

Assessment of the finds from Site 3, Mansfield Bypass (MARR03)

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Excavation of a brick-built kiln on Site 3, Mansfield Bypass, by Pre-Construct Archaeology (Lincoln) recovered a collection of ceramic building material and a small quantity of other finds. These finds were submitted to the author for identification and assessment. They were recovered from six contexts (Table 1).

Context	Description
101	Layer of debris overlying the structure consisting of collapsed superstructure and waste
102	Samples taken from the brick wall of the structure
106	The cut number for a pit, fill 105 containing waste
107	Fill of pit containing rake-out from flue holes
109	fill of cut 108 containing coal and fired clay
110	fill of cut 111 containing coal and fired clay
US	Unstratified finds
Grand Total	

Description

Ceramic Building Material

Thirty fragments of brick and tile were collected from the site. They consist of bricks, flat roof tiles and malting oven tiles.

The bricks include 10 samples taken from the superstructure of the kiln and two from the debris overlying the structure, 101. They were bonded with clay of exactly the same colour and texture as the bricks themselves and in several cases one side of the brick is heavily burnt or vitrified, indicating either that the temperature within the kiln was considerably in excess of 1000 degrees C or that the bricks were subjected to a lower temperature over a long period of time. The bricks range in length from 230 to 246 mm, in width from 112 to 120 mm and in thickness from 56 to 58mm.

The fabric is hard and appears to have a calcareous groundmass with lenses of white-firing, red-firing and black-firing clay and little sand. Large rounded quartzite pebbles, from the Sherwood Sandstone, are present in most of the samples and a single angular fragment of limestone was observed in one sample. These pebbles range up to 30mm across.

The flat tiles, by contrast, come mainly from contexts associated with the use of the structure: 106, 107, 109, and 110. Some of these were warped (although in one case it was not certain if the warping was original and evidence for the production of hip tiles). The tiles were made in a sanded former from a similar clay to that of the bricks, except that in some cases it contains a quartz sand absent or less

prominent in the bricks and in others it contained rounded calcareous clay pellets. No complete lengths could be measured but one of the tiles was 187mm wide. The thickness of four tiles could be measured and ranged from 17mm to 19mm. Five nibs were present.

Two malting oven tiles were found in context 106. They were made in a similar fabric to that of the flat tiles, containing rounded calcareous clay pellets. These tiles were rectangular with one complete length, 212mm. The tiles were both 141mm wide and 23mm thick. The tiles had been pierced by a regular series of conical holes scooped out from the underside of the tile. Subsequently, holes were pierced from the bottom of these holes through to the top surface of the tile.

Clay Tobacco Pipe

Six fragments of clay tobacco pipe were recovered from the site, two unstratified and four from context 105. Five were stem fragments with bore diameters suggesting a later 17th or early 18th-century date. The fifth fragment was part of a spurred bowl whose size suggests a late 17th-century date (consistent with the bore diameter). This fragment is coated with red, fired clay and is either likely to have been incorporated into a brick or tile or may have been contaminated with clay which was subsequently accidentally fired.

Pottery

Six fragments of pottery were recovered from context 100. All are likely to be of 19th-century date. They include Transfer-printed ware (TPW), Nottingham stoneware (NOTTS), Blackware (BL, in this case made from mixed Coal Measures clays) and a red earthenware (LMPLOC), probably of local manufacture.

Assessment

Providing that the samples taken from the site are representative, it seems that the kiln was producing flat roof tiles and malting oven tiles and that bricks were used in the superstructure but not produced in the kiln.

If so, then the bricks must have been produced in another kiln although the similarity of the brick fabric to the bonding clay suggests that this kiln too would have been on the site.

It is not clear from the CBM samples whether there are several different clays used at the site or one, rather variable clay. The latter is more likely. The characteristics of the clay suggest that it was mainly derived from the Mercian Mudstone, which can be calcareous. Objects made from that clay often contain rounded clay pellets with a higher calcareous content than the groundmass. However, the large pebbles, which are unlikely to have been deliberately added, since they introduce a weakness into the finished objects, derive from the earlier Sherwood Sandstone. The limestone fragment, however, is likely to have been derived from the Magnesian Limestone, which is of Permian age. Most likely, the source of clay was a boulder clay composed in the main of Mercian Mudstone with some material from

earlier strata. The quartz sand noted in some of the flat roof tiles, however, is likely to have been deliberately added. A supply of such sand would have been required in order to dust the wooden formers used in making these tiles, to stop them from sticking to the tiles.

It would be possible to test these suggestions by taking samples of the bricks and tiles for petrological and chemical analysis.

It is possible that one could narrow down the data range for the operation of this kiln by comparing the products with those still in place in dated buildings in the Mansfield area. The use of nibs as opposed to peg holes appears to vary regionally rather than chronologically. However, malting oven tiles of the type produced at the site appear to be a 17th/19th-century type. The presence of the clay-coated clay pipe which appears to have been incorporated into a brick or tile suggests that the kiln was in operation in the late 17th century or later, as do the pipe stems in context 105. If this is the case, then the 19th-century pottery in the same context is probably not associated with its use but indicates later activity on the site.

Further work

It would be possible to determine more precisely the raw materials used by these tilers through thin section and chemical analysis of a sample of bricks and tiles.

Task	Description	Costing
Thin sectioning	A sample of six thin sections, two each of bricks, flat tiles and malting oven tiles. Produced at the Department of Earth Sciences, University of Manchester. Analysis and report at AVAC, Lincoln	£22 x 6 = £132 plus VAT
Chemical analysis	A sample of 14 analyses, two of malting oven tiles, and six each of bricks and flat roof tiles. Produced at the Department of Geology, Royal Holloway College, London. Analysis and report at AVAC, Lincoln.	14 x £22 = £308 plus VAT
Total		£440 plus VAT = £517

Appendix

Contextname	Form	Weight	Nosh	NoV	Part	subfabric	REFNO	Use	Description	l	b	th
101	PMTILBRICK	287	2	2BS				VITRIFIED	COMPLETELY VITRIFIED			0
101	PMTILBRICK	2378	1	1BS		RED CLAY WITH LARGE ANGULAR LIMESTONE FRAG		HEAVILY WARPED	BONDED WITH CLAY OF SAME CHARACTER AS BRICK			0
101	PMTILFLAT	336	1	1BS		RED SANDY CLAY WITH LARGE RED INCLUSIONS;LARGE BUNTER PEBBLES			NIBBED			0
101	PMTILFLAT	419	1	1BS		RED SANDY CLAY WITH LARGE RED INCLUSIONS		WARPED	NIBBED			0
101	PMTILFLAT	301	1	1BS		RED SANDY CLAY WITH LARGE RED INCLUSIONS						0
102	PMTILBRICK	2692	1	1COMPLETE		CALCAREOUS CLAY;;LARGE BUNTER PEBBLES	1		230MM BY 95MM - 106MM BY 58MM	95-230	106	58
102	PMTILBRICK	2564	1	1INCOMPLETE		CALCAREOUS CLAY;;LARGE BUNTER PEBBLES	1		240MM BY 114MM BY 56MM	240	114	56
102	PMTILBRICK	2766	1	1COMPLETE		CALCAREOUS CLAY;;LARGE BUNTER PEBBLES	1		240MM BY 116MM BY 57MM	240	116	57
102	PMTILBRICK	3023	1	1COMPLETE		CALCAREOUS CLAY;;LARGE BUNTER PEBBLES	3		240MM BY 116MM BY 57MM	240	116	57
102	PMTILBRICK	3029	1	1COMPLETE		CALCAREOUS CLAY;;LARGE BUNTER PEBBLES	3		246MM BY 120MM BY 58MM	246	120	58
102	PMTILBRICK	2803	1	1COMPLETE		CALCAREOUS CLAY;;LARGE BUNTER PEBBLES	3		236MM BY 112MM BY 56MM	236	112	56
102	PMTILBRICK	169	1	1BS		VARIEGATED CLAY WITH WHITE, RED AND BLACK LENSES;LARGE BUNTER PEBBLES	2	VITRIFIED DOWN ONE LONG SIDE	BONDED WITH CLAY OF SAME CHARACTER AS BRICK			0

Contextname	Form	Weight	Nosh	NoV	Part	subfabric	REFNO	Use	Description	l	b	th
102	PMTILBRICK	477	1	1BS		VARIEGATED CLAY WITH WHITE, RED AND BLACK LENSES;LARGE BUNTER PEBBLES	2	VITRIFIED DOWN ONE LONG SIDE	BONDED WITH CLAY OF SAME CHARACTER AS BRICK			0
102	PMTILBRICK	2876	1	1BS		VARIEGATED CLAY WITH WHITE, RED AND BLACK LENSES;LARGE BUNTER PEBBLES	2	VITRIFIED DOWN ONE LONG SIDE	57MM THICK;BONDED WITH CLAY OF SAME CHARACTER AS BRICK			57
102	PMTILBRICK	1216	1	1BS		VARIEGATED CLAY WITH WHITE, RED AND BLACK LENSES;LARGE BUNTER PEBBLES	2	VITRIFIED DOWN ONE LONG SIDE	57MM THICK;SANDED BASE AND SIDES			57
106	OVEN PMTILTILE	787	1	1BS		CALCAREOUS RED CLAY WITH ROUNDED CALCAREOUS CLAY PELLETS;TRIASSIC CLAY?			RECT TILE; 141MM BY 23MM;REGULAR GRID OF CONICAL HOLES IN BASE PIERCING TOP SURFACE		141	23
106	OVEN PMTILTILE	1055	1	1BS		CALCAREOUS RED CLAY WITH ROUNDED CALCAREOUS CLAY PELLETS;TRIASSIC CLAY?			RECT TILE; 212MM BY 141MM BY 23MM;REGULAR GRID OF CONICAL HOLES IN BASE PIERCING TOP SURFACE	212	141	23
106	PMTILFLAT	417	1	1BS		CALCAREOUS RED CLAY WITH ROUNDED CALCAREOUS CLAY PELLETS;TRIASSIC CLAY?		WARPED	NIBBED			0
107	PMTILFLAT	865	1	1BS		CALCAREOUS RED CLAY WITH ROUNDED CALCAREOUS CLAY PELLETS;TRIASSIC CLAY?		WARPED				0
109	PMTILFLAT	740	2	1BS		CALCAREOUS RED CLAY WITH ROUNDED CALCAREOUS CLAY PELLETS;TRIASSIC CLAY?			187MM WIDE;19MM THICK		187	19
109	PMTILFLAT	481	1	1BS		CALCAREOUS RED CLAY WITH ROUNDED CALCAREOUS CLAY PELLETS;TRIASSIC CLAY?			18MM THICK			18
109	PMTILFLAT	102	1	1BS		CALCAREOUS RED CLAY WITH			17MM			17

Contextname	Form	Weight	Nosh	NoV	Part	subfabric	REFNO	Use	Description	l	b	th
						ROUNDED CALCAREOUS CLAY PELLETS; TRIASSIC CLAY?						
109	PMTILFLAT	357	1	1BS		CALCAREOUS RED CLAY WITH ROUNDED CALCAREOUS CLAY PELLETS; TRIASSIC CLAY?			18MM			18
110	PMTILFLAT	589	1	1BS		CALCAREOUS RED CLAY WITH ROUNDED CALCAREOUS CLAY PELLETS; TRIASSIC CLAY?		WARPED	MAY BE WARPED OR MAY BE HIP TILE			0
110	PMTILFLAT	285	1	1BS		CALCAREOUS RED CLAY WITH ROUNDED CALCAREOUS CLAY PELLETS; TRIASSIC CLAY?						0
US	PMTIL	7	1	1BS					COMPLETELY VITRIFIED			0
US	PMTILFLAT	59	1	1BS				WARPED	NIBBED			0
US	PMTILFLAT	338	1	1COMPLETE		LARGE BUNTER PEBBLES			NIBBED			0