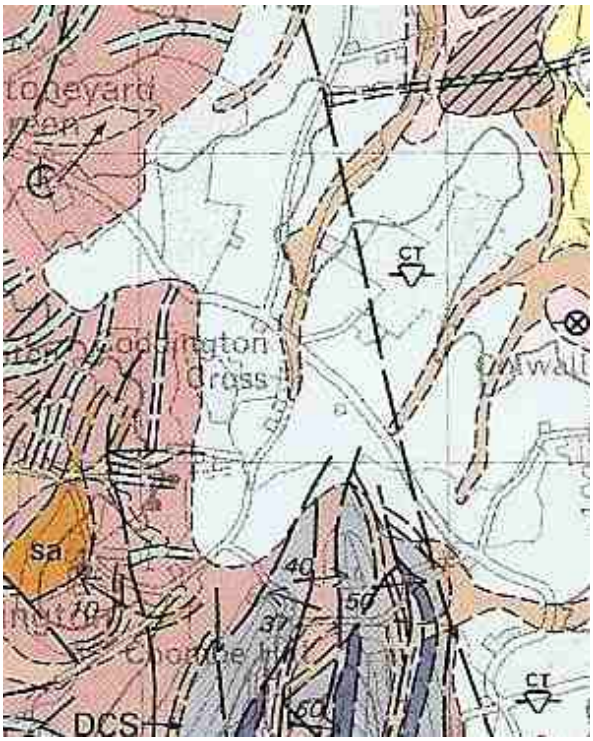
Appendix 1 - Geology Report on Adhisthana by Moira Jenkins

Adhisthana, formerly Coddington Court, is perched on a ridge capped with glacial moraine, composed of rock fragments which were carried in the ice and deposited as a glacier melted in a red-brown clay matrix. The ground slopes down past the swales to a valley cut in Raglan Mudstone, the highest part of the Silurian and the first of the Old Red Sandstone rocks. The church is perched on a ridge of sandstone, also late Silurian in age.

Figure 1 Geology map centred on Coddington Cross.



The pale blue is the glacial moraine, the Coddington Till. The pinkish area is the Raglan Mudstone. Sa is the sandstone ridge on which the church stands. To the south are limestone ridges shown in blue and grey. To the north, the hatched area shows a former gravel pit.

Before the ice age the former Mathon River flowed from north to south to the west of the Malvern Axis. Sands and gravels were deposited which were worked in pits in the Mathon area. The Coddington Till was deposited on top of these and at its maximum thickness was 10m at South end SO 737 447, It is 1.5m thick in Warner's Pit at Mathon.

At Adhisthana in 2018, a mound of material had been dug out of the area for a new garden which was being created. This contained material from the Coddington Till.

The rock fragments are all angular having been broken off, carried in the ice and deposited as this melted.

Figure 2 The mound dug from the new garden area.

The angular rock fragments in the till could also be seen under a thin soil layer at the edge a path by the side of one of the buildings. The top of the moraine is a calcreted layer, fragments cemented by lime dissolved from the rocks.

Figure 3 Moraine exposed by path

Closer examination of the mound showed that there are a wide variety of different rock types. Some are fairly local. Some have travelled a long distance from the north.

Figures 4 and 5. Variety of rock fragments in the mound.

There were some crystalline rocks, Precambrian Malverns Complex from the Malvern Hills. There are local red sandstones and, from slightly further afield, are fossiliferous Silurian limestones and siltstones. Further travelled still are rounded Triassic Bunter pebbles and also Carboniferous coal fragments. There is chert which may be Carboniferous in age. These last three rocks outcrop a long way to the north, showing the direction of travel of the ice from north to south. There are other igneous rocks which may be from the Precambrian of Shropshire.

Figure 6 Selection of rocks from Coddington Till

Key to Figure 6. The scale is marked in centimetres.

1. igneous rock, granite, probably source Malvern Hills, **2.** medium-grained sandstone, **3.** sandstone, possibly Silurian, **4.** possibly dolomite with calcite spar in a cavity (very hard), **5.** basic igneous rocks, either from Malvern Hills or Shropshire, **6.** siltstone with fossils, **7.** fine-grained sandstone, **8.** limestone with fossils, **9.** possibly a quartzite, **10.** sandstone rounded and split pebble, **11.** Silurian siltstone with bryozoa and brachiopod, **12.** chert possibly Carboniferous, **13.** fossil coral Favosites Silurian, **14.** vein quartz far travelled and rounded, **15.** Siltstone, **16.** Rounded liver coloured quartz pebble. Triassic Bunter Pebble Beds from the north, **17.** This is finer glacial material calcreted, the fragments joined together by lime cement, **18.** fossil coral with patches of calcrete.

These rocks are of a great variety of types and are not all local. Some are crystalline igneous rocks. Some are sedimentary. Some specimens contain fossils. Two of these are shown in the last photos.

Figure 7 Photo of specimen 11 showing the brachiopod on the left and the stick bryozoan.

Figure 8 Photos of each side of specimen 13.

It is rather worn but still shows the structure of the coral. The scale is marked in centimetres.

The BGS Technical Report WA/90/92,' Details of the Pleistocene Deposits in the Malvern Hills area' describes a well at the nearby Coddington Cross. There was soil to 0.3m, over 0.9m of colluvium (yellow sandy clay), underneath which was the Coddington Till. This is listed as 8.23m of 'boulderclay' with striated pebbles and pieces of coal. Beneath this is 4.57m of White House Silts which are finely laminated clay with a slight dip east to west and finally Mathon Sand Gravel, red sand, water bearing, of which the bottom was not reached.