

# Geological observations at the Minchery Farm excavation site, 31<sup>st</sup> October & 8<sup>th</sup> November 2012. Notes by C.J. Lister.

## **1. Large stones** (found in the moat)

The large rounded stones appear to be “doggers” (concretions, i.e. better-cemented, rounded or oval units within a less-consolidated sedimentary bed) similar to those seen elsewhere in the district. The lithology is mid-grey sandstone, consisting mainly of rounded colourless quartz grains about 0.5mm across, with some rounded dark grains (as yet unidentified, perhaps iron-coated quartz, or glauconite). Some slightly larger carbonaceous grains and streaks are present, one about 1mm across, and one thin streak about 3mm long. The sandstone is carbonate-cemented (reacting with 5% HCl). Although the initial impression was of similarity to the doggers in the Kimmeridge Sand, further investigation has confirmed that doggers also occur in the Corallian Beckley Sand Member (Fig 1), exhibiting similar shapes to those seen at the excavation. Since the Beckley Sand is shown on the BGS 1:50,000 geological map as underlying the site, this unit seems a more likely source for the doggers.

Large blocks of creamy-yellow bedded sandstone are probably also from one of the Corallian rock units outcropping locally. The large block standing vertically in one of the cuts at Trench 2 shows parallel bedding, and has a lithology of quartz sand with grain size about 0.5mm, cemented by calcium carbonate. The yellowish colour is probably caused by a very small quantity of ferric iron. The Corallian Formation in the Oxford area includes several individual “members”. Overlying the Beckley Sand at the Littlemore Railway cutting is the Littlemore Member (Fig 2), which contains more strongly cemented beds of limestone and sandy limestone. The large sampled block could come from either the Beckley Sand Member or the Littlemore Member. Either way, the stone is likely to be very local in origin.

## **2. Stones in excavated walls**

In the excavated walls, most of the stones appear to be light cream to grey limestone, which is not particularly fossiliferous, but contains some burrow-like structures. These stones are up to 20 or 30cm across, and appear to come from bedding units up to about 10cm thick. Many of the stones are small and very irregularly shaped. The most likely source must be the locally occurring limestones of the Corallian; although everybody immediately thinks of the Headington Stone as the main building material, there are other possibilities, including the Littlemore Member illustrated above (Fig 2).

Headington Stone, worked from the 11<sup>th</sup> century (Arkell, 1947), and therefore available at the time when the Priory was built, contains abundant fossils and fossil fragments, including corals; these were not observed here. The stones in walls may come from a different local source, where the limestone is less fossiliferous, and this source may be very nearby. Definite identification of the source of stones in walls would require more detailed work.

## **3. Stones in walls of the Priory Public House**

A wide variety of stone types has been used in this building. The lower parts of the main walls consist of grey limestones that may be similar to those seen in excavated walls of

Trench 3. In the upper parts of walls, lithologies include bedded sands similar to the Beckley Sandstone, grey sandstones and limestones (some with bivalves), and fossiliferous cream-coloured limestones. The quoin stones are cream-coloured, shelly, bedded limestones, similar in appearance to some lithologies within the Headington Stone. The carved stones around the door are also of this type, but are more weathered. Shaped stones have been re-used in the end wall of the pub. Notably absent from the excavation site are the shelly limestones used as quoins; also there were no stones on the excavation site that were of this size and shape. Use of Headington Stone may perhaps be of a later date.

#### 4. Bedrock

Yellowish sand of similar appearance to parts of the Beckley Sand Formation (Corallian) is seen underlying the soil layers at Trench 2. Below this is a dark grey clay. If these geological units are in situ, the clay can only be the Oxford Clay, which stratigraphically underlies the Corallian. Kimmeridge Clay, shown on the BGS map as outcropping nearby, stratigraphically overlies the Corallian. The sequence is:

<i>Kimmeridge Clay and Sand</i>		<i>Younger</i>
<i>Corallian, including</i>		↑
<i>Oxford Clay</i>		<i>Older</i>

These rock units are Upper Jurassic in age.

#### 5. River deposits

The main lithology at Trench 1 is a mid-to light grey clay with variable silt content, and with some woody plant remains. This is most likely derived from river action on Oxford Clay bedrock, which was not seen at Trench 1, but must be near surface, at a similar elevation to the clay seen at Trench 2.

At the far corner of Trench 1, a shelly and pebbly light grey clay of probable alluvial origin is overlain by a peat deposit.

#### References

Arkell WJ 1947 Oxford Stone. Faber.

British Geological Survey 1:50,000 Geological map, sheet 237,Thame.

Horton A, Sumbler MG, Cox BM, Ambrose K 1995 Geology of the country around Thame. Memoir for 1:50,000 geological sheet 237 (England and Wales). British Geological Survey, HMSO