

Geological trail around St. Michaels.

START: The basilica foundations to the right of Verulamium Museum main door as you come out of the Museum. Also note the carefully knapped **flints** of the museum walls.



The line of the Basilica foundations has been highlighted using a distinctive rock type. The cobbles are **dolerite**; a dark basic igneous rock comprising medium grained crystals of plagioclase feldspar, pyroxenes and magnetite.

1st stop St. Michael's Church: Wall construction typical of the immediate area with a combination of flint and roman brick as the main constituents. The corner stones comprise a shelly oolitic limestone which is thought to be **Jurassic Ham Hill Limestone** from Somerset. There are also examples of the "banded" **Ancaster Stone** derived from Lincolnshire.

Walking around the church to the left; within the shrine hole cidarid echinoid plates are visible within one of the flints. The arch in the south corner of the church is made of **Totternhoe stone**, a much used local building stone originating near Dunstable, noted for its potential for carving when it's fresh and soft, then hardening as it's exposed to air.



There are numerous blocks of **Hertfordshire Puddingstone** in the walls of the church and there are considerably more on the north side when compared with the south. (*If you want to have a competition counting them then the final totals are given at the base of the next page*).

Much of the porch was originally constructed using Totternhoe Stone, but this has weathered away and was been replaced during the Victorian renovations using striped Jurassic oolitic Ancaster Stone from Lincolnshire. The same stone has been used to replace the window mullions along the side of the church.



If you look carefully in a flint about a metre to the right of the main porch at about head height, the basal part of a conical fossil sponge (*Ventriculites*) is visible in the centre of the flint.

Now make your way out of the churchyard and back onto St. Michaels Road noting the use of Jurassic Portland stone for the porch of the original Verulamium museum building.

There is not a great deal of geology to see as you walk down St. Michaels Street, but it's worth keeping your eye on the **Sarsen stone** gutters and the kerbstones on the left side of

the road. These sets all appear to be made of a yellowish brown siltstone or flagstone as far as the Six Bells, set with the bedding planes vertical, presumably as they were easier to shape like this before the use of diamond saws. From Blacksmiths Lane to Kingsbury Mill they change to be an igneous rock, probably a **granodiorite**. The kerbstones outside the Rose and Crown are good examples.

2nd stop Kingsbury Mill: The **Hertfordshire Puddingstone** found at the front of the mill building is a typical example of this well known local rock. It is a type of conglomerate with



abundant flint pebbles of varying sizes (2 – 15 cm across) contained within a siliceous matrix or silcrete. Most of the pebbles have a black coating/patina although many show other colours such as yellow, brown or grey. There are also occasional red coloured pebbles. The flints were originally eroded from the Chalk before being rounded by transport during re-deposition during the Paleogene period around fifty five million years ago (Upnor and Reading Formations). The siliceous cementation followed shortly afterwards, forming the very hard stone we find today.

It's interesting to note that the puddingstone is so hard throughout that fractures cut through the pebbles and continue on through the matrix. There is another excellent example of Hertfordshire Puddingstone on St. Michaels Court, just opposite the Blue Anchor Inn, which shows deep reddish brown pebbles in a brown matrix.

Turning left off St. Michaels Road onto Branch Road you pass Kingsbury Manor. This has numerous blocks of **Totternhoe Stone** built into the walls around the site. Although many of these blocks have been given a coat of white paint during the Manor's history there are still many which have the typical greenish grey colour of the original rock, some also containing small (< 1cm) subangular grains of phosphate which are often found in certain levels of this rock. Walk on up Branch Road to the corner with Mount Pleasant lane.

3rd stop Ver Cottage: This "chalk house", built in 1831, uses regular blocks of clean white chalk. **Chalk** is a firm, very fine grained limestone, formed from the microscopic remains of extremely small single celled plants or algae. The plate-like remains of these organisms are called coccoliths and these were deposited on the sea floor during the formation of the chalk between 100 and 65 million years ago. Most of the chalk found around St. Albans was deposited between 87 and 90 million years ago. It often has a cream colour and is "gritty" to the touch being formed of abundant, fragmented shell debris. This is not the case with Ver Cottage; the chalk here is fine, white and chosen by the builder or original owner to retain this clean looking colour. If you analyse the coccoliths that make up the chalk of the cottage they're about 85 million years old and therefore younger than the chalk found in the St. Albans area. The nearest in-situ chalk of this age occurs around Hertford or Rickmansworth; so the chalk in the walls of Ver Cottage were "imported"; a considerable feat at a time before the railways and when roads were not at their best.

If you enjoyed this introduction to geology, visit www.hertsgeolsoc.org.uk to learn more.

Answer to the St. Michaels Puddingstone Question: There are five blocks on the south wall and forty eight on the north wall.