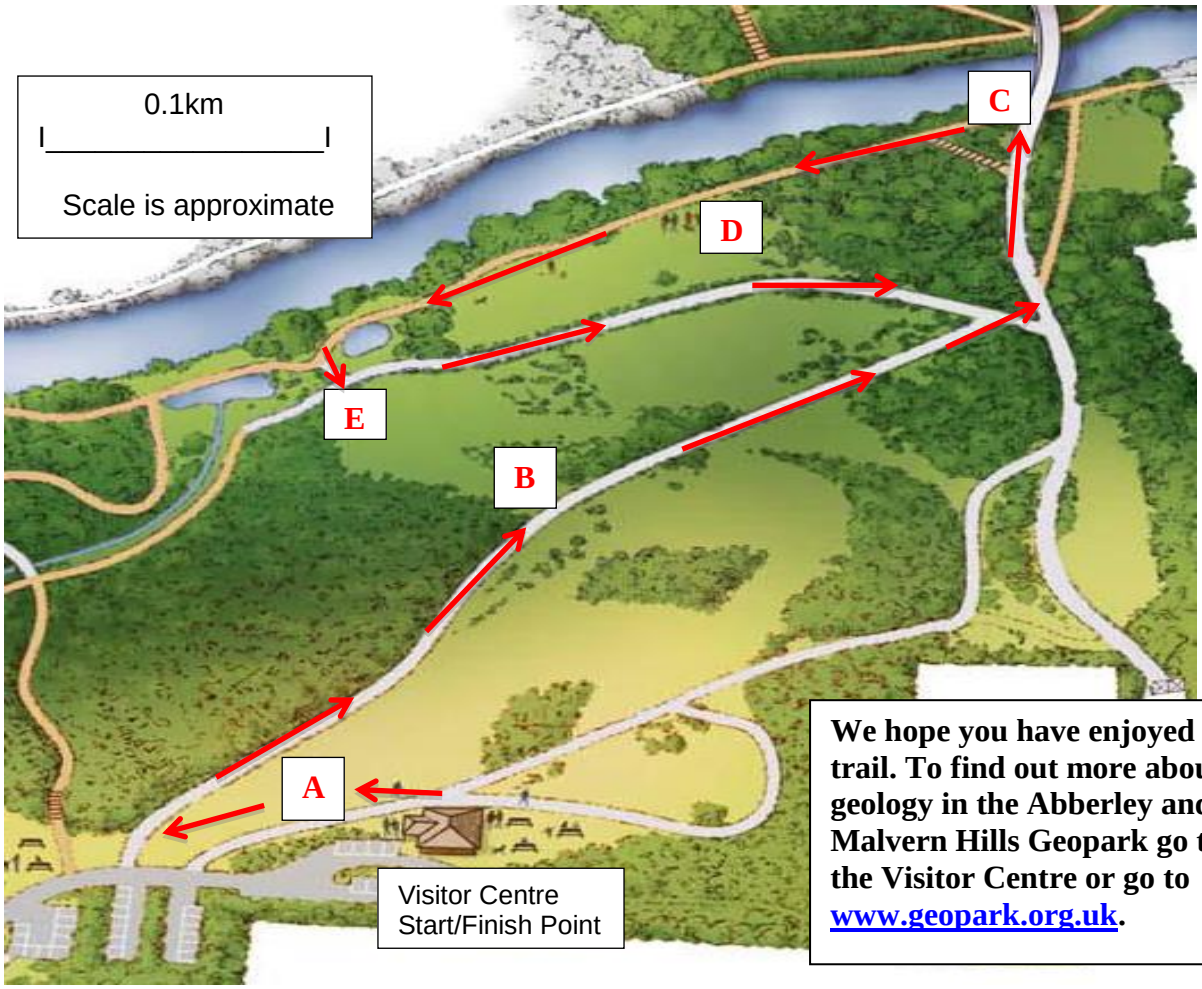
River Severn near Worcester where pebbles were deposited from the floodwaters of the river over 10,000 years ago. Look for the fragments of white vein quartz (see QUARTZ text box).



QUARTZ or Silica is a mineral with the composition silicon dioxide. It occurs commonly in many different forms. It is an original constituent crystal in many igneous rocks. It forms the bulk of the grains in sandstones. It is also a prominent constituent of veins that cut through older rocks. It can be found as clear and coloured crystals such as rock crystal, amethyst and rose quartz. Silica occurs also as flint, agate and jasper.

LOCATION E

Continue along the Riverside Trail to make your way back to the Visitor Centre. On your way see if you can find examples of the rocks that you have seen so far.



We hope you have enjoyed this trail. To find out more about geology in the Abberley and Malvern Hills Geopark go to the Visitor Centre or go to www.geopark.org.uk.