WEST HOATHLY BRICKWORKS SHARPTHORNE WEST SUSSEX

PROGRAMME OF ARCHAEOLOGICAL RECORDING FOR PHASE 3 (PART 1) EXTRACTION

For

IBSTOCK BRICK LIMITED

CA REPORT: 07061

May 2007

COTSWOLD ARCHAEOLOGY



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SUMMARY

Site Name: West Hoathly Brickworks Phase 3 (Part 1) Extraction

Location: Sharpthorne, West Sussex

NGR: TQ 3763 3286

Type: Watching brief

Date: 22-25 May 2007

Planning Reference: HO/36/98

Location of Archive: To be deposited with East Grinstead Museum

Site Code: WHS 07

A programme of archaeological recording was undertaken by Cotswold Archaeology (CA) as a continuing programme of works associated with the extension of the clay quarry at West Hoathly Brickworks, Sharpthorne, West Sussex.

Several large quarry pits were identified, similar to those identified previously on the site and likely have been the result of medieval iron ore extraction.

At least one iron-smelting furnace pit was also present and this appears to have been partially protected by a shelter or windbreak. Other slag-filled pits and postholes were present close to the furnace pit. Although these features contained no dateable finds, they are likely to be medieval in date, given their proximity and similarity to medieval ironworking structures and features identified in an adjacent area.

1. INTRODUCTION

- 1.1 During May 2007 Cotswold Archaeology (CA) carried out a programme of archaeological recording for Ibstock Brick Ltd at West Hoathly Brickworks, Sharpthorne, West Sussex (centred on NGR: TQ 3763 3286; Fig. 1).
- 1.2 The programme of archaeological recording formed part of ongoing archaeological work required to fulfil a condition attached to planning consent for an extension to the clay quarry attached to the brickworks (planning ref.: HO/36/98). The objective of the archaeological work was to record any archaeological remains exposed during the groundworks.
- 1.3 The archaeological fieldwork was carried out in accordance with a *brief* for archaeological recording prepared by Mr John Mills, Archaeologist for West Sussex County Council Economic and Environmental Policy Service, the archaeological advisor to the Local Planning Authority (LPA), and with a subsequent written scheme of investigation (WSI) produced by CA (2003) and approved by the LPA acting on the advice of Mr Mills. The fieldwork also followed the *Standard and Guidance for an Archaeological Watching Brief* issued by the Institute of Field Archaeologists (1999) and the *Recommended Standard Conditions for Archaeological Fieldwork, Recording and Post-Excavation Work (Development Control), Version 2b* issued by West Sussex County Council.

The site

- 1.4 The current works comprise Phase 3 (Part 1) Extraction and follow on from Phase 1 and Phase 2 (Parts 1-4) Extraction reported on previously (CA 2001b; 2004a, b; 2006; 2007) and located to the immediate south and west of Phase 3 (Part 1). The site lies at approximately 140m AOD and comprises an area of former pasture which occupies a gentle north-facing slope to the north of Mare Pit Wood (Fig. 2).
- 1.5 The underlying geology of the area is mapped as Wadhurst Clay overlying Ashdown Beds Sandstones (Geological Survey 1977). Clay substrate was exposed throughout the groundworks and bands of iron ore were visible in the faces of previously guarried areas.

Archaeological background

Introduction

1.6 The general background to the archaeological works at the quarry has been outlined elsewhere (eg CAT 1999a) and it is not intended to fully reprise that information here. The results of the previous programmes of archaeological recording (Phase 1 and Phase 2, Parts 1-4; Fig. 2) are summarised below.

Prehistoric

1.7 Three flint flakes and a scraper were identified during Phase 1 Extraction (CAT 2001b). A flint fabricator and an unutilised flake were identified during Phase 2 (4) Extraction (CA 2007). All were unstratified and dated to the Late Neolithic to Early Bronze Age.

Medieval

- 1.8 An evaluation prior to Phase 1 Extraction identified several undated features including a stone-filled ditch, a posthole and a pit containing burnt material (CAT 1999b). The ditch was fully exposed during a subsequent watching brief, along with a number of pits and postholes to its east. Medieval pottery, dateable to the 11th to 14th centuries, was recovered from these features. These features also contained iron slag, burnt sandstone and fired clay likely to have derived from the walls of a charcoal-fired furnace, although no *in situ* furnace was identified (CAT 2001b).
- 1.9 Within the Phase 2 Extraction area visible earthworks within Mare Pit Wood were archaeologically surveyed (CAT 2000; 2001a) and an archaeological evaluation was undertaken within the northern part of the wood (CAT 2000). This work showed that the earthworks are likely to have been the remains of infilled iron minepits and associated spoil heaps. These are presumed to be medieval on the basis of evidence elsewhere within the quarry (Worssam et al. 1987).
- 1.10 A watching brief during the final stage of Phase 2 Extraction (Phase 2 (4)) identified a large number of the probable medieval quarry pits within the former extent of Mare Pit Wood (CA 2007). Beyond the wood, the foundations of a timber building were identified, along with several pits. These features were associated with a small amount of medieval pottery and had been backfilled with iron-processing waste likely to have been associated with iron processing in the near vicinity. Although no in situ furnaces were identified, debris likely to have derived from such furnaces was present within the backfills of the features.

Post-medieval

1.11 The evaluation and survey work demonstrated the presence of substantial post-medieval clay extraction (marl) pits and associated trackways and drainage channels within Mare Pit Wood. These were exposed during Phase 2 (Parts 1 and 4) Extraction. A pit containing charcoal and iron smelting slag was also identified during Phase 2 (Part 1) Extraction. This remained undated, although the slag is likely to be post-medieval to early modern in date (CA 2004a).

Methodology

- 1.12 The fieldwork followed the methodology set out within the WSI (CA 2003). An archaeologist was present during intrusive groundworks, comprising the removal of the topsoil and subsoil using a 360° tracked machine equipped with a toothless bucket (Fig. 2). All exposed features were then recorded in accordance with CA Technical Manual 1: Fieldwork Recording Manual (2005).
- 1.13 Subject to the agreement of the legal landowner, the finds will be deposited with East Grinstead Museum, along with the site archive.

2. RESULTS

2.1 No dateable material was recovered from the archaeological features. As a result, the features have been assigned dates on the basis of their spatial location in relation to medieval features exposed during Phase 2 (4) Extraction.

Medieval

2.2 Five medium-sized pits identified close to the southern edge of the site formed a continuation of the probable medieval quarry pits identified during Phase 2 (4) Extraction (Fig. 3). All were sub-circular in plan, measuring between 3.2m and 4.25m in diameter. In agreement with John Mills, all remained unexcavated at this stage of the works due to their anticipated depth, and all remained undated. A subsequent watching brief was undertaken during c. 0.6m deep ground reduction across the quarry pits exposed during the Phase 2 (4) works, but this did not expose the full depth of any of the pits and no artefactual or ecofactual material was recovered. In all cases, the pits had been infilled with material derived from the clay

substrate and in all probability each exhausted quarry pit was used as a suitable receptacle for spoil from the next pit to be excavated.

- 2.3 Ditch 610, a continuation of ditch 432 identified during Phase 2 (4) Extraction, was also identified. It was filled with material derived from the substrate along with moderate quantities of iron slag. Postholes 629 and 655 were located along the northern edge of this ditch and were filled with similar material. Two further postholes, 642 and 647, were located to the south of the ditch. Both had pointed bases and steep edges and had been backfilled with iron-processing waste.
- 2.4 Postholes 615 and 653 were located to the north of ditch 610. Both had been backfilled with iron-processing waste including slag, charcoal and fired clay. The fill of posthole 653 also contained several fragments of furnace base, consisting of iron slag with grey fired clay around its outer edges, and it is possible that this material was re-used as post-packing. These two postholes were aligned with two postholes exposed during Phase 2 (4) Extraction and might have formed a fence line alongside ditch 610/432.
- Furnace pit 619 was located to the south of ditch 610. It comprised a shallow, round-based cut, 0.53m in diameter and 0.1m deep (Figs 3 and 4). The natural clay around its edges and base was scorched red, indicating that heating had occurred within the pit. Its lowest fill, 621 was a single piece of iron slag, a proportion of which was identifiable as tapslag, with grey fired clay around its outer edges. It had solidified around the edges and base of the pit, indicating that it had entered the pit in molten form. This was covered by upper fill 622, a dark ashy deposit containing occasional pieces of iron slag. A fragment of sandstone, 625, burnt red, was located along the outer edge of the pit and may have been the only remnant of an associated structure. It seems likely that this pit was the base of a bowl furnace for iron smelting. These deposits were cut by oval slag-filled pit 623 which was similar to the slag-filled oval pits identified during Phase 2 (4) Extraction.
- Ditch 649 was located to the immediate west of the furnace pit. It was 2.75m long, 0.35m wide and 0.07m deep and was flat-based with a posthole at each terminus (postholes 651 and 634). The ditch was slightly curvilinear in plan and might have been the foundation for a windbreak associated with the furnace. The fills of this feature graduated from black, slag-rich deposits at its northern end (closest to the furnace) through to pale clay with occasional slag and fired clay pieces.

- 2.7 Five small pits (604, 612, 617, 632 and 644) were located close to these features, either side of ditch 610. All had gently-sloping edges and rounded bases and had been backfilled with iron-processing waste. Upper fill 646 of pit 644 was almost pure charcoal. Pit 631 was larger but otherwise similar and was also filled with slag-rich deposits.
- 2.8 The function of these small, rounded pits remains unclear. They were similar in form and size to furnace pit 619 and may have had a similar function. Although no *in situ* burning was present within these pits, it is possible that they were scoured out to recover any reusable slag before being re-used as waste disposal pits for iron-processing waste. This might account for some of the larger rounded pits, such as pit 631, which could conceivably have grown in size if they were scoured out. The scoop-like pits identified during Phase 1 and Phase 2 (4) Extraction might have had a similar function.

Post-Medieval

2.9 North-east/south-west aligned ditch 640 was identified in the southern part of the site. The alignment of this ditch suggests that it drained northwards from marl pit 330 identified during the Phase 2 (4) works. Since the ditch was far shallower than the marl pit, it may be a later addition, perhaps suggesting that the marl pit was re-used as a reservoir for arable irrigation. The ditch turned just before reaching medieval ditch 610, but the significance or otherwise of this is likely to become more apparent during any future recording to the east.

Finds

- 2.10 Metallurgical residues were recovered from 12 deposits (Appendix 2). Identifiable among the metallurgical residues were tapslags, indeterminate ironworking slags, fired clay hearth or furnace lining and vitrified clay.
- 2.11 Much of the metallurgical material cannot be identified with specific processes. However, the quantities of shelly iron ore and dense, free-flowing slags (tapslags) indicate that most or all of the metallurgical residues relate to iron smelting. Fragments with curving morphology suggests these formed within bowl-shaped structures similar to furnace pit 619. Charcoal, fired clay, vitrified clay and were also noted in the assemblage.

3. DISCUSSION

Medieval

- 3.1 The features identified during the current works form a clear continuation of those identified during Phase 2 (4) Extraction. The location of the five quarry pits is further indication that the northernmost extent of medieval iron ore extraction closely followed the 140m contour line. Ditch 610 appears to define this contour and northernmost extent of the quarry pits.
- 3.2 The presence of an *in situ* furnace represents a significant addition to the site, providing the first definite evidence that that extraction and smelting occurred on the same site. That these activities were broadly contemporaneous seems to be confirmed by the presence of moderate quantities of processing waste within ditch 610 which defined the limit of the extraction.

4. CA PROJECT TEAM

4.1 The fieldwork was undertaken by Jonathan Hart. This report was compiled by Jonathan Hart with illustrations prepared by Jemma Elliot. The archive has been compiled by Jonathan Hart and prepared for deposition by Victoria Taylor. The project was managed for CA by Mark Collard.

5. REFERENCES

- CAT (Cotswold Archaeological Trust) 1999a West Hoathly Brickworks, Sharpthorne, West Sussex, Phase 1; Cookham's Lane: Archaeological Recording CAT typescript report no. 991046
- CAT 199b West Hoathly Brickworks, Sharpthorne, West Sussex, Phase 1; Extraction Area (Excluding Cookham's Lane): Archaeological Evaluation CAT typescript report no. 991063
- CAT 2000 West Hoathly Brickworks, Sharpthorne, West Sussex (Mare Pit Wood):

 Archaeological Earthwork Survey and Evaluation CAT typescript report no. **001159**
- CAT 2001a West Hoathly Brickworks, Sharpthorne, West Sussex, Mare Pit Wood; South-East: Archaeological Earthwork Survey CAT typescript report no. **01127**
- CAT 2001b West Hoathly Brickworks, Sharpthorne, West Sussex, Phase 1 Extraction Area:

 Archaeological Watching Brief CAT typescript report no. **01110**
- CA (Cotswold Archaeology) 2003 West Hoathly Brickworks, Sharpthorne, West Sussex:

 Written Scheme of Investigation for a Programme of Archaeological Recording
- CA 2004a West Hoathly Brickworks, Sharpthorne, West Sussex: Programme of Archaeological Recording for Phase 2 Extraction (Part 1) CA typescript report no. 03176
- CA 2004b West Hoathly Brickworks, Sharpthorne, West Sussex: Programme of Archaeological Recording for Phase 2 Extraction (Part 2) CA typescript report no. **04152**
- CA 2006 West Hoathly Brickworks, Sharpthorne, West Sussex: Programme of Archaeological Recording for Phase 2 Extraction (Part 3) CA typescript report no. **05192**

CA 2007 West Hoathly Brickworks, Sharpthorne, West Sussex: Programme of Archaeological Recording for Phase 2 Extraction (Part 4) CA typescript report no. **06119**

Geological Survey 1977 Map of Quaternary Deposits: UK South

Worssam, B. and Swift, G. 1987 *'Minepits at West Hoathly Brickworks, Sharpthorne, Sussex'*, Wealdon Iron **7**, 3-15 (Bulletin of the Wealdon Iron Research Group)

APPENDIX 1: CONTEXT DESCRIPTIONS

Context	Description
601	Topsoil: mid brown clay silt. 0.25m deep
602	Subsoil: mid brown-grey silty clay. Very thin and intermittent
603	Natural: light brown-yellow slightly silty clay with fragments of iron panning
604	Pit: oval in plan with concave sides and rounded base. 1.85m long x 0.86m wide x 0.08m deep
605	Only fill of 604: mid brown clay silt with iron slag, charcoal flecks and fired clay pieces.
606	Quarry pit: sub-circular, unexcavated. 3.2m diam
607	Upper fill of 606: mid/light grey-brown clay silt
608	Quarry pit: sub-circular, unexcavated. 3.3m diam
609	Upper fill of 608: mid/light grey-brown clay silt
610	Ditch: NW-SE aligned with 45° edges and u -shaped base. 0.8m wide x 0.15m deep
611	
612	Only fill of 610: mid brown clay silt with moderate quantities of iron slag Pit: circular in plan with concave edges and slightly rounded base. 0.5m diam x 0.06m deep
613	
	Only fill of 612: charcoal lumps and iron slag within a mid grey-brown clay silt matrix
614	Only fill of 631: charcoal lumps, fired clay and iron slag within a mid grey-brown clay silt matrix
615	Posthole: circular in plan, steep, straight sides and pointed base. 0.3m diam x 0.16m deep
616	Only fill of 615: iron slag within a mid grey-brown clay silt matrix
617	Pit: circular in plan with concave edges and rounded base. 1m diam x 0.17m deep
618	Only fill of 617: charcoal lumps, fired clay and iron slag within a dark grey silt matrix
619	Furnace pit: circular in plan with concave edges and rounded base. 0.53m diam x 0.1m deep
620	As 603 but scorched red natural clay to a width of 0.2m around edges of 619
621	Furnace base: fired (grey) clay and iron slag around edges and base of pit 619
622	Upper fill of 619: grey-black ashy silt with occasional iron slag pieces
623	Pit: oval in plan, only partially exc. to confirm relationship with pit 619. 1.75m long x 0.65m wide
624	Fill of 623: iron slag and occasional lumps of fired clay within a black ashy silt matrix
625	Single sandstone fragment, burnt red, located along edge of pit 619. possibly remains of a structure
626	Quarry pit: sub-circular, unexcavated. 3.4m diam
627	Lowest exposed fill of 626: compact blue-grey clay
628	Upper fill of 626: mid/light grey-brown clay silt
629	Posthole: circular in plan, unexcavated. 0.12m diam
630	Fill of 629: mid/light grey-brown clay silt
631	Pit: circular in plan with straight edges and flat base. 1.55m diam x 0.1m deep
632	Pit: circular in plan with concave edges and rounded base. 0.28m diam x 0.09m deep
633	Only fill of 632: charcoal lumps, fired clay and iron slag within a dark grey silt matrix
634	Southern terminal of 2.75m long ditch 'windbreak 2'. Steep, concave edges and flat base. Small depression close to terminal may be the base of a posthole
635	Only fill of 634: mid brown clay silt with frequent iron slag pieces and occasional fired clay pieces and charcoal flecks/lumps
636	Quarry pit: sub-circular, unexcavated. >2.5m diam
637	Upper fill of 636: compact blue-grey clay
638	Quarry pit: sub-circular, unexcavated. 4.25m diam
639	Upper fill of 638: compact blue-grey clay
640	Post-medieval ditch: NE/SW aligned, turns to run E/W. unexcavted, 0.8m-1.4mn wide. Drained into marl pit 330 identified during Phase 2 (4) works
641	Fill of 640: mid brown clay silt with modern (late 20th-century) bottle glass
642	Posthole: circular in plan, with vetical northen edge, steeply-sloped southern edge and pointed base. 0.16m diam x 0.1m deep
643	Only fill of 642: iron slag, fired clay pieces and charcoal flecks/lumps within a mid brown clay silt matrix
644	Pit: circular in plan with concave edges and rounded base. 0.34m diam x 0.12m deep
645	Lower fill of 644: iron slag, fired clay pieces and charcoal flecks/lumps within a mid brown clay silt matrix
646	Upper fill of 644: charcoal with occasional iron slag pieces and small amounts of clay silt
647	Posthole: circular in plan with almost vetical NE edge, steeply-sloped SW edge and pointed base.
317	0.24m diam x 0.18m deep
648	Only fill of 647: mid grey-brown clay silt with frequent iron slag pieces
649	Part of of 2.75m long ditch 'windbreak 2'. Steep, concave edges and flat base. 0.35m wide x 0.07m
	deep

650	Only fill of 649: mid grey-brown clay silt with frequent charcoal flecks/lumps and iron slag and fired clay pieces
651	Northern terminal of 2.75m long ditch 'windbreak 2'. Steep, concave edges and flat base with steep-sided, rounded-based posthole forming northernmost terminus.
652	Only fill of 651: iron slag, fired clay pieces and charcoal flecks/lumps within a grey silty clay matrix
653	Pit or postpit: circular in plan with vetical edges. Flat base with deeper flat-based depression in SE corner. 0.55m diam x 0.3m deep (depression was a further 0.1m deep)
654	Only fill of 653: fragments of hearth base, iron slag and fired clay pieces and charcoal flecks/lumps within a grey silty clay matrix
655	Posthole: circular in plan, unexcavated. 0.3m diam
656	Fill of 629: mid brown clay silt

APPENDIX 2: THE INDUSTRIAL RESIDUES

Industrial residues, comprising macroscopic ironworking slags and quantities of fired clay hearth/furnace lining, were recovered from 12 deposits. The residues were scanned by context and quantified by category. Material from hearth base deposit 621 was recovered as a bulk sample (3) and was scanned as part of this assessment.

Identifiable among the metallurgical residues were:

- tapslags, consisting of dense, typically grey-coloured and sometimes glassy slags with 'ropey' appearance;
- 'indeterminate ironworking slags', which included moderately dense and a more vesicular material;
- · fired clay hearth or furnace lining; and
- vitrified clay, which consisted of clay clearly subjected to very high temperatures and which has developed glassy surfaces.

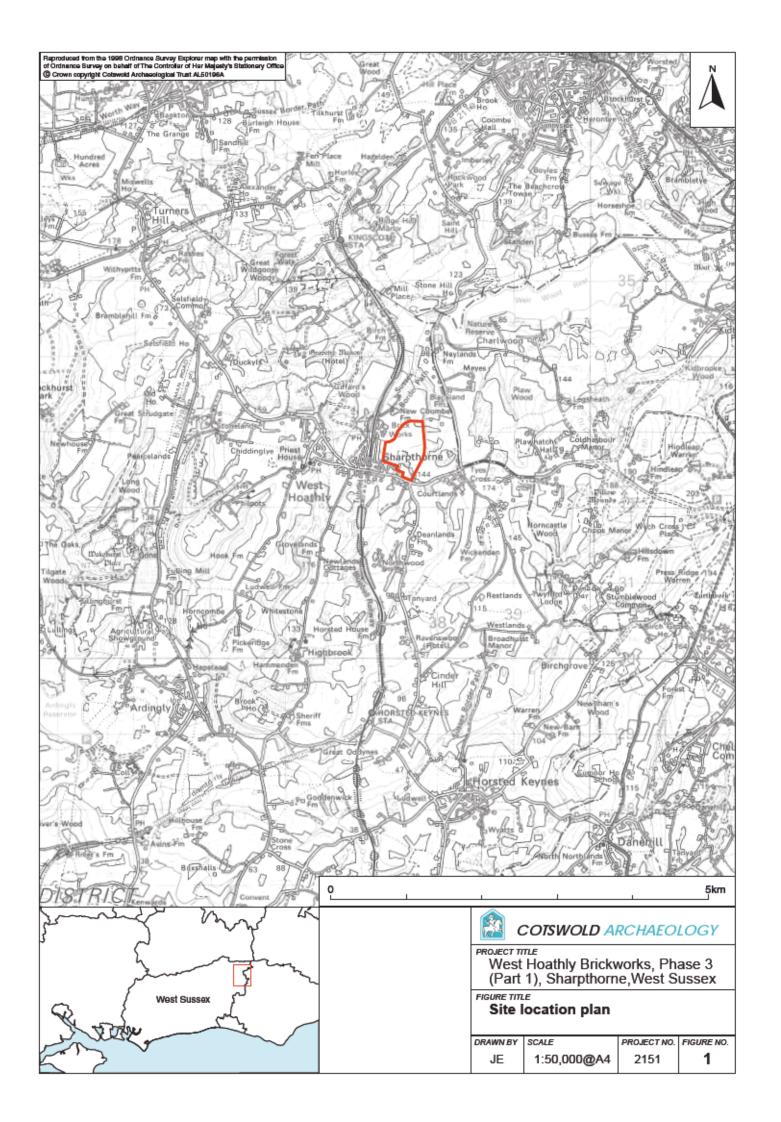
Much of the metallurgical material cannot by its form be related to specific processes. The nature of the deposits and the quantities of shelly iron ore and dense, free-flowing slags (tapslags) indicate that most or all material relates to iron smelting. Pieces of inderminate ironworking slag with curving morphology probably formed within bowl-shaped structures such as the furnace pit encountered. Charcoal, fired clay, vitrified clay and were also noted in the assemblage.

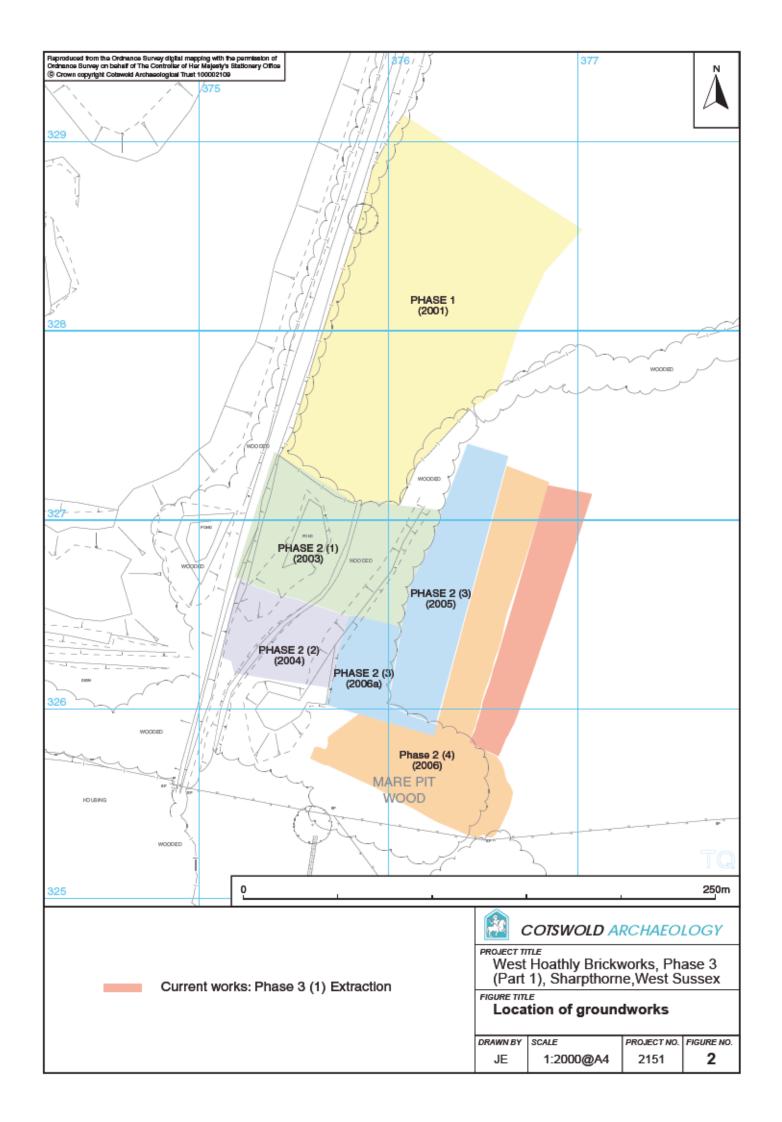
Bulk sample 3 consisted almost in its entirety of ironworking slags, a proportion of which was identifiable as tapslags.

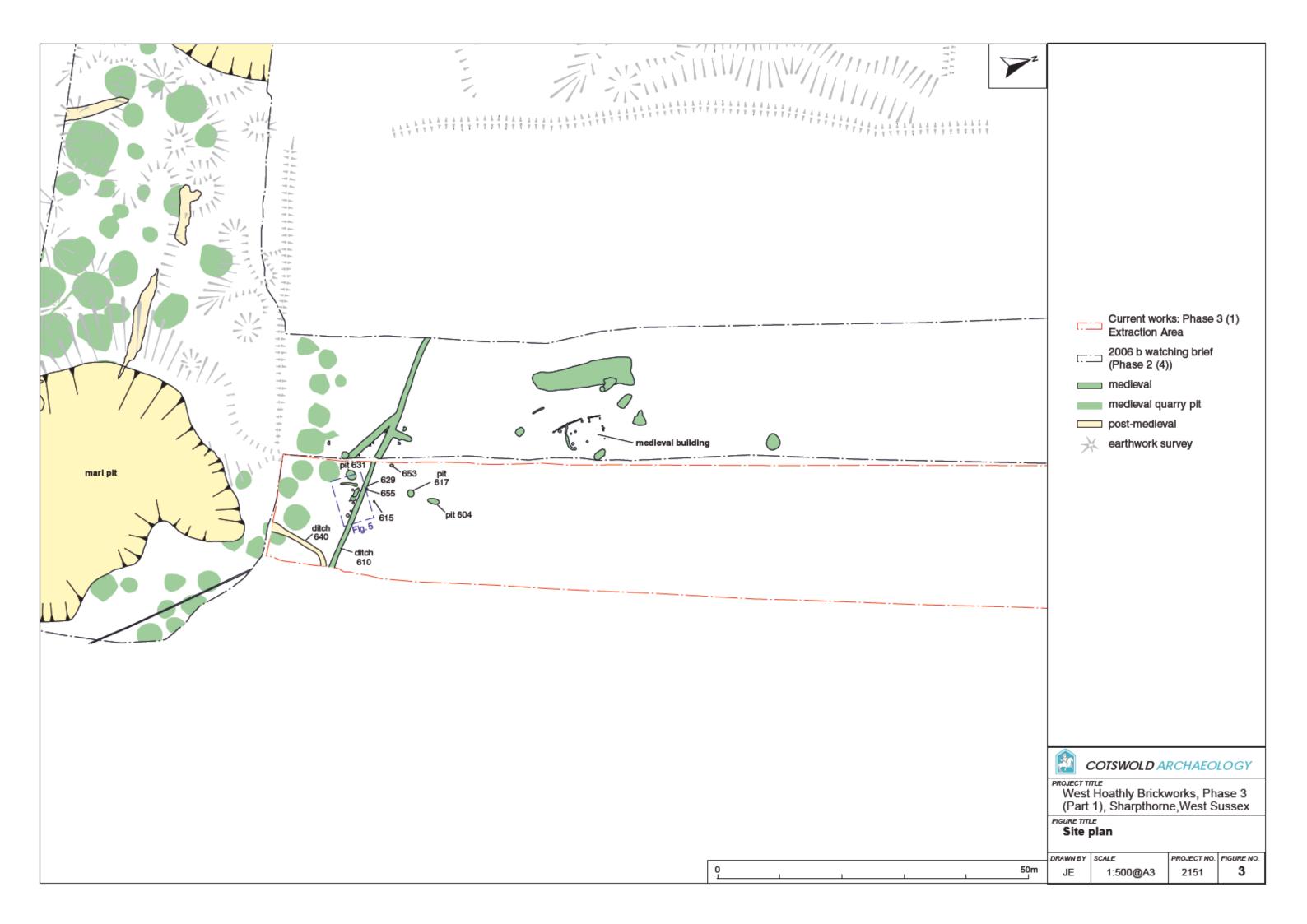
Table 1: Quantification of metallurgical residues

Context	Туре	Description	Weight (grams)	Count	Comments
605	Pit 604	tap slag	374	13	
		fired clay	38	2	
		indet. vesicular slag	50	2	
		indet. slag	44	2	
611	Ditch 610	iron ore	312	4	
		tap slag	40	2	
		indet. vesicular slag	162	3	
614	Pit 631	fired clay	158	4	
		indet. slag	152	1	
		tap slag	590	8	
		iron ore	24	1	
614	Pit 631	tap slag	1396	2	Concave shape to Misc. Iron
		indet. slag	62	3	Slag, seems to have formed in
					a depression similar to hearth
					base 654. Rough underside
					and smoother upper side with
					runs of tap slag
616	PH 615	fired clay	22	1	One piece of unidentifiable slag
		tap slag	316	6	has fired clay attached to it
		indet. vesicular slag	58	3	
		indet. slag	286	17	
618	Pit 617	fired clay	8	2	
		tap slag	610	11	
		misc. iron slag	340	7	
		indet. vesicular slag	74	2	

Context	Туре	Description	Weight (grams)	Count	Comments
618	Pit 617	tap slag	390	5	Vitrified clay is blue/grey in
		fired clay	6	3	colour
		vitrified clay	8	1	
		indet. slag	224	4	
624	Pit 623	tap slag	156	2	Misc. Slag has concave profile
		misc. iron slag	298	1	with areas of vesicular slag visible
624	Pit 623	indet. vesicular slag	828	4	Vesicular slag is grey in colour
		tap slag	90	1	with up to 2cm of blue/grey clay
		indet. slag	404	1	adhering to some pieces. The
					concave shape and presence of
					blue/grey fired clay suggests it formed in a depression/hearth
					etc.
633	Pit 633	tap slag	156	5	Blue/grey and orange fired clay
		fired clay	36	4	attached to Misc. Iron Slag
		charcoal	4	4	_
		indet. vesicular slag	108	5	
		indet. slag	176	3	
635	Ditch 634	iron ore	130	2	Vitrified clay is blue/grey in
		fired clay	2	1	colour
		vitrified clay	46	1	
		tap slag indet. slag	580 978	13 9	
648	PH 647	tap slag	114	7	
040	111041	indet. slag	1412	13	
652	PH 650	tap slag	236	7	
		iron ore	148	2	
		fired clay	52	8	
		vesicular slag	40	1	
		misc. iron slag	836	23	
654	PH 653	hearth base	3328	5	Concave shape. Some fired
		(indet. slag)			clay still adhering to base. 2
					flatter pieces have tap slag on upper surface
654	PH 653	fired clay	292	16	аррог запасс
		iron ore	832	5	
		indet. slag indet.	220	5	
		vesicular	22	1	
		slag tap slag	996	10	
Total			5690	42	









Furnace pit 619 with furnace base 621 half sectioned

