

## **Assessment of the Fired Clay and Ceramic Building Material from the Saltfleetby Gas Storage Project, Lincolnshire (SGS 06)**

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A small collection of fired clay and ceramic building material recovered during archaeological trial trenching carried out at the proposed Grayfleet Gas Storage Facility by Northern Archaeological Associates.

The ceramic building material includes Roman brick, medieval flat roof tile and fragments of 19<sup>th</sup>-century field drain and probably modern brick.

The fired clay comes from two trenches. Trench 6 (Roman) produced a small quantity of what might be daub whilst Trench 1 (late medieval or later) produced a collection which probably came from a mud-walled structure.

### **Description**

The finds were examined at x20 magnification using a binocular microscope and recorded by fragment count and weight.

### **Ceramic Building Material**

#### **Roman**

A single fragment of brick of Roman character was recovered, from context 605. The fabric of the brick contains abundant rounded quartz sand, including several matt-surfaced grains of Permo-Triassic origin. The groundmass consists of fine-textured red-firing clay with light-coloured lenses and laminae.

The brick was made in a sanded mould and the upper surface is slightly darkened and spalled. This suggests that the brick has been reused in a hearth or oven. There is no sign of mortar on any face.

The fabric characteristics of the brick indicate the use of a Jurassic clay, probably one of the Middle Jurassic estuarine beds. These do not outcrop in the Lindsey Marshes area and the most likely source is therefore in the vicinity of Lincoln. Similar fabrics were produced at Washingborough and Fiskerton, both on the edge of the Lincolnshire Fens with easy access to the Witham.

The chemical and petrological characteristics of the sandy boulder clay which outcrops in the Lindsey Marshes is known from samples taken from Grimsby and Barton-upon-Humber whilst the characteristics of the products of the Lincoln area tileries are known from analyses

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of Roman tiles from Partney, in the southern Wolds, and post-medieval bricks from a brick yard at North Hykeham. Thin section and chemical analysis of the Site 6 brick could therefore determine the origin of this brick and provide information about the distribution of ceramic building materials in Roman Lincolnshire.

### Medieval

A single fragment of flat roof tile was recovered from context 601. The tile contains sparse rounded quartzose sand, including some polished quartz grains and sparse angular flint and angular red ironstone. The groundmass is slightly calcareous and contains sparse burnt calcareous pellets whose original character is indeterminate. The surfaces have slight salt-surfacing.

The fabric characteristics of this tile are similar to those of medieval roof tiles from Partney where analysis indicated that they were the result of tempering an Upper Jurassic clay with a mixed cover sand which includes grains derived from Lower and Upper Cretaceous strata. The Partney tiles were thought to have a local origin. As with the Roman tile, these characteristics are probably not matched with deposits in the Lindsey Marshes and indicate that in the medieval period too ceramic building material was imported to the area.

### Post-medieval or later

Two fragments of brick were recovered from context 102. Both have a similar appearance and could come from the same brick. The fabric contains sparse organic voids and burnt-out calcareous inclusions surrounded by a yellow reaction rim. The groundmass consists of an overfired calcareous, silty clay.

The characteristics of this brick are matched with bricks produced in the Lincolnshire Fens from local estuarine silts and the brick could therefore have been produced locally.

Handmade bricks of this sort were produced locally from at least the mid 15<sup>th</sup> century and continued to be produced in numerous brickyards well into the 19<sup>th</sup> century (1999).

### Modern

A fragment of U-sectioned field drain was recovered from context 201. The fabric contains few inclusions larger than c.0.1mm and has a silty, micaceous groundmass. This differs from the post-medieval brick in that the fabric contains more mica and is not noticeably calcareous.

Field drains in Lincolnshire are probably mostly of mid 19<sup>th</sup> century and later date.

## **Fired Clay**

### Roman

Small collections of fired clay were recovered from contexts 601, 604 and 605 (including numerous small rounded fragments recovered from sieved samples from contexts 601 and 605).

One of the fragments has a coarse sandy fabric, the sand including angular flint and subangular quartz grains, with a silty micaceous groundmass. This fabric seems to be a mixture of estuarine silt with sandy, non-calcareous boulder clay. The remaining fragments are much finer in texture and contain numerous thin organic voids (filled with carbonised organic material where the fragments are reduced). Their groundmass is silty and micaceous with no noticeable calcareous content and was probably produced using local estuarine silt.

Most of the fragments are completely featureless but a few have flat surfaces. The firing pattern indicates that most of the fragments were burnt in a fragmentary condition giving an oxidized surface and reduced core. There is slight evidence for salt surfacing but less than is typically found in collections of fired clay associated with salt-production.

### Medieval

Collections of fired clay were obtained from contexts 102 and 105. There is no appreciable difference in the material from either context, all of which has similar characteristics.

The fragments all have moderate organic inclusions, either surviving as voids where the clay is oxidized or as carbonised fragments in the reduced cores. The groundmass is silty, micaceous with little sign of calcareous content. However, the range of colours of the oxidized clay indicates the presence of a minor salt and calcareous content. A few fragments have roughly flat or curved surfaces but most of the fragments have irregular surfaces and their firing pattern indicates that most were already fragmentary when burnt.

The material appears to be cob, the result of the burning of a structure with unfired mud walls (known locally as "mud and stud" architecture). The organic inclusions probably indicate the deliberate tempering of the mud with straw (as opposed to the much finer organic matter in the Site 6 fired clay, which was probably present in the parent clay). The clay was probably obtained close to the place of use.

### Assessment

Fired clay is a common find on sites in the Lindsey Marshes and is often debris from prehistoric and early Roman salt working. The large saltern mounds contain large quantities of burnt clay, together with recognisable briquetage fragments (containers, pedestals, clips, spacers and oven wall fragments). These mounds were often subsequently chosen for settlement, since they were raised above their surroundings and afforded some protection against flooding, and the fired clay originally present in these mounds is often redeposited in later deposits. Neither of the two collections from Grayfleet appears to have this origin.

Fired clay was also a by-product of medieval and post-medieval salt production and this material either takes the form of unworked blocks of subsoil or clay mixed with large quantities of straw. Again, neither of the two Grayfleet collections is similar to this material.

It is likely that in both cases the fired clay is associated with housing. That from Trench 6 is probably of Roman date and probably from a wattle and daub structure. However, the lack of wattle impressions and the breakage pattern are similar to the material from Trench 1 where it is more certain that the clay comes from a mud-walled structure. The presence of brick alongside this fired clay may suggest that certain features in the structure were made of brick (e.g. chimney stacks, or a dwarf wall on which the structure rested). The brick also suggests that the structure is no earlier than the later 14<sup>th</sup> century and probably much later.

The Roman and medieval tile fragments are both probably imports to the area. In the case of the Roman tile, the nearest likely sources are about 40 miles away, involving overland transport across the Wolds or a longer but probably easier coastal journey. The nearest source for the medieval tile is probably over 20 miles away overland and longer if water transport was used.

### **Further Work**

The suggested sources for the Roman and medieval tiles should be tested using thin section and chemical analyses. No further work is recommended on the fired clay.

### **Costing**

Two thin sections (produced at the University of Manchester) and two chemical analyses (Inductively-Coupled Plasma Spectroscopy, carried out at Royal Holloway College London) at £24.00 plus VAT per analysis. Total £96.00 plus VAT including statistical analysis of chemical data and report.

### **Bibliography**

Robinson, D. N. (1999) *Lincolnshire Bricks, History and Gazetteer*, The Heritage Trust of Lincolnshire, Lincoln.

*Appendix 1*

TRENCH	PERIOD	PERIOD	Context	Cname	Subfabric	Description	Form	Part	Nosh
1	MED+	PIT 103	102	FCLAY	REED AND POSS WOOD IMPRESSION	IRREGULAR FRAG		BS	1
1	MED+	PIT 103	102	FCLAY	MANY ORGANICS	POSSIBLE FLAT SURFACE		BS	1
1	MED+	PIT 103	102	FCLAY		IRREGULAR FRAGS		BS	2
1	MED+	PIT 103	102	FCLAY	MANY ORGANICS AND SALTED SHERES	IRREGULAR FRAGS		BS	2
1	MED+	PIT 103	102	FCLAY	REED IMPRESSIONS AND OTHER ORGANICS	IRREGULAR FRAGS		BS	10
1	MED+	PIT 103	102	FCLAY	SMALL BLOBS OF CLAY EVIDENT (AND ORGANICS)	IRREGULAR FRAGS		BS	19
1	MED+	PIT 103	102	FCLAY	MANY ORGANICS	IRREGULAR FRAGS		BS	133
1	MED+	PIT 103	102	MOD			BRICK	BS	2
1	MED+	PIT 103	102	FCLAY	FEW ORGANICS	IRREGULAR FRAGS		BS	11
1	MED+	PIT 103	102	FCLAY	SMALL BLOBS OF CLAY EVIDENT	TWO ROUGHLY CURVED SURFACES		BS	1
1	MED+	PIT 103	105	FCLAY		POSSIBLE FLAT SURFACES	DAUB?	BS	2
1	MED+	PIT 103	105	FCLAY	SMALL BLOBS OF CLAY EVIDENT			BS	10
1	MED+	PIT 103	105	FCLAY		ROUGHLY CURVED PIECES	DAUB?	BS	3
1	MED+	PIT 103	105	FCLAY	MANY ORGANICS	IRREGULAR FRAGS		BS	15
1	MED+	PIT 103	105	FCLAY		IRREGULAR FRAGS		BS	2
2	MOD	DITCH 206	201	MOD	U - SHAPED		FIELD DRAIN	BS	3
6	ROM	BURIED SOIL	601	RTIL			TEG	BS	1
6	ROM	BURIED SOIL	601	FCLAY		FRAG		BS	1
6	ROM	BURIED SOIL	601	FCLAY			?	BS	1
6	ROM	BURIED SOIL	601	FCLAY		ROUNDED FRAGS FROM SAMPLE		BS	34

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6	ROM	DITCH 603	604	FCLAY		IRREGULAR FRAG		BS	1
6	ROM	DITCH 603	604	FCLAY	REED IMPRESSION	IRREGULAR FRAG		BS	1
6	ROM	DITCH 606	605	RTIL			BRICK	BS	1
6	ROM	DITCH 606	605	FCLAY		SUB-ROUNDED FRAGS FROM SAMPLE		BS	40
6	ROM	DITCH 606	605	FCLAY		POSSIBLE FLAT SURFACE		BS	1
6	ROM	DITCH 606	605	FCLAY		IRREGULAR FRAGS		BS	6