

Visit report
Somerset Earth Science Centre
nr. Radstock
10 April, 2026

Ten NGS members visited the Somerset Earth Science Centre on Friday, 10 April. The centre is located adjacent to Moon's Hill Quarry on the Beacon Hill Pericline near Radstock. The Society visited the eastern end of the pericline on the Valis Vale trip in September last year, so this provided further context to the overall picture of Mendip Geology.

The Centre is funded by the five quarry producers in the Mendips area as an educational centre for the local communities and hosts visits for schools, geology societies such as ours and hosts public open days. The area is extensively quarried for aggregates, primarily andesites and the Black Rock limestone.

The day started with a presentation on the geological history of the Mendip Hills by Dr. Peter Hardy, author of the book *The Geology Of Somerset*.

The story of the Mendip Hills began in the **Silurian** period, some 420 million years ago (oldest are 428 Ma). The region was a volcanic island arc offshore of an ancient coastline, where typical subduction zone volcanism erupted thick layers of andesite (an intermediate igneous rock derived from a mix of basaltic oceanic crust and accretion accretionary prism sediments).

In the following **Devonian** period, thick deltaic deposits of sandstone, known as the Old Red Sandstones, eroded off the Arcadian Mountains to the north in what is now the Briston Channel area, were deposited on top the andesites.

A marine transgression in the early **Carboniferous** led to shallow seas over the region, in which limestones were deposited. The primary unit of commercial interest is the Black Rock Limestone, so coloured by manganese content.

The **late Palaeozoic** Variscan Orogeny, where Laurussia and Gondwana collided to form Pangea, compressed and folded these three layers of rock, pushing up the four periclinal structures (classically described dome structures, but here they are elongated into east-west oriented anticlinal structures with closure at each end) that now make up the Mendip hills. Beacon Hill, the feature of today's and the Valis Vale trip last year, is the easternmost of these periclinal structures.

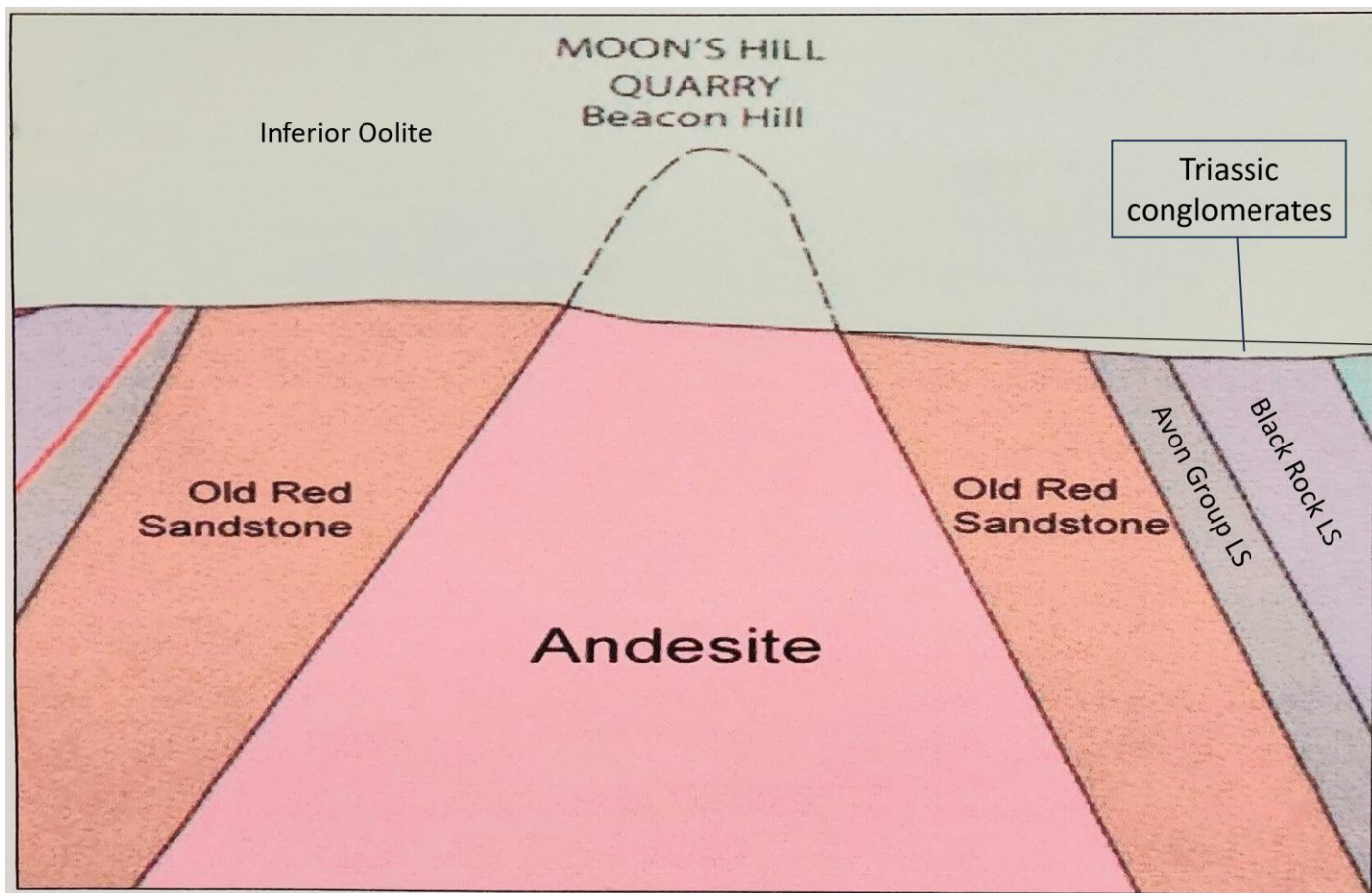
The following **Permian** period featured extensive erosion of the Mendip structures, removing the crests (as seen in the De la Beche Unconformity at Valis Vale).

Conglomerates of dolomitic composition were then deposited in the **Triassic**, but these were largely removed by further erosion and only minor deposits exist in the Mendips today.

The story of commercially valuable geology ends in the **Jurassic**, when shallow seas provided the right environment for the deposition of thick layers of oolitic limestone, the Inferior Oolite. This building stone is not present in commercial quantities in these quarries, but is extracted and used extensively as a building stone elsewhere in the region.



Above: samples from the Centre, from l to r: andesite, Old Red Sandstone, Black Rock Limestone, Valis Vale Limestone (overlies the BRL, blue on the right of the diagram), then the non-conformal Triassic conglomerate and the Inferior Oolite.



Above: cross-section through the Beacon Hill pericline, showing the general relationship between the andesite core (Silurian), ORS (Devonian), Black Rock (Carboniferous), conglomerate (Triassic) and Inferior Oolite (Jurassic). The De la Beche Unconformity is represented by the horizontal line truncating the Palaeozoic rocks.

After Peter's presentation, we headed off in the Centre's bus to Whatley Quarry, five miles to the east on the southern limb of the Beacon Hill pericline. This superquarry produces 6 million tons of aggregates from the Black Rock Limestone annually. From a viewpoint on the northern edge, we had a panoramic view of this massive excavation, around a mile long (east to west), $\frac{3}{4}$ mile wide and currently 150 metres deep (planned to go down to 165 metres). The process of removing and storing overburden (used later in site remediation), benching (the rock is excavated in benches, each 15 metres high & wide) and moving stuff around on the quarry floor to access particular areas was explained, with all the live operations taking place before us. Management of groundwater is a major task, with large ponds and pumps used to move, store and remove water. When the quarry is finally abandoned, it will become a reservoir up to the top of the water table, with the top two benches, which will remain dry, already being remediated with vegetation.



Above: panoramic view of Whatley Quarry, looking across to the north wall. The rock is all Black Rock Limestone. Note the processing works at top left.



Above: the north wall, showing two faults running from surface to base. The pale, steep scar on the left is thought to be a normal fault, and the incline running from upper left to lower right is thought to be a shallow-angle thrust fault.

Below: north wall bedding planes, dipping at around 65° , seen at the processing works.



We moved on to the processing works at the north-west end of the quarry and visited the operations room, where to process of crushing, sorting, storing and exporting was explained. The largest market for the quarry's aggregates is the South East of England, and product is transported there by rail from a railhead here at the quarry, passing through Newbury on the way.



Above: the 6 million tons produced annually arrives at the primary crusher 100 tons at a time.

After Whatley, we returned to the Centre to view the adjacent Moon's Hill Quarry, where andesite is extracted from the core of the pericline. A similar production process is followed, though product, around 700,000 tons annually, is exported by road.



Above: Moon's Hill Quarry, where andesite is extracted. The red rock just left of centre in the picture is the Old Red Sandstone that overlies the igneous rock and separates it from the Black Rock Limestone extracted at Whatley.

The day ended back at the Centre, where we examined their extensive rock and fossil collection.