

**Waytemore Castle mound limestone blocks.** Identification: CP WCP22 064–069 (6 stones) MOLA ref S00243516.

## Summary

The present St Michael's church predates 1431 but is unlikely to be earlier than mid-14<sup>th</sup> century (based on its Perpendicular architectural style). Waytemore castle, already in existence then, was granted a 'licence to crenelate' in 1346. We were interested to know if, for economy, the builders involved arranged a common source of imported limestone for their work.

Limestone blocks were recovered from the base of the castle mound by Museum of London archaeologists (MOLA). They were revealed among much flint rubble when the hedge surrounding the mound was cut down in 2023. This allowed a direct comparison of the stones from the two buildings. Most likely the limestones from the castle represent debris that fell from the shell-keep walls above. The recovered stones were dispersed around the mound, not grouped. The comparison of these rare limestone finds with representative limestones in St Michael's church fabric was made mainly on its south side, west of the porch on Saturday 15<sup>th</sup> July 2023 (see Figures).

In the church, the plinth limestones at the foot of the church tower and main walls are probably original (late 14<sup>th</sup> century onwards). Some plinth stones have shelly inclusions, but they are generally too weathered to be specifically identified; they have been variously ascribed to Bath stone (southern England), grey Portland limestone (e.g. from Bucks) or Barnack. The buttress and window stones (mostly of striped 'Ancaster' limestone) are 19<sup>th</sup> century. The main walls are made of field stone, largely of flint but including other local (e.g. Hertfordshire Puddingstone) and 'exotic' pebbles derived locally from glacial till and associated deposits. Within the wall infill, particularly near internal corners, are some larger blocks of a friable, grey limestone – generically termed Chalk Rock or clunch. These are of similar size to the mound limestones.

Five of 6 mound stones provided by MOLA were shaped limestone blocks; 4 had chisel marks; 4 had bevelled/angled edges (at c.60°) indicating they probably edged windows and/or doorways; one was cuboidal with a rough upper edge suitable for keying into flint rubble. Four were similar in colour and texture, suggesting a common source. The sixth (and smallest) stone probably originated from the flint rubble.

We found it impossible to say all the stones (church and mound) came from a single source. Overall, in the church plinth and the mound, perhaps Barnack, Lincs, which provides harder-wearing building material, may be a more likely source than the less weatherproof limestone from Totternhoe, Beds, even though Totternhoe is closer. The church plinth might be Barnack stone on the basis of its similarities with material used in Cambridge, but we can't say that the mound limestones were also from this specific location. Speculatively, the use of Totternhoe limestone in the medieval church may have led to deterioration that stimulated its Victorian restoration. The possible former Vestry door relocated to Monks Walk in Half Acres in the late 19<sup>th</sup> century may be relevant here.

## References

Catt J, Edmonds C, Bailey H, Green C (2010) *Mineral resources and church building stones*. In: Catt J (ed) *Hertfordshire Geology and Landscape*, Hertfordshire Natural History Soc, Welwyn Garden City, pp299-321.

Woodcock NH, Furness EN (2021) *Quantifying the History of Building Stone Use in a Heritage City: Cambridge, UK, 1040-2020*. *Geoheritage* **13(1)**: article 12.

Details of the blocks recovered from the mound:

ID*	Context*	Material*	Description	Shape	Colour	L	W	D	Wt
064	Mound surface	Worked stone	Large rectangular fine-grain block, sharp edges and corners, chisel marks, patches mortar (sand and white coloured), could be from window/door embrasure, the best shaped.	Obviously trapezoid; 7 surfaces, 4 surfaces nicely cut, 2 adjacent bevelled c.60°; other faces shaped more roughly, 3 holes/indents c.3-4 cm wide.	Light buff/sandy, uniform	35	17-18	10-11	11
065	Mound surface	Worked	Roughly squared block, chisel marks, mortar patches; one side carefully-shaped with squared edge, surface darker (exposed?).	Cuboid; 6 surfaces, 2 are nicely squared-off, 'top' pointy/roughly shaped.	Slightly darker than 064; patchy algal greening; 'outer' face darker	21	18	18	10
066	Mound surface	Worked stone	Rectangular block, rough-grained, mortar is 'arced' (like oyster shell) on one side as though stone swivelled into position; chisel marks, one rectangular surface has small gravelly/chalky inclusions (mortar or stone?); clastic sand grains.	Slightly trapezoid, 6 surfaces like 064 (could fit on top) but shorter, 4 surfaces nicely cut, 2 adjacent bevelled, others very roughly shaped.	Similar to 065, part darkened	31	13-16	13-14	10
067	Mound surface	Stone	<b>Smallest</b> , fine-grain, 'well-cemented', dense, unworked, from flint rubble?	Polygonoid, 8 surfaces, sharp edges, 2 surfaces v flat, used as infill? Triangular section.	As 065, 066 a corner is darkened (exposed?)	8	6	5	0.27
068	[No entry]	Worked stone	Polygonal block, small patches mortar on one face, no chisel marks; unlike the other stones, less dense, more porous, chalk rock.	Roughly trapezoid shape if set on one end, 6 surfaces, with one flat bevelled face.	Algal green, partly darkened (soil contact?)	16-19	14	10	2.5
069	Mound surface	Stone	Rectangular, roughly-shaped block, coarse chisel marks, coarse stone, like 066 in substance (small inclusions); mortar patches. Shelly, like some church stones.	Trapezoid, 'loaf'-shaped, 2 adjacent surfaces bevelled, 3 surfaces chiselled flat.	Algal greening, also browning (exposure?) esp on rounded surface opposite to bevel	33	16	11-13	10

\*Data from the L-P:Archaeology tickets. **L W D** = length, width, depth (cm), **Wt** = weight (kg)

## Observations:

- The stones were recovered from the base of the castle mound by MOLA archaeologists; they were revealed among much flint rubble when the hedge that surrounded the mound was removed in 2023. Most likely they represent debris that fell from the shell-keep walls above; the stones recovered were dispersed round the mound, not grouped: MOLA may be able to supply a location plan.
- The comparisons with St Michael's church fabric were made mainly on its south side, west of the porch, on Saturday 15<sup>th</sup> July 2023; weather good apart from a brief shower (see Figures 1 & 2).
- The plinths at the foot of the church tower and wall are clearly the oldest stones, probably original (late 14<sup>th</sup> century onwards), the buttress and window stones (mostly of striped 'Ancaster' limestone) are 19<sup>th</sup> century. Some of the plinth stones are clearly shelly (suggesting grey Portland stone, e.g. from Bucks), but are generally too weathered to ascribe a specific source.
- The main walls are made of 'field stone' which is largely flint but includes other local (e.g. Hertfordshire Puddingstone) and 'exotic' pebbles derived from glacial till and associated deposits. There is some mortar within the field stone infill and also remnants of a mortar render which would once have covered all the walls between the limestone quoins, doorways, windows etc. Also within the wall infill, particularly near internal corners, are some larger blocks (often friable – generically termed chalk rock or clunch), of a grey limestone. These are of similar size to the mound limestones – see Figure 1.
- Within the South Porch, there is a suggestion that at least some of the internal walls included chalk rock more extensively than the external walls. A fairly local well-used medieval source of such material is the quarry at Totternhoe, Beds.
- 5 of 6 mound stones are shaped (but apparently not the smallest 067), 4 have chisel marks; 4 of 6 have bevelled/angled edges (at c.60°) indicating they probably edged windows and/or doorways.
- The best shaped block (064) is 'cleaner', lighter in colour (no algal green or brown discolouration), is finer-grained and has indentations perhaps to take wedges or door/window closures (Fig. 2). It may have a patch of white plaster adhering. It's the only block with cut holes or indents. Its fabric resembles 065, suggesting the same source.
- The 3 larger trapezoidal limestone blocks (064, 066, 069) are of similar buff colour; two of them (066, 069) are coarser, look similar (Fig. 2) and have small inclusions; 069 has clear coarse chisel marks angled across two faces. Their flattest surfaces are on opposite sides, indicates that in situ they were stacked. Perhaps a common template was used for shaping them, especially if their dispersal round the mound means they're from different apertures. But skilled masons could have shaped these simpler pieces by eye.
- 064, 066 and 068 could be 'right hand' edges (as if one looks outwards from a doorway), 069 a 'left hand' edge, assuming the flattest faces were placed downwards (but 064 is ambiguous, could be either way) (Fig. 3).
- Only one stone (065) is cuboid, as though from a wall; its flattest (outer?) face (21x13 cm) is patchily brown-discoloured as though weathered in situ. The fact that its 'top' surface is roughly 'pointy' (and not darkened) suggests it was 'keyed' so as to bond with the rubble wall infill.
- The smallest stone (067) probably belonged with the flint rubble, or was used, as found, as a spacer between the limestone blocks (as often seen in dry-stone walling).
- The next smallest stone (068) is less dense than the other limestones, it's darker and greener (therefore more porous?), has one bevelled flat side although the other polygonal facies appear roughly smoothed, even slightly 'dished' – no chisel marks. Chalky, unlike the others.
- Stone surfaces exposed to the weather are often darker – brown/blacker – this discolouration affects 5 of the stones; but might reflect where they fell, rather than their position in situ?

### **Inferences:**

- It turns out it's not possible to say all the stones (church and mound) come from a single source. Overall, In the church plinth and the mound, perhaps Barnack, Lincs, which provides harder-wearing building material, may be a more likely source than Totternhoe, Beds, even though Totternhoe is closer. The church plinth might be Barnack on the basis of its similarities with material used in Cambridge, but we can't say that the mound limestones might also have been from this specific location. Transport from quarry sources in medieval times, necessarily from outside Hertfordshire, was of course a significant logistical consideration. Probably all that can be inferred is that Jurassic limestone was used in the construction, but such limestones are found widely outside Hertfordshire, perhaps most relevantly for us in Lincolnshire and Buckinghamshire.
- Totternhoe limestone deteriorates if exposed to weathering. Speculatively, its use in an earlier (Norman) church may have led to the deterioration that stimulated the late-Mediaeval rebuild. The possible former Vestry door relocated to Monks Walk in Half Acres in the late 19<sup>th</sup> century may be relevant to the medieval church.
- Nevertheless, considering their weight (a good 10 kg each) and the difficulties of mediaeval transport, and the fact that Waytemore castle predates the present St Michael's church, perhaps the castle mound stones originated from several quarry sources, arriving in small batches (e.g. by cart, but possibly by boat) as and when available/required. Stone types were therefore likely mixed up, then selected from what was available by masons on-site.
- Within the quarry itself, the stone quality may vary top to bottom, its geology reflecting changing natural forces at the time of deposition (sea temperature effects on diatom production, oolite size and deposition rate, the amount of included material – turbidity, sandy wash-in, storm-driven shell content, stones etc). Limestone from one quarry level may be mixed with stone from another, increasing its apparent heterogeneity at the building site, making comparisons more difficult.

### **Conclusions:**

- The castle's Licence to Crenelate was granted in 1346, but this could have been simply a bureaucratic or political exercise, reflecting only a minor 'tidying' process, not a major refurbishment. Thus little new stone may have been brought in for the castle, unlike for the church construction.
- In fact, the majority of the limestone used for the castle's architectural detail (doorways, steps etc) was likely imported in the 12<sup>th</sup> century on, well before the present St Michael's was built (based on its Perpendicular style, the church was most likely begun just after the Black Death – 1348-49).
- The castle keep was recorded as ruinous in 1549, and sold for its materials in 1649 when most remaining limestone blocks would have been salvaged for reuse. Thus the stones from the mound recovered today may represent material that remained in the bases of the keep windows, doorways or walls, not their tops or in the crenelations, which would have fallen and been removed first. If so, the material from the base would have been centuries older than 1346, and therefore possibly unrepresentative of the material used in the construction of the present-day St Michael's (late 14<sup>th</sup> century onwards).
- Nevertheless, we found the mound limestones were carefully shaped and similar enough to prove that there was an architectural design pattern in force. The stones may have been roughly cut to size at their quarry source (to reduce transport weight and facilitate handling – even the recovered worked stones are hefty). Careful templated shaping (the bevelling) would have been carried out on-site – e.g. in the castle's bailey area – allowing for the mason's finishing touches when the blocks were inserted in situ. Bailey archaeology findings could illuminate this process.
- Our exercise was valuable because it brought together people with different skills and expertise to clarify how the two major mediaeval buildings in Bishop's Stortford were constructed. Our observations in relation to Waytemore and St Michael's are new as far as we know; we hope they will stimulate further investigation.



The mound stones  
beside St Michael's  
church



**Fig. 1: The six mound stones** (064-069, left to right) arranged in front of the south wall of St Michael's church. In the angle, vertically above 064, light-gray limestone blocks and a rounded dark brown cobble are visible in the wall. A darkened, shaped, horizontal limestone string course is seen too. **The insert** (right) shows more of the wall above the string course with limestone blocks arrowed; the oval brown stone is also visible; the lower arrow indicates a crumbling limestone block.



**Fig. 2: The mound stones** in more detail. **Top left:** composite image to show their relative sizes; 70cm scale bar and 10cm divisions. **Anticlockwise from bottom left:** **066** showing sharp bevelled edges and 'oyster shell' mortar pattern. **068** smaller chalky, algal green block with bevel. **066** unworked side showing granular inclusions. **069** with bevelled edge (facing downwards), inclusions in upper surface similar to those in 066. **069** showing chisel patterns in 2 faces behind the bevelled edges (at left). **066** with cut indents at the bevel point and along the side. **065** cuboid stone with darkened surface (facing front) and roughly shaped 'pointy' top. Stone 067 is most likely from the flint rubble.



**Fig. 3: The mound stones** shown in a different arrangement. **Left:** stones 064, 066 & 068 (bottom to top) arranged as though on the left side of a window or doorway (looking in).

**Mid to right:** 069 positioned as though on the right of a doorway for comparison, with 065 (cuboidal) and 067 (the smallest).

Perhaps 064 (bottom left), the best preserved with the longest bevel, was from a doorway whereas the others were from windows? However, 069 may be damaged and thus its bevel foreshortened. Nevertheless, the bevel angles appear consistent, possibly templated.