

Report 2140



nau archaeology

**Archaeological Monitoring of the
Great Bardfield Raw Water Main, Essex
(Amended)**

GBA W09



Prepared for
anglianwater

Peter Crawley

November 2009



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Location:	Great Bardfield
District:	Braintree
Grid Ref.:	TL 6588 3197 to TL 6630 3187
HER No.:	GBA W09
Client:	Anglian Water Services Ltd
Dates of Fieldwork:	10–12 and 26 June 2009

Summary

The easement strip for a new water main was examined for archaeological features by NAU Archaeology. This was undertaken in an archaeologically sensitive area close to the River Pant near the hamlet of Hawkspur Green, where an historic crossing was thought to have existed.

The western half of the easement was obscured by a thick subsoil which was truncated by an 18th/19th-century field boundary. The eastern half of the easement revealed a series of irregular patches, disturbed natural and two parallel ditches. Many of the features were only recorded in plan due to their recent date. No archaeology was observed to the east of the Pant. All of the features appeared to represent late post-medieval activity possibly relating to the extraction and movement of material in the 18th and 19th centuries.

A final site visit was made to record the deposits at the base of the directional drilling pit situated in a natural hollow on the eastern side of the river. The deposits appeared to be of natural derivation and contained no cultural material. The deposits here suggest that the river had originally been wider and that it had been subject to alteration. A second directional drilling pit to the east of the river was examined and observed to cut through natural sand, gravel and clay.

1.0 INTRODUCTION

The easement strip for a new water main was examined for archaeological features by NAU Archaeology. This monitoring was undertaken in an archaeologically sensitive area close to the River Pant near Hawkspur Green, Essex, where an historic crossing was thought to have existed. The easement was 4km long, 20m wide and oriented east–west (Fig. 1). Only the 250m of the easement adjacent to the River Pant were subjected to archaeological monitoring. The site had until recently been used for a mixture of agricultural practices including both arable and pasture.

This fieldwork was funded by Anglian Water Services Ltd. It was undertaken in accordance with a brief issued by the Historic Environment Management Team of Essex County Council (Richard Havis, March 2009) and a Project Design written by NAU Archaeology (BAU2140/DW). The work was designed to mitigate damage to any archaeological remains within the proposed redevelopment area, following the guidelines set out in *Planning and Policy Guidance 16: Archaeology and Planning* (Department of the Environment 1990).

The site archive is currently held by NAU Archaeology and on completion of the project will be deposited with Saffron Walden museum, following the relevant policy on archiving standards.

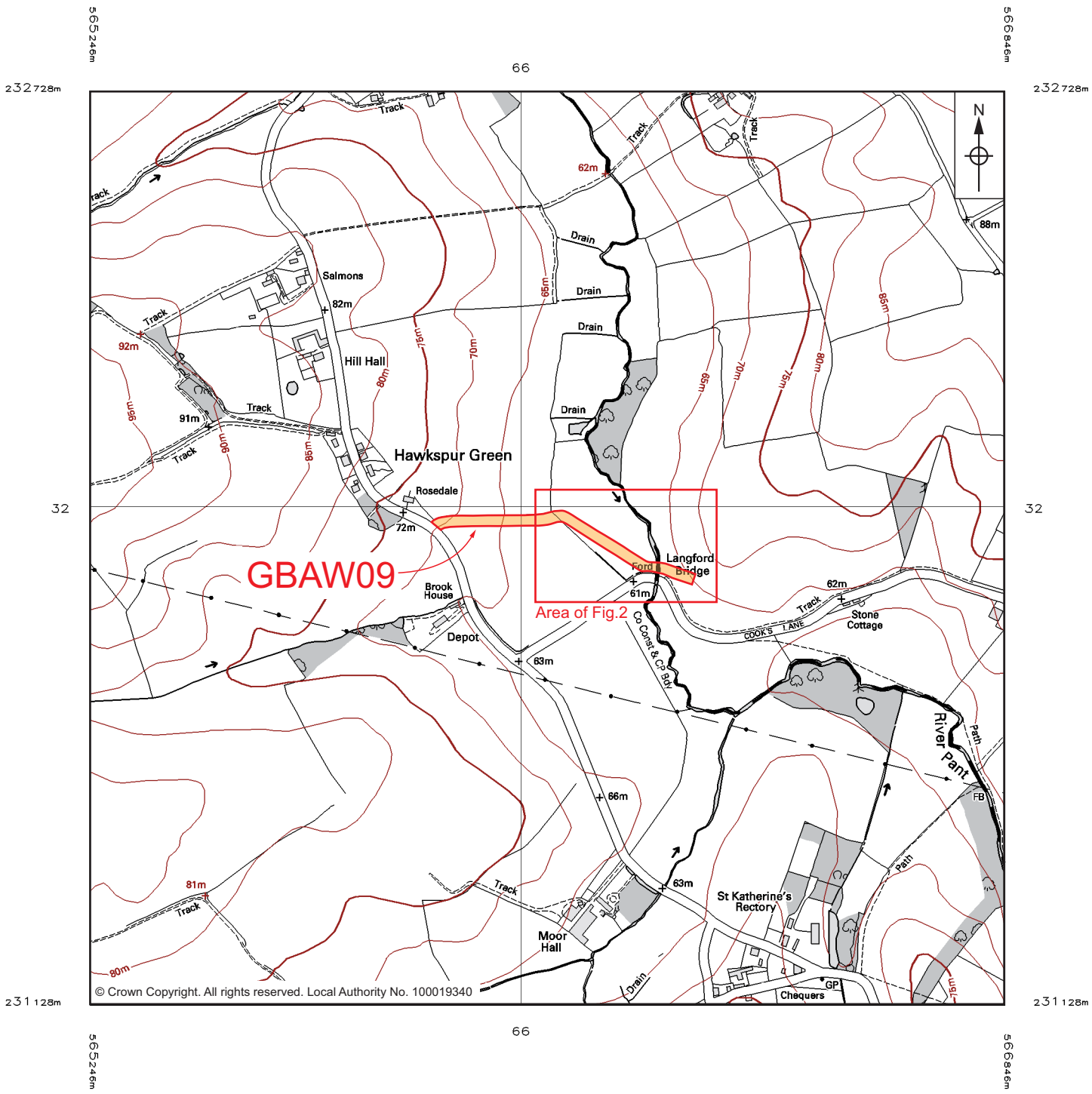


Figure 1. Site location. Scale 1:10,000

2.0 GEOLOGY AND TOPOGRAPHY

The site is situated in an area of Boulder Clay with overlying areas of glacial sand and gravel, such as the Kesgrave Sands and Gravels. The underlying solid geology is of London Clay (Hodge *et al.* 1984).

Specifically, where the natural deposits were observed on the site they consisted of a light brown sandy and silty clay. The topsoil was 0.20m thick on average and consisted of friable mid-brown clayey silt. The subsoil was a similar friable mid-brown clayey silt. There was enough sand in the upper deposits to allow for relatively good drainage of the site. The landscape was character was one of low-lying gentle slopes with a height of 70m OD at the western end of the easement descending to 60m OD in the east. A natural hollow lay at the centre of the site on the western side of the river Pant.

3.0 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

An HER search was undertaken by the Historic Environment Management Team of Essex County Council. Three HER entries lie close to the site:

- 1537 (MEX5552) – This findspot lay to the south of Brook Street, south of the site, and consisted of a single piece of Roman pottery.
- 1575 (MEX5659) – This entry was located to the west of the hamlet of Hawkspur Green. It comprised a possible windmill, indicated on the 1915 Ordnance Survey map. There appear to be no surviving physical remains associated with the monument.
- 18995 (MEX1036958) – This refers to undated cropmarks to the north of the site and east of Hawkspur Green. They appear to be field boundaries, some of which were shown on the 1st edition Ordnance Survey map.



Plate 1. Easement looking north-west.

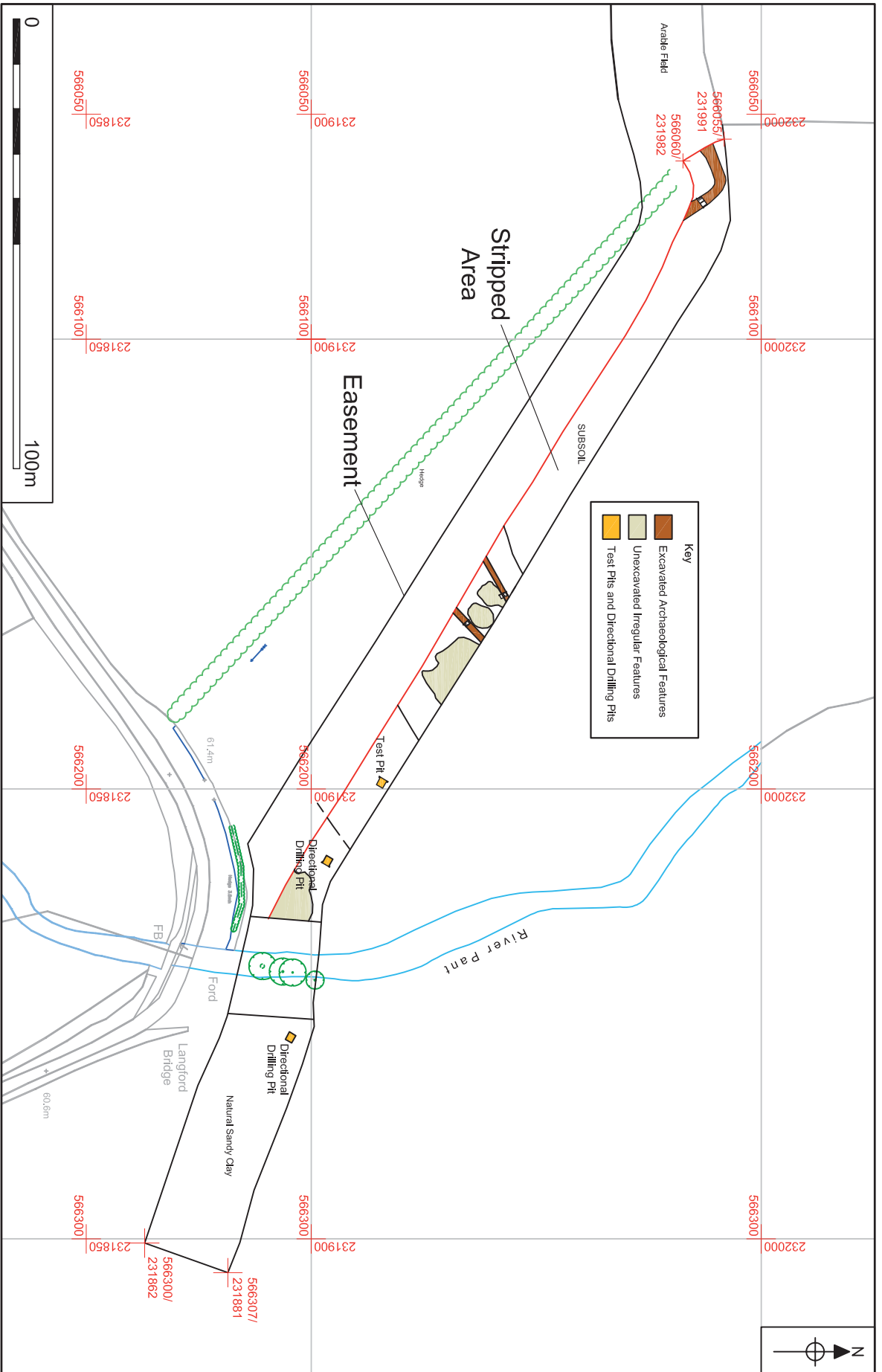


Figure 2. Trench location. Scale 1:1250

4.0 METHODOLOGY

The objective of this excavation was to determine as far as possible the presence or absence, location, nature, extent, date, quality, condition and significance of any surviving archaeological deposits within the stripped easement.

Machine excavation was undertaken by Balfour Beatty on behalf of Anglian Water using a 13-tonne hydraulic 360° excavator fitted with a toothless ditching bucket (Plates 1 and 2). The stripping of the easement was undertaken under constant archaeological supervision. A decision had been taken by the Historic Environment Management Team of Essex County Council and David Whitmore of NAU Archaeology to leave a layer of subsoil at least 0.1m thick *in situ* in the easement. As machining progressed several machine scrapes were made to monitor the subsoil's thickness. Close to the river the subsoil was less than 0.1m thick and the area was stripped.

All archaeological features and deposits were recorded using NAU Archaeology pro forma. Trench locations, plans and sections were recorded at appropriate scales and colour and monochrome photographs were taken of all relevant features and deposits. Spoil, exposed surfaces and features were scanned with a metal-detector. All metal-detected and hand-collected finds, other than those which were obviously modern, were retained for inspection.

A handheld GPS unit was used to give a height above sea level in conjunction with relevant maps and spot-heights provided by Balfour Beatty.

The deposits at the base of the westernmost of the two Directional Drilling pit were undated and contained no cultural material. Though not dated, it was considered a useful opportunity to examine the nature of these deposits, and samples were taken, examined and reported on by a qualified palaeo-environmental specialist.



Plate 2. Machining of the easement looking east.

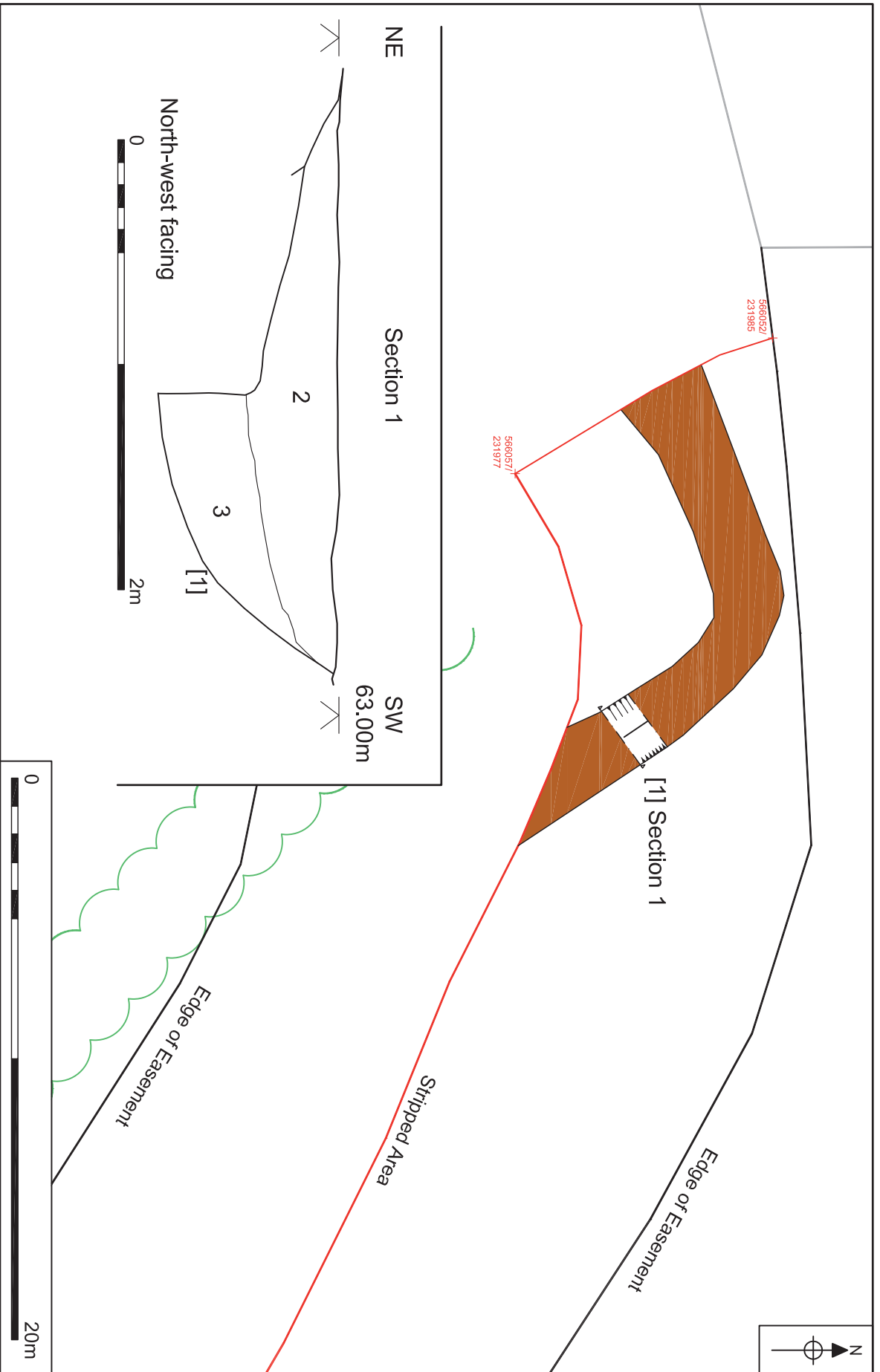


Figure 3. Plan and section of ditch [1]. Scale 1:200 and 1:25

5.0 RESULTS

The excavated features are discussed here in the order in which they were revealed as work progressed from west to east along the easement (Fig. 2).

At the western end of the easement a probable field boundary [01] was revealed which ran parallel with the present hedge line, before turning at a right angle at its western end (Fig. 3). A single slot was excavated across this ditch, indicating that it had concave sides and a concave base. The ditch was at least 10m long and 2.20m wide. Its depth was 0.80m. The primary fill (03) consisted of a firm slightly greenish-brown silty clay, and was overlain by fill (02), a dark grey-brown clayey silt with occasional chalk flecks, small flints and frequent amounts of roots. The fill had probably built up relatively recently. The ditch truncated a layer of subsoil (14) that had been left on the easement at this point, this was the only recorded feature to do so.

A narrow north-east to south-west oriented ditch [04] was observed towards the centre of the easement (Fig. 4; Plate 3). It had concave sides and base which were observed in the single slot excavated through it (Fig. 4, Section 2). It extended for at least 10m and had a width of 0.80m. Its depth was 0.20m. The ditch was probably of relatively recent origin and lay parallel to a similar ditch [06] several metres to the east. The single fill (05) of ditch [04] was a firm light brown silty clay which had probably resulted from natural silting.

A large irregular feature [08] was situated just to the east of the ditch (Fig. 4). The feature was 6.0 m by 5.75m in extent. The roughly rectangular feature appeared to be an area of disturbance without clear edges. Due to its size and recent date, this feature was largely seen in plan. It had a fill composed of firm light greyish-brown clayey silt (09) mixed with 'dirty' natural. It was partially excavated to examine its relationship with ditch [04].

A second, similarly irregular and roughly oval feature [10] lay immediately to the east (Fig. 4). It had a visible extent of 5.0m by 5.0m at its widest points. The feature appeared to be an area of disturbance without clear edges, and it was probably of relatively recent date. Its fill (11) was a firm light brown clayey silt mixed with 'dirty' natural.

A second narrow ditch [06] was observed immediately to the east (Fig. 4; Plate 4). It was at least 15m long and had a width of 1.0m. The depth was 0.44m. A single slot was excavated through the feature (Fig. 4, Section 3). The base of the ditch was slightly irregular although generally flat and the sides were almost vertical. The ditch contained a single firm light brown silty clay fill which had probably naturally silted up within the feature. As previously indicated, the ditch ran parallel with ditch [04].

A very large area of disturbance [17] started immediately to the east of ditch [06] and continued for 20m (Fig. 4). It was at least 7.0m wide, and extended beyond the northern extent of the easement. This feature appeared to be an irregular scoop similar to features [08] and [10] and was probably of relatively recent date. The single fill (18) was a firm pale grey clayey silt mixed with 'dirty' natural.

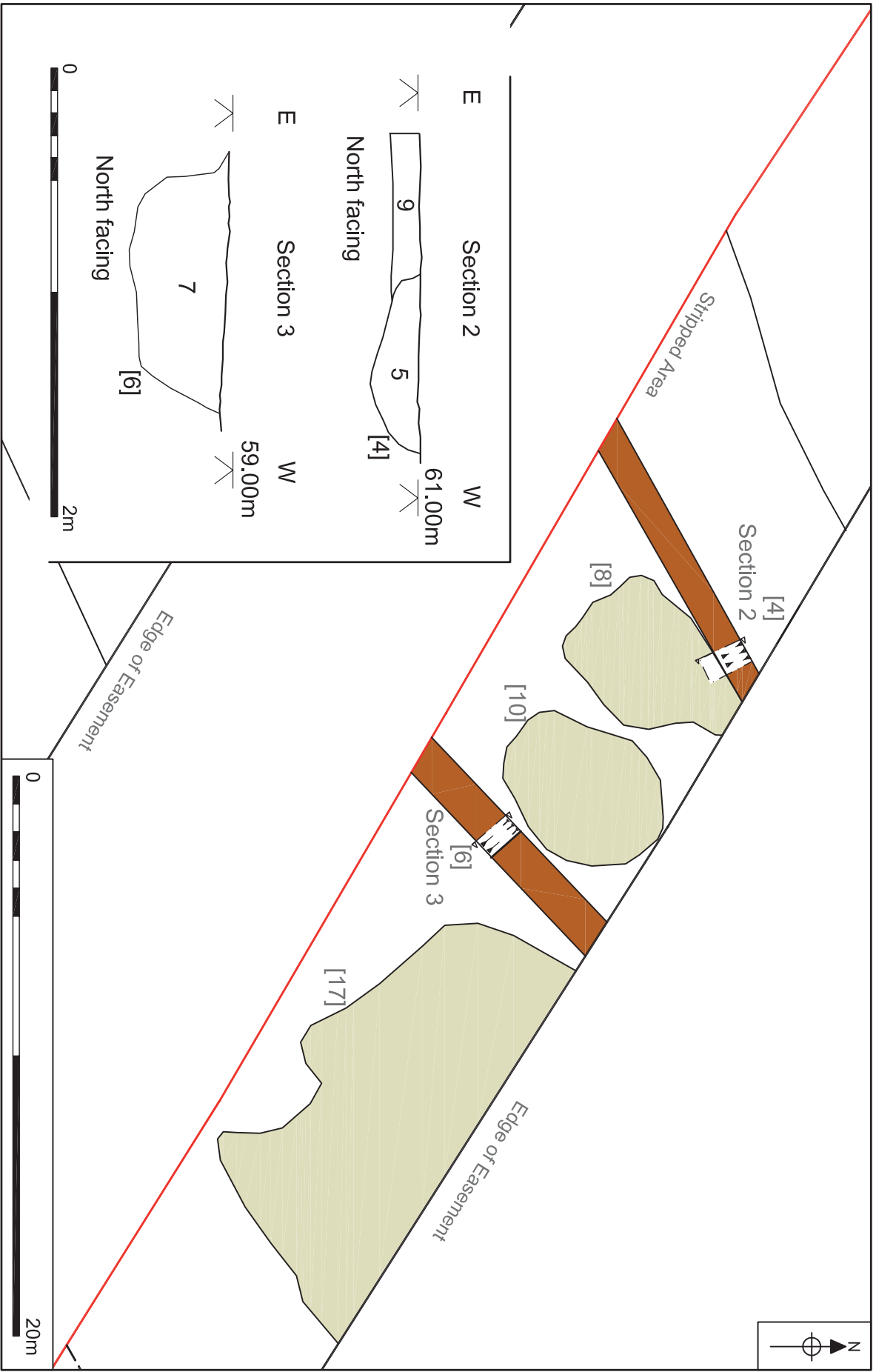


Figure 4. Plan and section of ditches [4] and [6]. Scale 1:200 and 1:25



Plate 3. Ditch [04] looking north.



Plate 4. Ditch [06] looking north.

Adjacent to this disturbed area to the east a large natural hollow was observed containing a thick layer of light brown silty clay subsoil (15) (Fig. 2). A test-pit was machine excavated into this hollow, at the base of which was a friable dark grey clayey silt (16) (Fig. 5). This deposit had formed naturally and contained no cultural material.

A further large area of disturbance [19] lay adjacent to the river (Fig. 6). It had irregular edges and was around 20m long with a width of at least 8.0m. The single fill (20) was a firm mid-brown clayey silt mixed with 'dirty' natural sand and gravel. This last of the series of irregular scoops cut through a series of naturally deposited layers within a hollow which sloped towards the river.

On the last monitoring visit to the site a directional drilling pit was excavated by operatives of Balfour Beatty under archaeological supervision and the deposits recorded (Plate 5; Fig. 6). All of the deposits were of natural derivation and contained no cultural material. Beneath the thicker layer of subsoil (21) was a loose pale mottled coarse sand (22) overlying a loose dark grey sand (23) which in turn lay above a 'ginger' coloured sand (24). At the base of the sequence was a dark grey-brown slightly clayey silt (25) which contained small fragments of preserved wood which gave off a strong sulphurous smell. No cultural material was present within this layer and it appeared to be of wholly natural deposition.

Deposit (25) was examined by an environmental specialist and is reported on below. This analysis was undertaken to attempt to determine the palaeo-environmental sequence of the flood plain deposits close to the River Pant. It was also hoped that dating evidence may have been recovered from the sample.

A second directional drilling pit on the east of the river was examined and observed to cut through natural sand, gravel and clay (Fig. 2). A section of the second directional drilling pit is not reproduced here due to the unexceptional and clearly natural derivation of the deposits encountered.

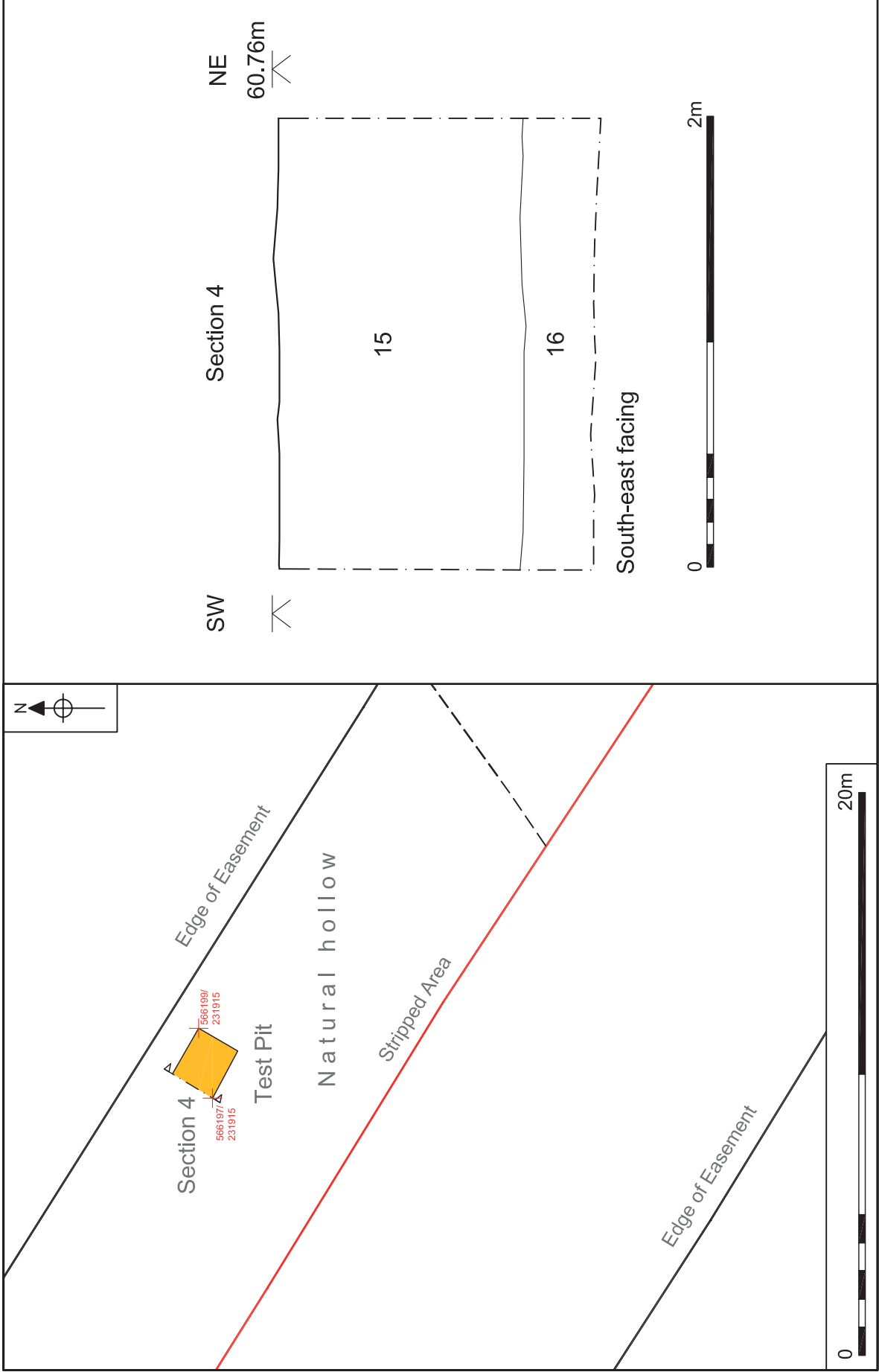


Figure 5. Section through natural hollow. Scale 1:200 and 1:25

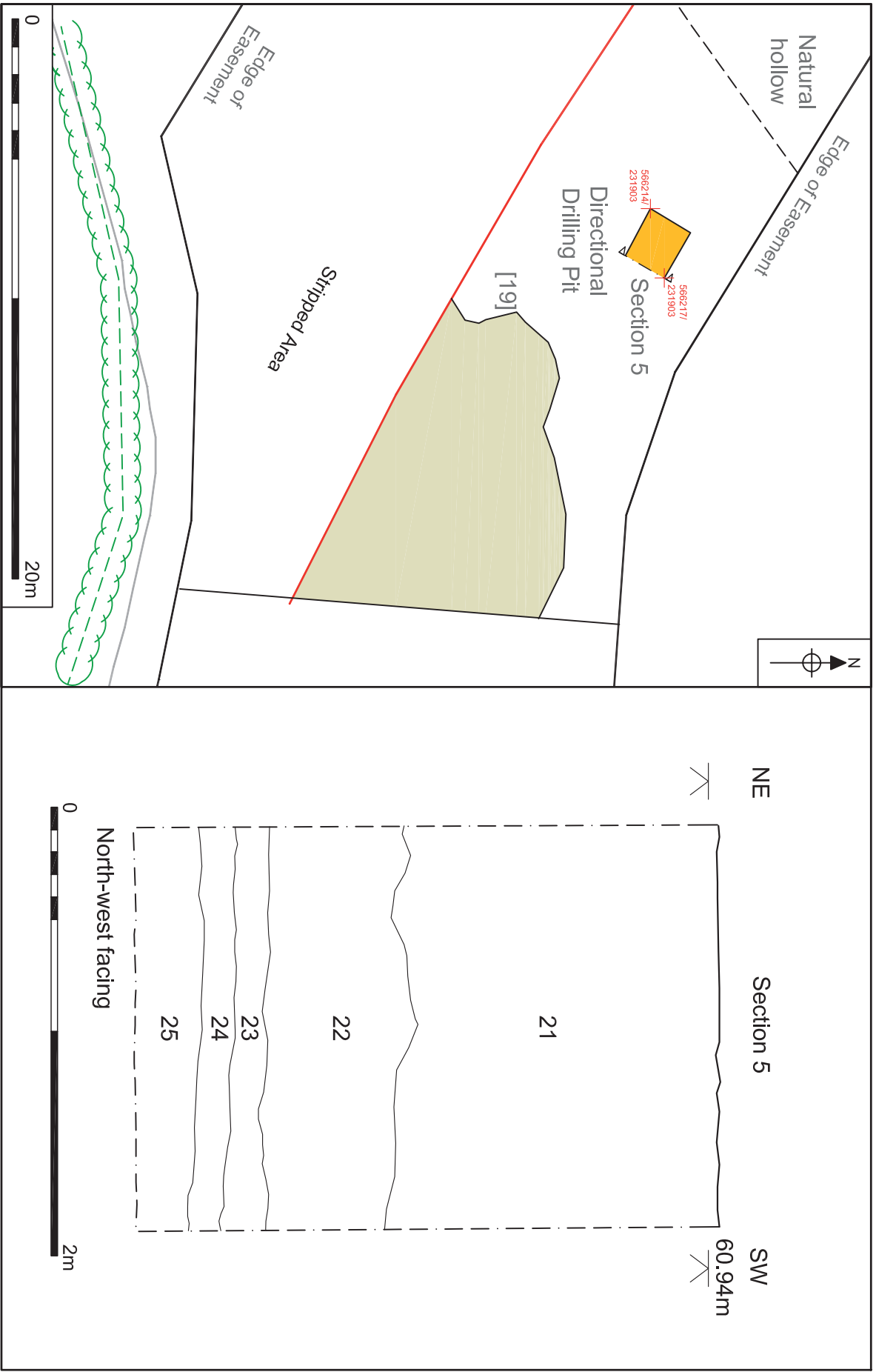


Figure 6. Section within Directional Drilling Pit. Scale 1:200 and 1:25



Plate 5. Section showing deposits within the drilling pit looking east.

6.0 THE FINDS

6.1 Ceramic Building Material

By Sarah Percival

Fourteen pieces of CBM weighing 907g were recovered from six contexts. All of the material is post-medieval and includes 12 pieces of flat roof tile weighing 386g and two pieces of brick. Two fabrics were identified: the first was a coarse sandy fabric used only for roof tile, the second, a sandy fabric with red ferrous inclusions and occasional chalk and flint pieces was used for tile and brick (Anderson 2005). All of the brick fragments and the pieces of roof tile show signs of use or reuse, all are weathered and several have mortar adhering to one or more surface.

6.2 Flint

By Sarah Bates

A single blade was found in the topsoil. It has cortex along its right side and has been repeatedly struck or battered at its proximal end at the former platform edge. This probably represents the deliberate preparation of the core. There is a small surviving length of retouch on the left part of the distal edge of the blade; the distal end of the left side appears to have snapped off. The blade may have been used as a minimally retouched end scraper. It is probably of earlier Neolithic date.

6.3 Metals

By Lucy Talbot

Five late post-medieval or modern buttons of shirt or trouser type were recovered from the fill of disturbed area [17].

7.0 ENVIRONMENTAL EVIDENCE

By Dr Fran Green

As part of the archaeological investigation two directional drilling-pits were excavated either side of the river Pant (Fig. 6). The directional drilling pit west of the river contained an interesting sequence of deposits, the lowest of which was sampled. A shallow sequence of deposits was recorded within this directional drilling pit.

7.1 Sedimentology

The lowest deposit was a light grey sand with moderate blackened flint. This deposit was not seen in section, but it is likely to be a fluviially deposited sand and gravel. Lying above this deposit was an organic sand (25) some 0.15m deep. This dark brown organic sand contained a little silt and much of the sand was coarse with some of it being grit sized. The sands appear to be massive with no apparent structure. There were frequent small rounded and sub-rounded flints and rare larger pebbles about 0.05m in size. The deposit also contained frequent fragments of wood and a hazelnut shell together with a moderate frequency of mollusc shells. The coarse sands and pebbles indicate a low to moderate energy environment within a watercourse, whereas the organic content is likely to have accumulated during periods of reduced flow.

Above the organic sand was a 0.45m deep sequence of inorganic sands and gravels – (24), (23) and (22) – also with a fluvial origin and deposited in a moderate energy environment. Sealing the thin sequence of sands and gravel was a 0.75m deep silty clay with occasional gravel and small shell (21). The fine sediments indicate a much lower energy environment than that which deposited the underlying deposits and were likely to be derived from over-bank deposits from a river in flood. This indicates that by the time these deposits had accumulated the river had changed course and had moved from the position it occupied when the sands and gravels were deposited.

7.2 Mollusca

To assist with the interpretation of the sedimentological sequence the mollusca found in the organic sands of (25) were analysed. The mollusc shells were picked from a bulk sample of sediment using tweezers and a fine paintbrush. Identifications were assisted by reference to Beedham (1972) and Macan (1969).

A single sample from context (25) was analysed (Table 1).

	Species	Number	% of all Mollusca
Bivalve	<i>Sphaerium corneum</i>	2	5
Gastropod	<i>Bithynia tentaculata</i>	19	51
	<i>Lymnaea palustris</i>	3	8
	<i>Lymnaea peregra</i>	7	19
	<i>Valvata piscinalis</i>	1	3
	<i>Planorbis albus</i>	5	14
Total		37	100

Table 1. Mollusca from context (25).

The assemblage of 37 molluscs were all freshwater aquatic forms and the most abundant species was *Bithynia tentaculata* (51% of all molluscs counted). This snail prefers hard water, quiet rivers and still waters, but not small ponds. Other molluscs that prefer to live in flowing water conditions include the freshwater bivalve *Sphaerium corneum* (5%), a species which lives in the mud at the bottom of rivers and large ditches although it is also found attached to macrophytes plant stems. Another species more common in moving water is *Valvata piscinalis* (3%). This gastropod is a soft water species.

Species that inhabit marginal marsh or edges of lakes and ponds include *Lymnaea palustris* (8%).

Less diagnostic of specific water conditions are the species that are widely distributed in all freshwaters and tolerant of a wide range of include *Lymnaea peregra* (19%). This is the most common freshwater snail in Britain and is tolerant of a wide range of conditions. Another species tolerant of a wide range of freshwater conditions is *Planorbis albus* (14%) that is generally distributed in all freshwaters usually in vegetation.

7.3 Discussion

The sedimentology together with the mollusc evidence suggests that deposit (25) was deposited in a muddy-bottomed slow flowing river or stream with marginal marsh which probably had emergent vegetation at the margin or within the channel. The deposits of (25) most likely accumulated within the channel occupied by a small slow-flowing river. It is unclear if the water is soft or hard since molluscs indicating both conditions were identified, therefore it is most likely the water was neutral. Surrounding the watercourse was woodland with hazel, since fragments of branches, twigs and hazelnut shells were found within the deposit. Coarser sand and grit together with larger clasts of flint in (25) suggest occasional higher flow or an earlier phase of higher water flow. Sealing this deposit were sands and gravels (24), (23) and (22) which were probably deposited by the river or stream as some sort of lateral bar or even point bar on a meander bend. This suggests the position of the watercourse had moved slightly, perhaps no more than a metre or so, and this was no longer the position of the channel.

A thick sequence of alluvium (21) seals the sand and gravel and organic sands, indicating that the channel had moved further still, and these deposits accumulated as a result of repeated over bank flood deposits from the river onto the flood plain.

The modern river, located some 16m to the east, is straightened in this reach and these deposits may equate to the natural course of the river prior to its straightening. However, the deposits suggest a natural sequence of events and the position of the channel identified in this test-pit may be an even earlier channel position, not the one which was artificially moved in historic times. The position of the pre-straightened river is likely to be very close to the position of the channel identified in this test-pit, perhaps only a few metres. There is no dating evidence from this sequence of deposits, therefore the lower part (25) could date from any point between the mid-Holocene and historic times.

8.0 CONCLUSIONS

The single early Neolithic flint suggests a background presence in the area of that period, although in isolation no further conclusions can be drawn from this residual find.

The artefacts recovered from the majority of the fills establish that the ditches and irregular features are all of the later post-medieval period, and probably relate to a period of more intensive agriculture. The four irregular features may represent rudimentary quarrying. The similarly dated ditches consist of a probable field boundary [01] and two smaller drainage ditches [04] and [06]. All three of the features appear to have fallen out of use at about the same time, as they all contain fragments of roof tile presumably derived from a nearby dwelling. An examination of the 1881 Ordnance Survey map and other early modern maps did not reveal any further information about the ditches or indicate any nearby buildings from which the roof tiles may have been derived. Without a closer alternative it is probable that the tiles came from a building situated at the hamlet of Hawkspur Green and may have been spread during manuring.

No early remains of archaeological significance were recovered during the work, a conclusion in keeping with the scarcity of Historic Environment Records pertaining to the area. The generally clayey nature of the ground, possibly with a tendency to flood, would have rendered the ground difficult to exploit until advancements in farming techniques made this a possibility.

The organic-rich layer containing fragments of preserved wood at the base of the sequence from the directional drilling pit indicates that there is excellent potential for the preservation of any wooden and leather artefacts, although none were present within the pit. If this was an historic crossing of the River Pant there may be preserved elements associated with this activity.

An examination of the 1881 Ordnance Survey map indicates that there was an unusual kink in the river at the position of the site, which may explain the alluvial deposits (such as layer (24)) encountered at the base of the natural hollow and in particular in the base of the directional drilling pit. At some point before the surveying of the early modern maps there was possibly a narrowing and straightening of the river Pant. This may relate to there being a crossing or ford at this position on the river which necessitated alteration to the water course, although the present work found no archaeological evidence for the existence of such a crossing.

Acknowledgements

The fieldwork was undertaken by the author. Thanks to the operatives of Balfour Beatty for their help in the field. The finds were processed by Lucy Talbot. Sarah Percival reported on the CBM and the flint was examined by Sarah Bates. The environmental sample was reported on by Frances Green. The illustrations were prepared by David Dobson from site drawings digitised by the author. This report was edited by Richard Hoggett.

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Appendix 1a: Context Summary

Context	Category	Description	Period
1	Cut	Ditch	Post-medieval
2	Deposit	Upper fill of [1]	Post-medieval
3	Deposit	Lower fill of [1]	Post-medieval
4	Cut	Ditch	Post-medieval
5	Deposit	Fill of [4]	Post-medieval
6	Cut	Ditch	Post-medieval
7	Deposit	Fill of [6]	Post-medieval
8	Cut	Irregular Feature	Undated
9	Deposit	Fill of [8]	Undated
10	Cut	Irregular Feature	Post-medieval
11	Deposit	Fill [10]	Post-medieval
12	Deposit	Topsoil	–
13	Deposit	Natural	–
14	Deposit	Subsoil situated in the eastern part of the site	–
15	Deposit	Subsoil within the natural hollow	–
16	Deposit	Lower deposit within natural hollow	–
17	Cut	Large irregular feature	Post-medieval
18	Deposit	Fill of [17]	Post-medieval
19	Cut	Large irregular feature	Post-medieval
20	Deposit	Fill of [19]	Post-medieval
21	Deposit	Layer of subsoil within natural hollow	–
22	Deposit	Layer of naturally deposited sand	–
23	Deposit	Layer of naturally deposited sand	–
24	Deposit	Layer of naturally deposited sand	–
25	Deposit	Clayey silt at base of natural hollow	–

Appendix 1b: OASIS feature summary table

Period	Feature type	Quantity
Undated	Irregular Feature	1
Post-medieval (1540 to 1900AD)	Ditch	3
	Irregular Feature	3

Appendix 2a: Finds by Context

Context	Material	Qty	Wt (g)	Period
02	Ceramic Building Material	1	3	Post-medieval
05	Ceramic Building Material	2	25	Post-medieval
07	Ceramic Building Material	1	8	Post-medieval
11	Ceramic Building Material	7	323	Post-medieval
12	Ceramic Building Material	1	27	Post-medieval
12	Flint – worked	1	–	Prehistoric
18	Copper alloy – buttons	5	–	Post-medieval/modern
20	Ceramic Building Material	2	521	Post-medieval

Appendix 2b: OASIS Finds Summary Table

Period	Material	Quantity
Neolithic (4000 to 2201 BC)	Flint	1
Post-medieval (AD 1540 to 1900)	CBM	14

Appendix 3: CBM

Ctxt	Material	Qty	Wt(g)	Period
02	Flat roof tile	1	3	Post-medieval
05	Flat roof tile	2	25	Post-medieval
07	Flat roof tile	1	8	Post-medieval
11	Flat roof tile	7	323	Post-medieval
12	Flat roof tile	1	27	Post-medieval
20	Brick LB1	2	521	Post-medieval

Appendix 4: Metal Objects

Context	Quantity	Material	Object Name	Object date
18	5	Copper Alloy	Buttons	Late Post-medieval/Modern

Appendix 5: Flint

Context	Type	Period	Quantity
12	Retouched blade	Neolithic	1