BACTON TO KING'S LYNN

Natural Gas Pipeline

Post-Excavation Assessment of Potential for Analysis and Updated Project Design

Volume 2: Appendices

Version 3

Prepared by
Network Archaeology Ltd
on behalf of
Murphy Pipelines Ltd
for
Transco

July 2004

MURPHY

Transco network archaeology

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NATURAL GAS PIPELINE

POST-EXCAVATION ASSESSMENT OF POTENTIAL FOR ANALYSIS AND UPDATED PROJECT DESIGN

POST-EXCAVATION MAP2 ASSESSMENT

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APPENDIX 1

SPECIALIST ASSESSMENTS AND REPORTS

PREHISTORIC POTTERY ASSESSMENT

Prehistoric Pottery Assessment

By Sarah Percival

Introduction
Prehistoric pottery was recovered from thirty-five sites along the route of the Bacton to Kings Lynn pipeline. Six sites produced large assemblages of over 100 sherds and of these three sites generated over 500 sherds (Table 1). Pottery of all prehistoric periods was represented. Of particular interest are the large earlier Neolithic to Later Neolithic Early Bronze Age assemblage from East Walton (NHER37617), the earlier Neolithic to earlier Iron Age assemblage from Weasenham All Saints (NHER 37826-28), the earlier Iron Age assemblage from Oulton (NHER37629) and the later Bronze Age and earlier Iron Age assemblage from Antingham (NHER 37987).

Methodology
The assemblage was analysed using the pottery recording system described in the Norfolk Archaeological Unit Pottery Recording Manual and in accordance with the Guidelines for analysis and publication laid down by the Prehistoric Ceramic Research Group (PCRG 1992). The total assemblage was studied and a full catalogue was prepared. The sherds were examined using a binocular microscope (x10 magnification) and were divided into fabric groups defined on the basis of inclusion types present. Fabric codes were prefixed by a letter code representing the main inclusion present (F representing pottery, G grog and Q quartz). Vessel form was recorded; R representing rim sherds, B base sherds, D decorated sherds and U undecorated body sherds. The sherds were counted and weighed to the nearest whole gram. Decoration and abrasion were also noted. The pottery and archive are curated by Network.

The following ceramic periods were used:

Earlier Neolithic	4000-3000BC
Later Neolithic and earlier Bronze Age	3000-1000BC
Later Bronze Age	1000-600BC
Earlier Iron Age	600-300BC
Middle and later Iron Age	300BC-50AD

Pottery that cannot be firmly assigned a ceramic period has been catalogued as indeterminate prehistoric. Pottery, which falls within a broad period grouping by fabric but cannot be closely dated by form, is catalogued as 'Neolithic', 'Bronze Age' or 'Iron Age'. Sherds which appeared in the original catalogue but have subsequently been assigned a Roman or post-Roman date have been omitted. The pottery is presented by site with a description of each major pottery period represented. Pottery of uncertain date is not described in detail.

Site 1/253 (NHER 37617 WNE)
Site 253 in East Walton parish produced a small assemblage of quartz-sand tempered sherds from a single feature (1852). The sherds are not closely datable

Further work
No further work is required

Site 1/252 (NHER 37616 WNE)
Site 252 also lay within the parish of East Walton. The site produced a small assemblage of quartz-sand tempered sherds from a single feature (1862). The sherds are not closely datable.

Further work
No further work is required

Site 1/251 (NHER 37617 WNE)
Excavations at site 01/251 in the parish of East Walton (TF 736171) produced a prehistoric assemblage of 311 sherds weighing 1662g. The majority of the sherds are of earlier Neolithic date. A number of later Neolithic earlier Bronze Age sherds were also found. Small quantities of Bronze Age, Iron Age and indeterminate prehistoric sherds were also present these appear in the catalogue but are not described in full here.

Table 1: Quantity and weight of sherds by ceramic period.

Ceramic Period	Quantity	Weight (g)
Earlier Neolithic	147	823
Neolithic	10	80
Later Neolithic Early Bronze Age	89	515
Bronze Age	35	151
Mid Bronze Age	1	25
Iron Age	3	4
Undetermined	26	64
Total	**311**	**1662**

Earlier Neolithic
The earlier Neolithic pottery comprises plain carinated bowl in a range of flint-tempered fabrics. The round-based bowls have a carination or shoulder, which falls low on the body of the vessel, and are undecorated with simple pointed, rounded or rolled out rims. Similar examples have been found locally at Spong Hill, North Elmham (Healy 1988 63), Broom Heath, Ditchingham (Wainwright 1972) and during recent excavations at Colney (Percival forthcoming).

The earlier Neolithic assemblage was recovered from within a buried soil horizon (1024) and from pit fills (1036, 1054). The context of deposition suggests possible dispersed surface scatters of artefacts similar to those noted at The Stumble, Essex where evidence for low-density occupation was sealed under a subsequent build-up of colluvium (Brown in press).

Carinated bowl assemblages are generally regarded as being domestic in function (Thomas 1999, 98) but it is possible that they also carried a non-utilitarian significance to the users (Herne 1988, 26). Carinated bowls were in use for a long period spanning 4000BC to c. 3100BC (Thomas 1999, 99). The examples from Colney have been tentatively dated to around 3800-3300BC (Percival forthcoming).

Later Neolithic Early Bronze Age
A number of styles are represented within the Later Neolithic Early Bronze Age assemblage. Peterborough Ware, a regional variation of later Neolithic impressed ware dating to around 3400-2200BC, was recovered from the buried soil (1471). Also present was a small quantity of Grooved Ware (3000-2100BC), over fifty sherds of Beaker (2600-1800BC) and a single sherd from a Collared Urn (2150-1450BC).

The Grooved Ware came from the fill of a pit (1028) and is decorated with shallow incised channels suggesting the Clacton sub-style (Longworth 1971). Recent re-analysis of Grooved Ware sites has suggested that Clacton style vessels are often found in 'domestic' pit groups whilst Durrington style sherds are more closely associated with monuments (Garwood 1999). Finds of Grooved Ware are relatively rare in Norfolk, Clacton style sherds have been found at Redgate Hill, Hunstanton (Cleal 1993), Sponghill, North Elmham (Healy 1988) and Markshall, Caistor St Edmunds (Percival 2000).
The Beaker sherds are mostly decorated with geometric motifs formed from square-tooth comb-impressions. A small number of Beaker sherds were found within the buried soil but most came from the fill of a single small pit or posthole (1311). The deposition within a discrete pit is highly characteristic of Beaker pottery and such deposits have been interpreted as indicating intermittent use of a site, perhaps associated with seasonal grazing for animals (Healy 1995).

The single sherd of Collared Urn found in a pit (1136) indicates that activity at the site continued until the end of the Later Neolithic Early Bronze Age period. Collared Urn is often associated with funerary practice but has been found in domestic contexts at sites such as West Fen Row.

Discussion
The assemblage offers an opportunity to study activity over a wide time span in the prehistoric period. Further study of the pottery should discuss the nature of the use of the site with particular reference to close proximity to the Fen edge and the numerous assemblages of 'domestic' Beaker and other Later Neolithic Early Bronze Age pottery have been recorded there.

Further work
- Full integration of context information and preparation of publication text
- Selection of illustrated sherds and production of catalogue

Site 6/228 (NHER 37819 CAA)
Site 06/228 produced a moderate assemblage of earlier Neolithic plain bowl including two rim sherds of a folded or rolled form (Healy 1988 fig. 57). All the sherds are made of flint-tempered fabrics and probably date to between 4000BC and 3100BC (Thomas 1999, 99).

Further work
No context data was supplied for this site. Further work should include:

- Checking the context of deposition for the sherds and preparing a brief description and discussion for publication.
- Production of short publication discussion

Site 6/226 (NHER 37821 RGH)
Site 06/226 is located within the parish of Rougham (TF 831184). The site produced a small prehistoric assemblage consisting of nine sherds weighing 123g. One sherd, from the fill of a ditch (6859) was made of flint-tempered fabric and was possibly of earlier Iron Age date. The remaining sherds were of quartz-sand tempered fabric and appeared to be of mid-to-later Iron Age date. The assemblage included two base sherds, both simple undiagnostic forms. No rim sherds or decorated pieces were present. The assemblage was recovered from the fills of three ditches and two pits and does not suggest a substantial Iron Age presence at the site.

Further work
No further work is required.

Site 06/225 (NHER 37822 RGH)
Site 225 produced a single flint-tempered base sherd, probably of earlier Iron Age date from the fill of a single feature (5859).

Further work
No further work is required.

Site 2/224 (NHER 37823 RGH)
Excavations at this site produced six sherds of Later Neolithic Early Bronze Age Beaker (2600 –1800BC) decorated with comb-impressed filled bands and chevrons and two sherds in a sand-tempered fabric, which were not closely datable.

Further work
No further work is required.

Site 07/223 (NHER 37824 RGH)
Four sherds weighing 19g were recovered from a single context (7857) at site 07/223. The sherds are made of quartz-sand tempered fabric and are probably of Iron Age date.

Further work
No further work is required.

Site 8/217-219 (NHER 37826 & 37827 LEX & 37828 WAS)
The pottery presented here is from three sites, two within the parish of Lexham (NHER 37826 37827) and one within the parish of Weasenham All Saints (NHER 37828).

Table 2: Quantity and weight of pottery by site.

Site	NHER Number	Quantity	Weight (g)
217	37828 WAS	30	96
218	37827 LEX	411	3325
219	37826 LEX	84	307
08/217-219		22	74
Total		**547**	**3802**

Site 8/219 (NHER 37826 LEX)
The site is located within the parish of Lexham (TF 852191). Four phases of prehistoric activity are represented in the pottery assemblage.

Table 3: Quantity and weight of pottery by pottery phase

Pottery phase	Quantity	Weight (g)
Later Neolithic Early Bronze Age	18	93
Bronze Age	2	3
M id Bronze Age	11	144
Earlier Iron Age	1	8
Mid-Later Iron Age	43	47
Undetermined	9	12
Total	**84**	**307**

Three features contained pottery of Later Neolithic and Early Bronze Age date. The most notable feature attributable to this phase is a small, circular pit [8119], which contained 13 sherds of Beaker weighing 64g. The Beaker was decorated with comb-impressed filled bands (cf. Bamford 1982 fig.13 P63.010).

The mid to late Bronze Age is represented by two fragmentary Collared Urns of Burgesses late style (cf. Burgess1986 348). Both were recovered from pit 8117. Other non-diagnostic Bronze Age sherds were recovered from 8010

Forty-three small sherds of mid to later Iron Age pottery was recovered from 8027, the fill of small, rectangular pit 8028. Some of the sherds were decorated with tool-impressed dots, similar to examples found during excavations at Beeston with Bittering, which were dated to the 3rd to 1st centuries BC (Percival 1999 Fig.20 P12, P18).

Further work is required to define the nature of Collared Urn and the Iron Age assemblage. This would comprise: -

- Further analysis and writing-up to publication standard
- Selection of sherds for illustration and production of illustrated sherd catalogue.

Site 8/218 (NHER 37827 LEX)
The site is located within the parish of Lexham. It is situated approximately 0.5km east of the A1065, Fakenham to Swaffham road, roughly 2.0km south of the village of Weasenham All Saints (TF 855195).

Excavations at site 37827LEX produced four hundred and eleven sherds weighing 3325g. Four phases of prehistoric activity are represented in the pottery assemblage.

Table 4: Quantity and weight of pottery by pottery phase

Pottery phase	Quantity	Weight (g)
Earlier Neolithic	247	1045
Later Neolithic Early Bronze Age	3	31
Later Bronze Age	39	1805
Earlier Iron Age	100	331
?Iron Age	4	43
Undetermined	18	70
Total	**411**	**3325**

The Earlier Neolithic pottery was recovered from nine pit fills, a post-hole and a ditch. The majority of the assemblage was plain carinated bowl with rolled rims and angular carinated shoulders. The Plain Bowl was similar to examples recovered from Spong Hill, North Elmham (Healy 1988, fig. 67 P83). A single sherd of impressed decorated bowl was found in pit 8275; a small hole had been through the body of the vessel after firing, perhaps suggesting that the bowl had been repaired. The bowl also had a parallel amongst the assemblage from Spong Hill (Healy 1988 Fig 67 P82). Pit 8275 was a deep, straight-sided feature, which contained a large assemblage of 117 sherds including plain bowl as well as the impressed decorated bowl.

Three sherds of Later Neolithic and Early Bronze Age pottery weighing 31g were recovered from two features. Two sherds of Beaker, one with comb-impressed decoration, were found in a relatively small, sub-circular ring ditch, [8362]. One Beaker sherd with all over tool-impressed decoration came from a large pit, [8385], at the western end of the site.

The Later Bronze Age pottery was all recovered from a single small, isolated pit, [8285], on the northern edge of the spread. The pit contained thirty-nine sherds weighing 1805g including a semi-complete vessel with fingertip-impressed decoration on rim top and shoulder. The pot also had a post firing perforation, perhaps suggesting a repair. The vessel is similar to examples from Grimes Graves (Ellison 1988). Later Bronze Age pottery is uncommon in East Anglia, and this assemblage is of interest, especially if it can be demonstrated to have been found in a domestic context.

The Iron Age pottery was recovered from a broad scatter of features for which an Iron Age date can confidently be proposed including three concentrated clusters of post-holes, [8399], [8400] and [8401] possibly associated with occupation. The pottery is undecorated and has out-turned rims with rounded rim endings and angular shoulders. Similar sherds have been found at Valley Belt, Trowse (Ashwin and Bates 2000, fig.140, P104; Fig. 138, P8) where they were tentatively dated to the fifth century cal. BC (Ashwin and Bates 2000 179).

Further work

- To define the nature of the earlier Neolithic and Later Bronze Age assemblages through further analysis.
- Writing-up to publication standard.
- Selection of sherds for illustration and production of illustrated sherd catalogue.

Site 8/217 (NHER 37828 WAS)

The site lay within the parish of Weasenham All Saints. Two phases of prehistoric activity are represented in the pottery assemblage. A small, truncated pit, [8852], contained six small pieces of earlier Neolithic plain bowl in flint and sand tempered fabrics.

Two further pits, [8003 and 8005] each produced small quantities of earlier Iron Age pottery. The sherds are made of flint-tempered fabric and are scrappy and abraded, suggesting that they may have been redeposited within the pit fill.

Further work

No further work is required.

Site 9/214A (NHER 37619 LTC)

Site 9/214A produced two flint-tempered sherds weighing 16g. The sherds are probably of Iron Age date but are not closely datable.

Further work

No further work is required.

Site 12/203 (NHER 37621 TTL)

Site 12/203 is located within the parish of Tittleshall, (TF 890201). Three quartz-sand tempered sherds weighing 14g were recovered from the fill of a pit (12015); the sherds were of Iron Age date and were suggested by the excavator as being residual. Additionally two prehistoric sherds (6g) were found. One sherd was of probable Iron Age date, the other is not closely datable.

Further work

No further work is required.

Site 13/202 (NHER 37622 TTL)

The site is located within the parish of Tittleshall (TF 893203).

Table 5: Quantity and weight of sherds by ceramic period.

Ceramic Period	Quantity	Weight (g)
Earlier Neolithic	84	1753

Ceramic Period	Quantity	Weight (g)
Later Neolithic Early Bronze Age	5	22
Bronze Age	5	7
Iron Age	52	140
Iron Age/Early Saxon	18	642
Undetermined	13	24
Total	**199**	**2588**

Excavations produced a sizeable assemblage of earlier Neolithic plain carinated bowl. The majority of the sherds are of medium or coarse fabric with flint inclusions (2488g) with a very small number of quartz-sand tempered sherds (100g). Rims are catalogued after Healy (1988 fig. 57). Three rim types are present; simple rounded (type 1a three examples) out-turned or folded (type 2 six examples) and externally thickened (R3 1 example) representing a minimum of seven vessels. All of the earlier Neolithic pottery was produced from the fill of a single pit (13071).

Five sherds Neolithic Early Bronze Age Beaker sherds were found. Two examples are in coarse, flint-tempered fabric and are decorated with fingertip impressed 'rustication'. The remaining sherds have incised geometric motifs such as herringbone patterns. Both forms of decoration are common within Fen-edge assemblages such as Hockwold-cum-Wilton (Bamford 1982, Gibson 1982) where they are associated with domestic occupation. The Beaker sherds were recovered from four contexts, a pit fill (13007) a layer (13033) and two later grave fills (13263, 13287). The dispersal of the pottery within later features suggests that the pottery may have originally been deposited in surface scatters or middens such as those observed at Hockwold-cum-Wilton (Bamford 1982) or beneath barrows such as examples from nearby Weasenham Lyngs (Petersen and Healy 1986). Beaker dating on stylistic grounds is uncertain; however it is probable that these examples fall towards the end of Beaker currency (2600-1800BC).

The Iron Age pottery is characterised by the use of flint-tempered and sand-tempered fabrics. Two rim sherds were found both with flattened rim-endings. No decorated sherds were found. The pottery was mostly found in association with a sub-rectangular enclosure [13214] and the fills of a scatter of pits. The assemblage is of Iron Age date but is not closely datable.

The range of ceramic evidence from the site is of interest as it spans a wide period from the earlier Neolithic to Iron Age. It is probable that the upstanding prehistoric features became the focus for the Saxon cemetery. This continuity of use finds a parallel with Harford Farm on the Norwich Southern Bypass, which occupied a similar valley-side location and produced a comparable ceramic assemblage (Ashwin and Bates 2000).

The presence of Iron Age and Saxon pottery on the same site and occasionally within the same features is problematic as both types are made in a similar way from a similar clay source and are therefore often indistinguishable. Further work is needed to closely identify and 'pin down' exact dates for sherds for which the dating is currently unsure.

Further work

- Full integration of context information and preparation of publication text
- Selection of illustrated sherds and production of catalogue
- Discuss problematic sherds with RG to confirm dating where possible

Site 21/149 (NHER 37890 BTE)

Site 13/203 produced a small assemblage comprising seven prehistoric sherds (10g). Five sherds were of probable Iron Age date, two not closely datable.

Further work

No further work is required.

Site 22/148 (NHER 37623 BTE)

The site is located within the parish of Bintree (TG 021229). Excavations at site 22/148 produced a small mixed prehistoric assemblage of twelve sherds weighing (39g) The site comprises several phases of medieval enclosures and other activity with no features being assigned a prehistoric date. The prehistoric assemblage is therefore entirely residual. The assemblage was provisionally dated by fabric type. No diagnostic forms or decorative traits were present and the assemblage is not closely datable.

Table 6: Quantity and weight of sherds by ceramic period.

Ceramic Period	Quantity	Weight (g)
Earlier Neolithic	1	26
Later Neolithic Early Bronze Age	1	5
Bronze Age	7	4
Iron Age	1	1
indeterminate	2	3
Total	**12**	**39**

Further work
No further work is required.

Site 24/144 (NHER 37892 FLS)
The site is located within the parish of Foulsham (TG 029232). Excavations at site 24/144 produced a prehistoric assemblage of 31 sherds weighing (407g)

Table 7: Quantity and weight of sherds by ceramic period.

Ceramic Period	Quantity	Weight (g)
Later Neolithic Early Bronze Age	5	26
Earlier Iron Age	6	45
Iron Age	2	12
Later Iron Age	4	42
Undetermined	14	282
Total	**31**	**407**

The Later Neolithic Early Bronze Age assemblage all came from the fill of a phase 2 Roman ditch (24082). The sherds are all made of grog-tempered fabrics; one example is decorated with a comb-impressed geometric motif.

The Earlier Iron Age assemblage comprises six sherds (45g) all of coarse flint-tempered fabric. Five of the sherds were found within the fills of a pit (24077 phase 1) and the other from a ditch (24109 phase 1).

Four mid-to-later Iron Age sherds were found all in phase 2 features, three from a posthole (24047) and one from a pit (24009). The assemblage included one rim with rounded rim-ending and long everted neck. The remainder of the sherds are undiagnostic body sherds, all are in quartz-sand tempered fabrics.

The remainder of the sherds are not closely datable.

Further work
No further work is required.

Site 25/138-136 (NHER 37624 & 37625 FLS)
The site is located within the parish of Foulsham (TG 046239). Excavations at site 25/138 produced a prehistoric assemblage of 115 sherds weighing (802g).

Thirty-two sherds weighing 144g were assigned an Iron Age date. The sherds are made of quartz-sand tempered fabric. A single stepped base sherd was recovered but the assemblage contained no rim or decorated sherds and is not closely datable.

Seventy-four sherds weighing 585 g were identified as being of Later Iron Age date. The assemblage included ten rim sherds, all with rounded rim-endings and long or everted necks similar to examples found at Bittering Quarry, Beeston with Bittering (Percival 1999fig.19 P7) which were dated on typological basis to the 3rd to 1st centuries BC. The sherds are associated a substantial rectangular enclosure, [25308] and [25311], pits and post-holes within the enclosure and a probable well or watering hole, [25195].

Table 8: Quantity and weight of sherds by ceramic period.

Ceramic Period	Quantity	Weight (g)
Iron Age	32	144
Iron Age/Early Saxon	1	20
Later Iron Age	74	585
Total	**115**	**802**

Further work

- Full integration of context information and preparation of publication text
- Selection of illustrated sherds and production of catalogue

Site 27/128 (NHER 37626 THM)

Site 27/128 produced three prehistoric sherds (2g). The sherds are not closely datable.

Further work

No further work is required.

Site 36/98 (NHER 37930 ZVL)

Two Iron Age sherds weighing 37g were found within the fill of a single feature (36028). One sherd is decorated with an impressed dimple similar to examples found within the mid-to-later Iron Age assemblage from Bittering Quarry, Beeston with Bittering (Percival 1999).

Further work

No further work is required.

Site 36/97 (NHER 37629 ZVL)

The site is located within the parish of Oulton (TG 135296). Excavations at site 36/97 produced a substantial prehistoric assemblage of 800 sherds weighing (8894g). The site is characterised by a scatter of later Bronze Age and earlier Iron Age pits and postholes

Table 9: Quantity and weight of sherds by ceramic period.

Ceramic Period	Quantity	Weight (g)
Later Bronze Age	1	37
Later Bronze Age/Earlier Iron Age	95	966
Earlier Iron Age	677	7556
Iron Age	20	315
Undetermined	7	20
Total	**800**	**8894**

The assemblage comprises jar and bowl forms made of flint-tempered fabric with angular shoulders and long straight necks ending in up-right rims and smaller 'fineware' jars in sandy fabric with burnished surface finish. Many of the sherds are decorated with fingertip-impressions or impressed cable motifs applied to the rim top and side. Fingertip-impressed decoration is also found on the shoulder of the vessel. Incised decoration is also present. Of especial interest are some fragments of a perforated sherd interpreted as a strainer or colander and perhaps associated with dairying.

The assemblage is closely comparable to the definitive Earlier Iron Age assemblage from West Harling (Clark and Fell 1953) and can be classified as 'decorated ware' within Barrett's 'Post Deveral Rimbury' typology (Barrett 1980).

Further work

- Refine dating for the assemblage and provide a detailed comparison with other sites in the region, in particular West Harling.
- Production of full publication report
- Selection of sherds for illustration and production of catalogue

Site 38/90(NHER 37939 JTT)
Excavations at site 38/90 (TG 149303) produced a single undiagnostic bodysherd sherd of Iron Age pottery weighing 2g. The sherd was recovered from later Medieval features.

Further work
No further work is required.

Site 39/89(NHER 37940 JTT)
The site is located within the parish of Itteringham (TG 150303). Two large sherds of prehistoric pottery were found both within an undated subsoil layer. The assemblage comprised a sherd of coarse flint-tempered Beaker with fingertip impressed decoration and a finer flint-tempered sherd which reassembles the collar from a Collared Urn. Collared Urn is not usually found in flint-tempered fabric so it may be that the sherd is from a large Beaker with an enlarged rim (cf. Healy 1996 fig. 80 P87). Both examples probably date towards the end of Beaker currency (2600-1800BC).

Further work
No further work is required.

Site 39/88B (NHER 39518 JTT)
The site is located within the parish of Itteringham (TG 154304). Excavations at site 39/88 8 produced a prehistoric assemblage of nineteen sherds weighing 116g.

Table 10: Quantity and weight of sherds by ceramic period.

Ceramic Period	Quantity	Weight (g)
Bronze Age	1	4
Iron Age	2	32
Later Iron Age	15	78
Undetermined	1	2
Total	**19**	**116**

The sherds were identified by fabric as no diagnostic rims, bases or decorated sherds were present. The largest single group of sherds came from the fill of an elongated pit (39106). The sherds are organic tempered and have been tentatively dated to the Later Iron Age, however similar fabrics were also common in the Saxon period.

The assemblage is not closely datable and it is recommended that no further work is carried out unless close dating of the features is required.

Further work
No further work is required.

Site 39/87A (NHER 37943 JTT)
One very small scrap of possible prehistoric date was recovered from site 39/87A.

Further work
No further work is required.

Site 40/67 (NHER 37963 JNW)
This site produced a single Iron Age sherd in flint-tempered fabric. The sherd is not closely datable.

Further work
No further work is required.

Site 42/64 (NHER 37966 ERP)
Site 42/64 produced a small assemblage of flint-tempered sherds dated to the Earlier Iron Age. The sherds came from three excavated context (no data supplied). No diagnostic rim, base or decorated sherds were present and the assemblage is not closely datable.

Further work
No further work is required.

Site 44/48 (NHER 37729 SFF)
This site produced a single Bronze Age sherd in grog-tempered fabric. The sherd is not closely datable.

Further work
No further work is required.

Site 45/44 (NHER 37732 SFF)
This site produced a single sherd in flint-tempered fabric. The sherd is not closely datable.

Further work
No further work is required.

Site 46/38 (NHER 37987 ANT)
The site is located within the parish of Antingham (TG 260317). Excavations at the site produced a substantial assemblage of 1035 sherds weighing 9330g.

Table 11: Quantity and weight of sherds by ceramic period.

Ceramic Period	Quantity	Weight (g)
Bronze Age	484	613
Later Bronze Age	299	6392
Earlier Iron Age	238	2206
Later Iron Age	13	118
Iron Age	1	1
Total	**1035**	**9330**

The assemblage includes five semi-complete or truncated urns from a small cremation cemetery [46065]. One semi-complete Bucket Urn context (1279) is 154mm high and made of coarse grog tempered fabric and is similar to an example from a cremation cemetery at Shouldham (Lawson 1980 Fig. 4). A second vessel (context 46025) also has a bucket shaped profile with an applied fingertip-impressed cordon below rim (cf Lawson 1980 Fig.5 B). Two urns survive only as base sherds. These include the base of large heavily grog-tempered from a bucket, biconical or cordoned urn (46007cf. Bamford 2000 Fig 73 P18). A second truncated base (context 46015) is too truncated to be closely defined a vessel type. Further pieces of urn were found in context 46004 these are also highly fragmentary.
The earlier Iron Age assemblage included one rim sherd from a vessel with a slight angular shoulder and a sherd with coarse flint grits stuck into the base. The Earlier Iron Age sherds are mostly flint-tempered and come from a low-density scatter of Iron Age pits and post-holes found across the site.

Further work
- Define dating for the assemblage and provide a detailed comparison with other sites in the region, in particular for the cremation vessels.
- Production of full publication report
- Selection of sherds for illustration and production of catalogue

Site 47/34(NHER 37631 WLN)
The site is located within the parish of North Walsham (TG 265321). The site produced an assemblage of 48 sherds of which 44 were identified as being of possible earlier Neolithic date (125g). All the prehistoric sherds were found in a single feature (pit 47003). The majority of the putative earlier Neolithic sherds are made of flint-tempered fabric (42 sherds) the remainder are quartz-sand tempered. Four sherds (3g) are not closely datable. No rim, base or decorated body sherds were found so the sherds were identified purely by fabric type and an Iron Age date is also possible for the feature.

Further work
No further work is required.

Site 47/36 (NHER 37989 WLN)
This site produced a single Iron Age sherd in flint-tempered fabric. The sherd is not closely datable.

Further work
No further work is required.

Site 50/26 (NHER 37996 SLD)
Site 50/26 is located within the parish of Swafield (TG 273329). The site produced an interesting assemblage comprising 37 sherds (494g) of Biconical Urn and one Iron Age sherd (2g).

Sherds of Biconical Urn were recovered from the fills of two large, sub-rectangular pits (50159/50199 and 50186) interpreted as representing settlement activity by the excavator. The urns are made of coarse, chunky grog-tempered fabric. One pit contained base and body sherds from a single vessel, the second an angular body sherd in similar fabric. Both examples are undecorated. Biconical Urn dates from around 1800-1300 (Healy 1996 115). The site lies 6k to the north-west of Witton where charcoal from a pit containing sherds of plain, grogged biconical vessels produced a radiocarbon date of 3090 ±60 BP (BM-208) (Lawson 1983 14).

The Iron Age sherd is made of flint-tempered fabric and is not closely datable.

Further work
No further work is required.

Site 52/20 (NHER 37635 FLD)
This site produced a single Iron Age sherd in flint-tempered fabric. The sherd is not closely datable.

Further work
No further work is required.

Site 53/16 (NHER 38005 KNP)
This site produced a single Iron Age sherd in flint-tempered fabric. The sherd is not closely datable.

Further work
No further work is required.

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Appendix A: Estimated Illustration Requirements by Site

Site Code	*Number of sherds*
01/251 (37734/37617)	12
08/218 (37741/37827)	20
08/219 (37741/37826)	12
13/202 (37746/37622)	15
25/138-136 (37758/37624 37625)	10
36/97 (37769/37629)	12
46/38 (37779/37987)	4

ROMAN POTTERY ASSESSMENT

Roman Pottery Assessment

By Alice Lyons

Summary
This is a relatively small abraded assemblage of Romano-British pottery collected from fourteen sites along the length of the Bacton to Kings Lynn gas pipeline. The majority of the material consists of locally produced, mostly unsourced, sandy grey coarse wares of a utilitarian character, consistent with refuse from small scale domestic settlement. The value of this material lies in aiding individual site interpretation and contributing to the larger database of Roman pottery that has previously been recorded.

The Roman British pottery recovered from site 24/144 in the parish of Foulsham, however, not only contains sandy grey ware utilitarian forms but several misfired sherds and pottery wasters. This material was found in, and associated with, a cruciform drying oven that may be part of a larger pottery production complex. This assemblage therefore, has more potential to further our understanding of pottery production in central Norfolk during the mid-Roman period and is worthy of further research (Going 1997, 40-41).

Introduction
A total of 662 sherds of Romano-British pottery, weighing 9.532kg were recovered from fourteen sites along the Bacton to Yarmouth pipeline. The majority of the pottery (90.74%) was recovered from only two sites 24/144 and 6/226.

Table 1. The Pottery, by site

Site	Quantity (sherd count)	Weight (kg)	Weight (%)
24/144	366	5.269	55.28
6/226	182	3.380	35.46
25/136-138	64	0.482	5.06
50/26	25	0.134	1.40
39/84a	2	0.094	0.99
03/236	13	0.091	0.95
45/45	1	0.025	0.27
13/202	2	0.021	0.22
2/242	1	0.021	0.22
36/97	1	0.004	0.04
39/88B	1	0.004	0.04
46/38	2	0.003	0.03
8/217-219	1	0.003	0.03
22/148	1	0.001	0.01
Total	**662**	**9.532**	**100.00**

Methodology
The pottery was excavated, washed and bagged by Network Archaeology.

All sherds were assigned a fabric type, then counted and weighed to the nearest whole gram and recorded by context. Each diagnostic sherd was assigned a form type and where possible the diameter and percentage of the rims were recorded. The presence of decoration, abrasion and sooting were also noted.

Layout of Report
The pottery is discussed by site, presented in descending order by plot number. The pottery fabrics (Appendix A) and vessel types (Appendix B) are listed at the end of this report.

The archaeological value of each ceramic assemblage is assessed individually.

Site 2/242 (NHER 37805 WAC)
No site data supplied.

A single base sherd of very abraded samian, weighing 0.021kg, was recovered from this site (2860). It can only be dated between the mid 1st and early 3rd centuries and is probably residual. No further analysis is required.

Site 3/236 (NHER 37811 WAC)
No site data supplied.

A total of thirteen sherds, weighing 0.091kg, of abraded Romano-British coarse ware pottery were recovered from this site. A single medium mouthed jar with a simple everted rim (type 4.13) was identified dating to between the 2nd and 3rd centuries AD.

No further analysis required.

Table 2. The Roman pottery from site 3/236

Fabric	Forms	Quantity	Weight (kg)	Weight %
Sandy grey ware	4.13	12	68	74.73
Sandy oxidised ware		1	23	25.27
Total		**13**	**91**	**100.00**

Site 6/226 (NHER 37821 RGH)
The site is located within the parish of Rougham. It is situated approximately 1.0km west of the A1065, Fakenham to Swaffham road, roughly 1.0km north of the village of West Lexham. It is approximately 2.0km due south of the village of Rougham itself (TF 831184).

A total of 182 sherds, weighing 3.380kg, were retrieved from this site. The majority of the pottery consists of locally produced (unsourced) utilitarian coarse ware forms including narrow mouthed jars (types 2.1 and 2.5), a funnel necked beaker (3.1), various globular medium mouthed jars (4, 4.5.3 and 4.5.4), storage jars (4.14), wide mouthed jars (5.2 and 5.3), dishes (6 and 6.21) and a lid (8.1). Fine wares were also recovered consisting of samian body sherds and a Nene Valley funnel necked beaker (3.1) and dish with an out-turned rim (6.15).

Table 3. The Roman pottery from site 6/226

Fabric	Forms	Quantity	Weight (kg)	Weight %
Sandy reduced ware	2.1, 3.1, 4.5.3, 4.5.4, 5.2, 5.3, 6.19, 6.19.6, 8.1	111	1918	56.75
Sandy grey ware	2.1, 4, 5.3, 6, 6.21, 8.1	26	551	16.30
Sandy oxidised ware	2.1, 2.5, 4.14	20	362	10.71
Sandy grey ware with flint inclusions	6.19	3	214	6.33
Black surfaced red ware	2.1, 6.19	5	95	2.81
Micaceous grey ware	5.2, 6.4	2	74	2.19
Samian		6	70	2.07
Nene Valley colour coat	3.1, 6.15	8	58	1.72
White ware		1	38	1.12
Total		**182**	**3380**	**100.00**

The majority of this pottery (87 sherds, weighing 2.055kg) was recovered from a Phase 1 double ditched enclosure [6121]. The pottery consistently dates from the early to mid Roman period, with the Nene Valley beaker fragment (possibly intrusive) the only late Roman (4th century) material recovered.

No further work is recommended for this assemblage, besides integration in to the main site report.

Site 8/219 (NHER 37826 LEX)
The site is located within the parish of Lexham. It is situated approximately 0.5km east-northeast of the crossroads formed by the junction of the B1145 and the A1065 (RDX 8), roughly mid-way between the villages of Weasenham All Saints and West Lexham (TF 852191).

A single abraded sherd of not closely datable sandy grey ware pottery, weighing 0.003kg, was recovered from the fill (8093) of an unphased ovoid pit [8092]. No further work is required.

Site 13/202 (NHER 37622 TTL)
The site is located within the parish of Tittleshall. It is situated on the east side of the minor road that connects Tittleshall and Mileham (RDX 13), approximately 0.5km south of Tittleshall and 2.0km north-west of Mileham, which straddles the B1145 roughly 10.0km south of Fakenham (TF 893203).

Two sherds of abraded Romano-British coarse ware pottery, weighing 0.021kg, were recovered from this site. A single body sherd of a sandy grey ware fabric recovered from a Saxon grave fill (13076) and a rim fragment from a straight-sided dish (type 6.18), that dates from the mid 2nd century onwards, was found in the topsoil. Both sherds are residual and require no further analysis.

Site 22/148 (NHER 37623 BTE)
The site is located within the parish of Bintree. It is situated approximately 0.5km west of the A1067, mid-way between Norwich and Fakenham, and roughly 0.5km south of the village of Bintree itself (TG 021229).

A single sherd of severely abraded not closely datable sandy grey ware pottery, weighing 0.001kg, was retrieved from the fill (22047) of a deep sub-circular late medieval (Phase 4) pit [22045]. This pottery is residual and requires no further analysis.

Site 24/144 (NHER 37892 FLS)
The site is located within the parish of Foulsham. It is situated approximately 0.5km north of the A1067, mid-way between Norwich and Fakenham, on the east side of the minor road running north towards Foulsham itself (TG 029232).

A total of 366 sherds, weighing 5.269kg, of Romano-British pottery were recovered from this area. Nearly all of the pottery consists of locally produced coarse wares, both oxidised and reduced, with only one fine ware sherd recovered. The coarse wares are found in various utilitarian vessel types including narrow mouthed jars (type 2.1), a funnel necked beaker (3.1), various medium mouthed globular jars (4, 4.1, 4.4, 4.5, 4.5.1, 4.5.2, 4.5.3, 4.8 and 4.13), storage jars (4.14), wide mouthed jars (5, and 5.4), a straight-sided dish (6.18) and lid (8.1). The fine ware is a samian cup fragment (DR33) dated to the 2nd century AD.

Table 4 The Roman pottery from site 24/144

Fabric	Forms	Quantity	Weight (kg)	Weight %
Sandy grey ware	2.1, 3.1, 4, 4.1, 4.4, 4.5, 4.5.1, 4.5.2, 4.5.3, 4.8, 4.13, 4.14, 5, 5.4, 6.18, 8.1	320	4524	85.86
Brampton/Spong Hill type grey ware	4.1, 7.11.3, 8.1	11	458	8.69
Sandy oxidised ware	-	23	160	3.04
Sandy reduced ware	-	4	49	0.93
Black surfaced red ware	-	1	25	0.47
Sandy grey ware, with flint inclusions	8.1	1	22	0.42
Samian	Dr33	5	21	0.40
Sandy grey ware with flint and grog inclusions	-	1	10	0.19
Total		**366**	**5269**	**100.00**

The Kiln feature group
A total of 111 sherds, weighing 1.539kg, of Romano-British pottery were recovered either from the 'kiln' [24078] or from features associated with it [24059]. The 'kiln' has been archaeomagnetically dated to 170 AD to 230 AD and the pottery is consistent with this mid-Roman date.

The pottery consists exclusively of locally produced (unsourced) utilitarian coarse wares. A narrow mouthed jar (type 2.1), a funnel necked beaker (3.1) and various globular medium mouthed jars (4.1, 4.4, 4.5.2, 4.5.3 and 4.8) and a wide mouthed jar (5) was recovered. Several of these vessels are slightly

misfired and one vessel base is Brampton Spong Hill type grey ware is a waster and unlikely to have travelled far from its source of manufacture. No finewares, either domestic or imported, were found associated with this feature.

Table 5: The pottery from the kiln feature group

Fabric	Forms	Quantity	Weight (kg)	Weight %
Sandy grey ware	2.1, 3.1, 4.1, 4.4, 4.5.2, 4.5.3, 4.8, 5	98	1333	86.61
Brampton/Spong Hill type grey ware		7	152	9.88
Sandy oxidised ware		4	32	2.08
Sandy reduced ware		2	22	1.43
Total		**111**	**1539**	**100.00**

It is very unlikely, however, that pottery was manufactured within this 'kiln'. The 'cruciform' shape of the structure is not consistent with firing large numbers of pots at high enough temperatures to produce successful pottery manufacture. 'T-shaped' or cruciform dryers are, however, a standard feature on a number of kiln sites (Swan 1984, 47 to 48) and given the untidy way in which potters operate and dispose of their rejects, you might well expect to find wasters in the drying plant (Vivien Swan pers comm.).

The presence of potter wasters together with a drying oven does suggest pottery manufacture close-by.

Further work

To update the research aims stated in the project design "to establish through stratigraphic analysis, whether and which parts of the pottery assemblage could have been manufactured in the 'kiln' in Plot 144, and to consider whether this might aid in refining existing pottery chronologies" by more fully describing and illustrating this small group of pottery, in its area, feature and stratigraphic context, as the probable products of the yet to be discovered kiln site dated to the mid-Roman period.

Further research of the use of this 'kiln', including the analysis of environmental samples (if possible), locating parallels within the region (Burnham Market S. Percival pers comm.) and examining literary sources should be undertaken.

Site 25/138-136 (NHER 37624 & 37625 RGH)

The site is located within the parish of Foulsham. It is situated approximately 1.0km west of the hamlet of Themelthorpe and 1.5km east-south-east of the village of Foulsham, which is adjacent to the A1067, Norwich to Fakenham road (TG 046239).

A total of sixty-four sherds, weighing 0.482, of very abraded Romano-British pottery were recovered from this area. The majority of the pottery consists of sandy grey ware wide mouthed jars (5, 5.2 and 5.3) and a jar lid (8.1). Similar vessels were also discovered in other fabrics, such as the sandy reduce ware (5) and the micaceous reduced ware (5). Samian and a fine white ware fabric were also identified, but no forms found. This pottery is consistent with an early Roman date and quite different in character from other site assemblages found as part of this project.

The majority of this pottery (35 sherds, weighing 0.172kg) was retrieved from a Phase 2 substantial rectangular enclosure of Late Iron Age and Early Roman date. The pottery is consistent with this date.

Table 6. The Roman pottery from site 25/138-136

Fabric	Forms	Quantity	Weight (kg)	Weight %
Sandy grey ware	5, 5.2, 5.3, 8.1	54	357	74.07
Sandy reduced ware	5.3	3	83	17.22
Samian		3	20	4.15
Micaceous grey ware	5	2	18	3.73
White fine ware		2	4	0.83
Total		**64**	**482**	**100.00**

No further work is recommended for this assemblage, besides integration into the main site report.

Site 36/97 (NHER 37629 ZVL)
The site is located within the parish of Oulton. It is situated on the southwest side of the B1354, Aylsham to Thursford road, approximately 6.0km north-west of Aylsham itself, mid-way between the villages of Saxthorpe and Blickling (TG 135296).

A single abraded undecorated body sherd of sandy grey ware coarse ware pottery was recovered from this site. It is datable between the late 1st and 3rd centuries AD and was retrieved from the fill (36051) of a gully [36050]. An isolated find of this type can not provide conclusive dating and its abraded condition suggests it may be residual. No further work is required.

Site 39/88B (NHER 39518 JTT)
The site is located within the parish of Itteringham. It is situated approximately 4.5km north-west of Aylsham, roughly 0.5km east of the minor road from Itteringham to Itteringham Common, on the east side of the River Bure (TG 154304).

A single sherd of abraded and not closely datable sandy grey ware pottery, weighing 0.004kg, was recovered from this site. It was found from a deposit (39056) within a large unphased sub-circular pit. The pottery is consistent with being residual and requires no further analysis.

Site 39/84A (NHER 39520 JTT)
The site is located within the parish of Itteringham. It is situated approximately 4.5km north-north-west of Aylsham, mid-way between Blickling Hall, to the south, and Wolterton Park, to the north. It is reached via a minor road running southwest from Calthorpe, which lies approximately 2.0km away (TG 164307).

A total of two coarse ware utilitarian sherds were recovered. A sandy grey ware narrow mouthed jar (type 2.1) and a sandy oxidised medium mouthed globular jar (4.5). Both are severely abraded and residual with a medieval ditch and enclosure systems ([57373] and [57418]).

Table 7. The Roman pottery from site 39/84A

Fabric	Forms	Quantity	Weight (kg)	Weight %
Sandy grey ware	2.1	1	0.089	94.68
Sandy oxidised ware	4.5	1	0.005	5.32
Total		**2**	**0.094**	**100.00**

No further analysis required.

Site 45/45 (NHER 37731 SFF)

No site data supplied.

A single sherd of abraded and not closely datable sandy grey pottery, weighing 0.025kg) was recovered from this site. It is likely that is residual and requires no further analysis.

Site 46/38 (NHER 37987 ANT)
The site is located within the parish of Antingham. It is situated approximately 1.5km north-west of North Walsham, on the west side of the A149 (TG 260317).

Two sherds of abraded and not closely datable sandy grey ware pottery, weighing 0.003kg, were recovered from this site. One was certainly residual as it was recovered from a deposit (46057) within a post-medieval ditch system [46056]. The other is of slightly more interest as it was recovered from a buried soil horizon thought to be of an Iron Age date. It may well be intrusive due to animal disturbance, or other post-depositional processes. Neither sherd requires further analysis.

Site 50/26 (NHER 37996 FLD)
The site is located within the parish of Swafield. It is situated approximately 2.0km north to north-west of North Walsham, on the east side of the minor road running south from the hamlet of Bradfield (TG 273329).

A total of 25 sherds, weighing 0.134kg, of Romano-British pottery were recovered from this site. All of the pottery found consists of locally produced (unsourced) utilitarian coarse wares. No individual vessel types were identified.

Table 8. The Roman pottery from site 50/26

Fabric	Forms	Quantity	Weight (kg)	Weight %
Sandy grey ware		23	130	97.01
Sandy reduced ware		2	4	2.99
Total		**25**	**134**	**100.00**

The pottery was not retrieved from any one significant feature group. No further analysis is required.

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Appendix A: The Roman-British Pottery Fabrics (the abbreviated codes refer to the catalogue)

Black surfaced red ware
BSRW
This is a broad fabric group which includes any misfired local grey ware, with the end result of a red fabric and black surface, examples of this can be seen in the Postwick and Ellingham assemblages.

Brampton/Spong Hill 'type' grey ware
BSHGW
A distinctive blue-grey slightly sandy and micaceous grey ware, usual in central Norfolk. Produced on an industrial scale at the small town of Brampton.
Description: Green 1977, 31-92

Nene Valley colour coat
A pale fabric that is colour-coated with paint-slip, usually orange to brown in colour.
Description: Tomber and Dore 1998 p118

Sandy grey ware with flint inclusions
SGW(f)
This is a hard very dark greyish brown (10YR 4/2) wheel thrown fabric with a harsh texture and irregular fracture. It contains abundant medium (0.25-0.5 mm) rounded sand and sparse coarse and very coarse (larger than 1 mm) angular flint inclusions. Occasional sherds contain some very coarse white flint inclusions which have a range of between 3-5mm. This fabric also has sparse mica which is probably a natural contaminant of the clay.

Sandy grey ware with flint and grog inclusions
(SGW (f/g)
This is a hard very dark greyish brown (10YR 4/2) wheel or hand thrown fabric with a harsh texture and irregular fracture. It contains abundant medium (0.25-0.5 mm) rounded sand and sparse coarse and very coarse (larger than 1 mm) angular flint inclusions. Abundant grog (0.25mm-0.5mm) pieces are also visible. This fabric also has sparse mica which is probably a natural contaminant of the clay.

Samian
SAM
A distinctive glossy red fabric, imported in large numbers, from Gaul, during the early to mid Roman period. The decorated examples were mould made.
Description: Tomber and Dore 1998 25-41.

Sandy oxidised ware
SOW
This is a sandy pale fabric that can vary on colour from cream to pale orange.
Description: Andrews 1985 90 (OW1).

Sandy grey ware
SGW
This is a sandy fabric that can vary in colour from dark grey to a pal brown colour.
Description: Andrews 1985, 92.

White fine ware
WFW
A pipe clay fabric, almost devoid of visible inclusions.
Description: Lyons 2000, 213.

Micaceous grey ware
MicaGW
A dark grey to grey sandy grey ware fabric, with common to abundant mica that is present as a natural constituent of the clay.
Description: Tomber and Dore 1998, 184. Gurney 1995, 102.

Appendix B: Type Series
Form Descriptions and Codes

2.1	Narrow mouthed jar with rolled everted rim, rounded body and various cordons with decoration on the neck, body and base of the vessel. Scole: 63, 114, 183.
2.5	Two-handled storage jars/honey-pot types. Colchester (Hull, 1963) 175, 177.
3.1	Beaker with tall straight neck (funnel necked) and rounded body. Scole: 110.
4	Medium Mouthed Jars Miscellaneous or indeterminate.
4.1	Medium mouthed globular jar with high shouldered profile. Scole: 1, 2, 19, 22, 44, 107.
4.4	Medium mouthed globular jar with short angular neck, lid-seated or flattened rim. Brampton: 174, 186. CoS: 432, 433, 468-471.
4.5	Medium mouthed jar, short neck, rolled generally undercut rim and globular body. Scole: 43, 93, 115, 202.
4.5.1	Medium mouthed jar, short neck, rolled generally undercut rim and globular body. WSF: 003, 004 (unpublished).
4.5.2	Medium mouthed globular jar, short neck, squared rim and globular body. CoS: 397, 398, 408.
4.5.3	Medium mouthed jar, short neck, rolled severely undercut rim which forms a pointed lower rim edge and globular body. CoS: 416.
4.5.4	Medium mouthed jar, short neck, large rolled rim and globular body. Brancaster 86.1
4.8	Medium mouthed jar, everted rim- hollowed or with projection underneath, globular body. IKL: 56. Scole: 199-201, 134.
4.13	Medium mouthed jar, rounded body and simple everted rim. Scole: 5. BUG: 250, 251.
4.14	Large storage vessels - Misc or indeterminate sherds.
5	Wide mouthed Jars Miscellaneous.
5.2	Carinated jars. Scole: 21. WS: 221.
5.3	Rounded jar with a- reverse `S' profile. Scole: 39, 46, 94.
5.4	Rounded jar, reverse 'S' profile, one or two grooves mid body. Scole: 6, 40, 62, 66, 73, 92, 122. WS: 211, 212, 213.
6	Bowl, Cup, Dish, Platter; any open form. Miscellaneous or indeterminate.
6.4	Hemispherical bowl. BUG: 269, 270, 273-275.
6.15	Bowl with curving sides and out-turned rim, flanged and unflanged, footring base. Scole: 74, 76, 97.
6.18	Bowl straight sided, flat based, thickened everted `triangular' rim. Scole: 123, 129, 148, 175, 222.
6.19.0	Bowl straight sides which may be upright or angled, plain rim or may have external groove. CoS: 642, 643
6.19.6	Angled sides with two external grooves below rim.
6.19.7	Lid-seated.
6.21	Open bowl internal angle, incurving rim, flat or foot ring base. Scole: 83,86
7.11.3	Mortarium with a round bead and long sub-rectangular, slightly angled flange. CoS: 801
8.1	Lid - standard type to fit cooking/storage pot in-turned or out-turned can have terminal grip. Scole 102, 103 and 104.
Dr33	A conical cup with a footring. There are often grooves (or a groove) on the external vessel wall.

Key to Sites abbreviated in pottery type series:

Site Abbreviation	Site name	Publication reference
Brampton	Brampton, Norfolk	Green 1977
BRANCASTER	Brancaster, Norfolk	Andrews 1985
BUG	Burgh, Norfolk	Martin 1988
Colchester	Colchester, Essex	Hull 1963
CoS	Caister on Sea	Darling and Gurney 1993
IKL	Icklingham, Suffolk	West &Plouviez 1976
Scole	Scole, Norfolk	Rogerson 1977
WS	West Stow, Suffolk	West 1990
WSF	Wattisfield, Suffolk	Unpublished, available through the Suffolk Archaeological Unit HER.

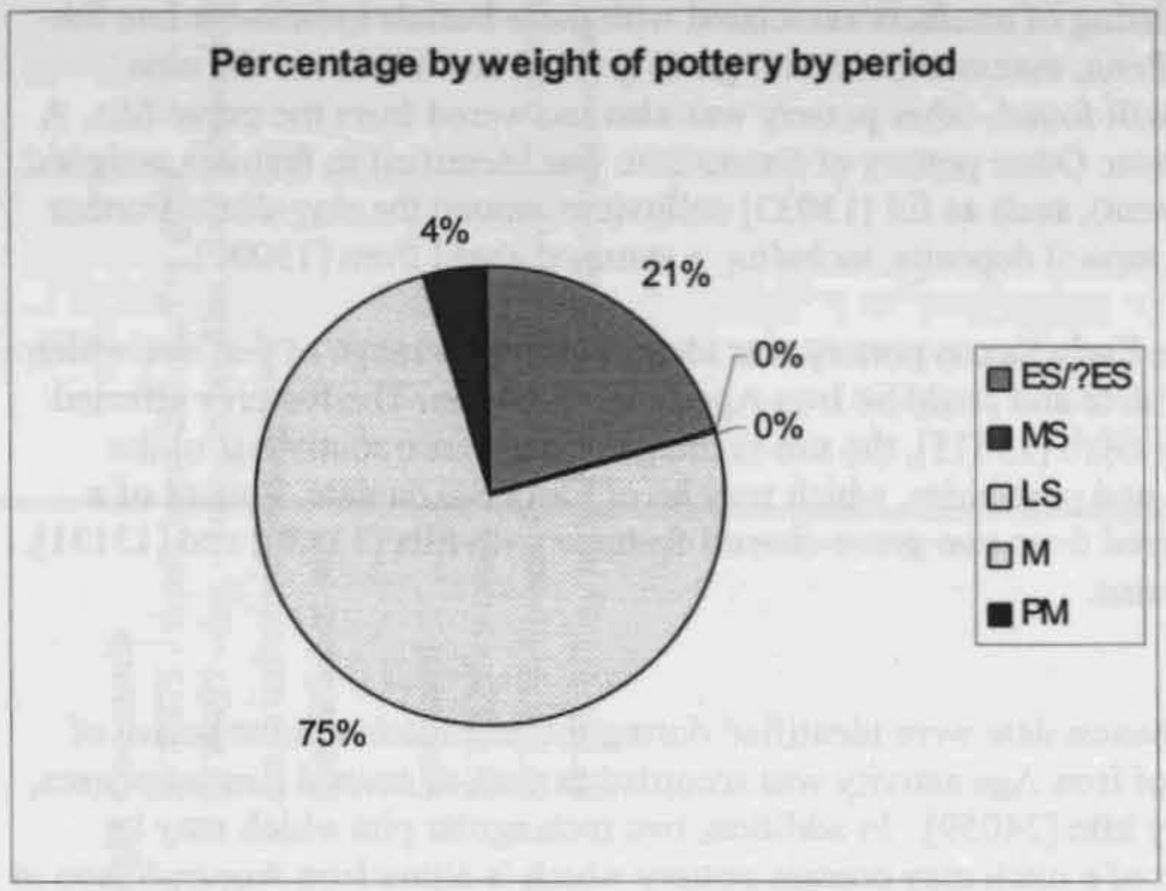
POST ROMAN POTTERY ASSESSMENT

Post-Roman Pottery Assessment

By Richenda Goffin

Introduction

A total of 5,779 fragments of pottery of provisional Post-Roman date were recovered from the excavations along the Bacton-Kings Lynn Pipeline, weighing 43, 678 kg in total. The pottery was recovered from the watching brief, evaluation and excavation phases of the project. A provisional breakdown of the pottery by major chronological period by weight is presented below:



Substantial assemblages of pottery both of Early Saxon and medieval date were recovered, with relatively small amounts of ceramics dating to the Middle to Late Saxon period. Post-medieval pottery is also poorly represented overall, although this may be partially due to the removal of surface deposits and/or method of retention.

The condition of the pottery is variable overall. Some complete or almost complete Early Saxon vessels were recovered from the cemetery site 13/202, but other Saxon sherds were abraded. A high proportion of the medieval pottery is worn and abraded. Many of these sherds show evidence of use in the form of sooting.

Methodology

The ceramics have been quantified by recording the number of sherds present in each context, the estimated number of vessels represented and the weight of each fabric. Other characteristics such as condition, indications of usage and decoration have been noted, and an overall date range for the pottery in each context established. Recommendations for illustration have also made. The pottery was recorded on proforma sheets by context using letter codes based on fabric, form and decoration. The fabric codes are based mainly on those identified in Eighteen centuries of pottery from Norwich (Jennings, 1981), and supplemented by additional ones used by the Suffolk Unit (S Anderson, unpublished fabric list). These fabric types are most commonly used for Post-Roman pottery in Norfolk and make up the Ceramic Type Series for this part of East Anglia (Slowikowski et al, 2001).

Summary of pottery by period

Early Saxon

Pottery of Early Saxon date (5th-7th century) was identified from several of the sites along the Pipeline, most notably Site 13/202. The pottery may form up to 20% by weight of the total assemblage, although only c11% by sherd count, but it is extremely likely that some of the pottery is Iron Age in date. Conversely it is also the case that some of the pottery which is at present in the Iron Age assemblage may be of Saxon date.

Site 13/202 (NHER 37622 TTL)
A total of 543 fragments of possible Early Saxon date weighing 6.210kg was recovered from this site (37746/37622 TTL), located approximately 10.00km south of Fakenham on one side of a sloping valley close to the village of Tittleshall. The site features several phases of early activity from the Neolithic period through to the Iron Age.

The pottery includes several vessels associated with individual burials making up part of a Saxon inhumation cemetery. Some of these have been small found individually. A range of fabrics are represented which have been provisionally catalogued. There is one example of decorated vessel (SF70497) which has four rows of stamped decoration, associated with one of the burials, otherwise they are undecorated. Provisional dating of artefacts associated with these burials indicates a late 5th-6th century date for the cemetery (Penn, assessment of iron grave goods). In addition to the nine pottery vessels which have been small found, other pottery was also recovered from the grave fills. A few additional features are also Saxon. Other pottery of Saxon date was identified in features assigned to Phase 14 (modern soil development), such as fill [13033] colluvium around the ring-ditch. Further Saxon pottery was recovered from topsoil deposits, including a stamped sherd from [13000].

A considerable quantity of possible Early Saxon pottery was identified from a range of features which are currently indeterminate in their date and could be Iron Age or Early Saxon. The features affected are the infilling of the outer barrow ditch [13515], the sub-rectangular enclosure south-east of the barrow [13214] and a range of pits and post-holes, which may be of Early Saxon date. Pottery of a likely Early Saxon date was recovered from two grave-shaped features with fills [13130] and [13131], which have no human skeletal remains.

Site 24/144 (NHER 37892 FLS)
Several features of possible Early Saxon date were identified during this excavation in the parish of Foulsham. Considerable evidence of Iron Age activity was recorded as well as several Roman phases, and the remains of a Roman pottery kiln [24059]. In addition, two rectangular pits which may be sunken featured buildings, and part of a ditch may contain pottery which is either Iron Age or Saxon in date, or both. A total of 239 fragments of hand-made pottery were recovered, weighing 2.236kg. The condition of much of this pottery is abraded or very abraded. Although almost entirely undecorated, one fragment from the ditch fill [24065] has horizontal grooving and stamped decoration.

Site 25/138-136 (NHER 37624 & 37625 FLS)
A small quantity of pottery of possible Early Saxon date was recovered from a further site in the same parish. Here too evidence of possible Bronze Age or Early Iron Age activity was identified, as well as a phase of Late Iron Age/Early Roman date. One group of pits [25296] contained pottery which is once again of indeterminate date, as it could be Iron Age or Early Saxon. Fifteen sherds of hand made undecorated sandy pottery were recovered from two contexts [25036] and [25037], weighing 0.90kg, with four other sherds from elsewhere on the site.

A small amount of possible Saxon pottery was also identified from Plot 1/253 (11 fragments weighing 0.120kg).

Significance and potential of the Early Saxon and? Early Saxon pottery
Although none of the excavated sites contained exclusively Early Saxon pottery, a number of vessels of Early Saxon date were found in association with the Early Saxon burials on Site 13/202 (NHER 37622 TTL). These have been provisionally catalogued below:

Context type	Context	Fabric		Form	Decoration	Cond	No. sherds	Illus?	Weight	Comments
Skeleton	13076	ES	ESO2	CP/JAR			6	YES	494	SF70475 - almost complete, chaff or grass
Male skeleton	13124	ES	ESO2	JAR	STAMP		68	YES	803	SF70497 - dec, 4 rows, recon, illus, poss. thin section
Grave fill	13045	ES?	ESCF?	BODY		AA	2		11	Large inclusions, poss. granitic?
Skeleton	13092	ES?	ESCS?	BODY		AA	1		4	Shell leached out?
Skeleton	13092	ES?	ESFL	BODY		A	2		5	
Skeleton	13092	ES?	ESO2	BODY		AA	1		2	Laminated
Juvenile skeleton	13278	ES?	ESO2?	BODY		AA	21		103	SF70529 - v crude
Skeleton	13092	ES?		CP/JAR			48	POSS	646	SF70478- Lower pt of vess, tooled ext + rim sherds, poss. Iron Age
Female skeleton	13124	ES?	ESO2	BODY		AA	39		13	SF70514-Tiny body sherds, small fine-walled vessel
Grave fill	13040	M	GRIMUNG/	BODY			1		4	
Grave fill	13040	M	MCW	BODY		AAA	1		1	
Skeleton	13092	M	LMU	BODY		A	1		1	

This group of ceramics is particularly significant since it represents a small assemblage which can be well-dated by its association with the other grave-goods. In addition several of the vessels are reasonably substantial and one has a stamped decoration, which provides further opportunities for comparative study.

The pottery from the cemetery deposits is also significant given the fact that there was considerable Iron Age activity elsewhere on the site, and that a number of features (described above) remain problematic in terms of dating.

Since the technology for undecorated hand-made sandy wares was similar for both periods of pottery production in this part of East Anglia, it is often extremely difficult or not possible to identify with any degree of certainty whether the sherds are of Iron Age or Early Saxon date. This is particularly the case with small undecorated sherds, and it is often the stratigraphic details with which the pottery is associated which point towards likelihood rather than a certainty for the dating.

It is therefore particularly important that accurate fabric descriptions are made for the pottery which is clearly Saxon. Although it is likely that similar fabrics were used in both periods, it is also possible that certain fabrics contain inclusions such as granite which may be non-local and exclusive to the Saxon period. It may be possible to identify such pottery in some of the more archaeologically ambiguous features.

As well as the pottery from the graves, a quantity of contentious pottery was recovered from the site which may be of Saxon or Iron Age date (329 sherds @ 3.596). In addition a number of sherds provisionally identified as Iron Age have not been included in this assessment. However it is important that all the pottery from these problematic features should be considered together, irrespective of initial categorisation. Account should also be taken of the dating evidence provided by associated small finds.

It is to be hoped that after close examination and discussion by the specialists working together that there will be some consensus about certain groups. Although it is likely that this may happen in some cases, it is also probable that there will be some groups of pottery which may still remain problematic. There is also the problem of possible residuality of material, a feature which may only be able to be measured by recording the condition of individual sherds, thus providing some indication of wear/abrasion.

The difficulty in distinguishing between certain types of Iron Age and Saxon pottery found within one site is clearly recognised between specialists within the region. At Spong Hill, for example, only pottery which was clearly accepted as Iron Age and which was excavated from such features was included in the Iron Age pottery recording. For the early Saxon pottery, only sherds found in features safely associated with the Saxon settlement were examined (Friedenson S and V and Rickett, 126). Recent excavations at Downham Market to the west of the county also provided evidence of Iron Age, Early and Middle Saxon activity (Percival, forthcoming, Goffin, forthcoming). Some of this pottery was only provisionally dated, due to the difficulties described above, and based on the balance of probabilities taking the stratigraphy into account.

Two other sites along the Pipeline also have smaller groups of pottery which are similarly difficult to date (Plots 24/144 and 25/138-136).

The Early Saxon pottery from the cemetery is made in a variety of fabrics, including one vessel which is heavily tempered with chaff or grass, and others which are predominantly sandy but with some flint and possible calcareous material. The range of forms appears to be limited to the jar. There is only one example of a stamped vessel, but it is possible that it may provide additional dating information.

Although the pottery from the cemetery is only a small assemblage, such artefacts form an important element of the grave goods and are worthy of careful recording. A study of the Saxon ceramics from the other features on the site, as well as the two additional plots will also contribute to establishing the dating sequence for different phases on the sites. A consideration of the distribution and spatial analysis of the pottery may provide information concerning the extent and type of land/use and settlement, suggested for example, by the possible sunken featured buildings on Plot 24/144.

In spite of the relatively small size of the assemblage from the cemetery and the other sites, the detailed recording of the ceramics will contribute to the growing body of knowledge which is beginning to emerge for ceramics of the Early Saxon period in East Anglia. Many cemetery and/or settlement sites have previously been published, but further small-scale excavations undertaken recently have added to the picture. As well as Downham Market, small settlement sites have been identified at Broome Ellingham and Grange Farm Snetterton (Goffin in Birks, forthcoming). Another site which is likely to be of direct relevance is the Early Saxon settlement of Witton near North Walsham (Wade 61-67). Further afield, recent settlement sites have been identified at Carlton Colville and Eriswell on the RAF Lakenheath airbase, and cemetery sites have been found at Flixton, Coddenham, Hadleigh and Eriswell (S Anderson, pers comm.).

The Saxon pottery from the Pipeline excavations is also significant in terms of regional ceramic studies. A study of the pottery will make a valuable contribution to the work which has been undertaken so far on the fabric groupings from sites in the region. Preliminary observations on the frequency or otherwise of different fabrics have been made on the Eriswell sites, Coddenham, and Flixton (Sue Anderson, pers comm.). Limited analytical work has also been undertaken on the Saxon settlement pottery from Spong Hill (Friedenson S and V and Rickett R 126-127, and on the funerary pottery (Hills, Penn and Rickett 1994).

Recommendations (applicable to Saxon pottery from Plots 13/202, 24/144 and 25 138-6)

Recording
Full quantification of the Saxon pottery should be undertaken, with sherd count, weight, and estimated number of vessels or Minimum number of vessels. If possible, rim diameters should be measured and EVEs recorded, following the national recommendations (MPRG, 2001).

The fabric identifications used should be the same as the most widely used Ceramic Type Series or Reference Collection for pottery of this period in the region, so that comparative studies can be undertaken between sites. In this instance it would be simplest to use the one which has been originated by the Suffolk Archaeological Unit. Fabric identifications should be aided by using a binocular microscope.

If necessary, time should be spent at the beginning to ensure consistency of fabric recording with the CTS. It may be that external collaboration may be required to facilitate this.

The condition of individual sherds should also be recorded, since this may be a significant factor in interpreting aspects of the site. The question of the residuality or otherwise of individual sherds is likely to be a significant factor in determining the possible date of some of the sherds.

Any sherd or vessel links between individual contexts should be noted. These may provide useful evidence on the disposal and movement of ceramics and contribute to the interpretation of site formation processes.

The stamped sherds should be properly classified according to the existing archive of Anglo-Saxon stamps available from Diana Briscoe.

Further work
Familiarisation with Ceramic Type Series and external collaboration with ceramic specialist

Consultation with prehistoric ceramic specialist over key groups from 3 sites

Recording of new material and re-recording of Saxon fabrics after specialist/site discussion and consideration (including computerisation)

Analysis and report-writing, to include discussion related to the stratigraphy and spatial distribution. Some synthetic discussion of the pottery in terms of regional studies.

Illustrations: Up to 15 illustrations

Middle Saxon

A very small quantity of pottery of Middle Saxon date was identified overall. Only two sherds were recovered in total from two different sites (0.036kg). A single fragment of Gritty Ipswich-type ware was present in a layer of topsoil from Site 13/202 and a smaller fragment was found in the fill of a large extraction pit [179] in an evaluation trench on site 50/26.

Recommendations/Further work: The lack of Middle Saxon evidence reflected in the ceramics is worth discussion in any overall overview of the archaeological significance of the excavations.

Illustrations: None

Late Saxon

A total of 89 fragments of Late Saxon pottery weighing 0.584kg was recovered in total from the excavations (c1% by weight of the total assemblage). Although the majority of this material was Thetford-type ware or Grimston Thetford-type ware, the identification of a number of sherds included in this total requires further investigation.

Late Saxon pottery was identified from the following sites:

Section	Plot	Context		Fabric	Form	Condition	Sherd No	Weight
24	144	24000	LS	THET	CP/JAR		6	52
28	119	28026	LS	THET	CP/JAR		1	5
28	119	28026	LS	THET	GING		2	12
28	119	28026	LS	THET	BODY		7	23
31	114	31866	LS	THETG	BODY	A	2	39
38	90	38021	LS	THET	BODY	A	2	3
38	90	38032	LS	THET	CP/JAR	A	1	5
38	90	38056	LS	THET?	BODY		1	8
38	90	38056	LS	THETG	BASE	AA	1	3
38	90	38067	LS	THET	BODY		2	5
38	90	38150	LS	THETG?	BASE	AA	1	14
38	90	38220	LS	THETG?	BODY	A	1	22
38	90	38232	LS	THET	BODY	A	1	36
39	88B	39034	LS	THET	CP/JAR		1	26
39	88B	39036	LS	THET	BODY	AAS	2	10
39	88B	39036	LS	THETG?	BODY	A	1	2
39	88B	39044	LS	THET	BODY		1	4
39	88B	39048	LS	THET	BODY	A	2	4
39	88B	39056	LS	THET	CP/JAR		2	11
39	88B	39092	LS	THET	BODY		1	4
39	88B	39247	LS	THET	CP/JAR		1	3
39	88B	39290	LS	THET	BODY	AA	1	3
39	84A	39324	LS	THET	BODY	A	3	21
39	84A	39324	LS	THETG	BODY		1	7
39	88B	39370	LS	THET	CP/JAR	A	2	8
39	88B	39387	LS	THETG?	CP/JAR	A	1	7
39	88B	39399	LS	THET	CP/JAR	AA	1	6
39	84A	39401	LS	THET	CP/JAR	A	1	9
39	84A	39401	LS	THET?	BODY		1	2
39	84A	39421	LS	THET	BODY		1	13
39	89	39830	LS	THET	CP/JAR	A	2	21
39	88B	39889	LS	THET	BODY		2	2
47	34	47134	LS	THET	BODY	S	1	4
44	48	44001	LS	THET	BODY	A	1	5
44	48	44058	LS	THET	BODY		3	9
25	136-138	25025	LS/M	THETG?	BODY		1	3

The Late Saxon pottery from plots 28/119 (Wood Dalling) and 38/90 (Itteringham) appear as residual elements in features which contain medieval pottery. The larger quantity of pottery recovered from Site 39/88B (Itteringham) is also residual in most instances.

Recommendations
The identifications of some of the ?Thetford-type wares requires confirmation. The presence of Late Saxon pottery from plots 28/119 and 38/90 is still significant although residual.

Further work: to check identifications and provide summary of Late Saxon wares for inclusion in further work.

Illustrations: None

Medieval
The medieval pottery forms the largest quantity of the total assemblage, making up c74% by weight overall. In total 4802 fragments were identified, weighing 32,335kg. Pottery of this date was recovered from most of the excavations, and will be discussed briefly by the main individual sites below.

The vast majority of the medieval pottery comprises a range of utilitarian domestic made in a limited number of forms including cooking vessels and jars, bowls and jugs. Much of the pottery has been classified under the general term of 'medieval coarseware', and there has been no attempt to identify any particular production centres, except for the case of the Grimston coarsewares. A second large collective group are the Local medieval unglazed wares. Although some production sites for sandy medieval fabrics have been identified (such as Blackborough End, Middleton, (Rogerson and Ashley 1985)), there were no doubt numerous others of which no trace is likely to remain, or which are unlikely to be ever identified in a rural environment. In an essentially conservative and traditional industry, much of the pottery produced in rural East Anglia during the early medieval period may well have been made in bonfire or clamp kilns. Often the appearance of the excavated pottery suggests that there was little control over firing temperatures and that the wares are consequently a mixture of colours both on their external surfaces and within the fabrics themselves.

The conservative nature of the potting tradition is also demonstrated by the continuation of hand-forming techniques for pottery making, probably at the same time that other production centres were making wheel thrown coarsewares. This does create some classification difficulties. Hand-made sandy sherds may be termed 'Early medieval wares' and date to the 11th-12th centuries, especially in the Norwich area, but in a rural context such pottery continued to be made later, and therefore such sherds have been classified as medieval coarsewares rather than early medieval wares. (The exception to this is when a fragment has a diagnostic feature, which indicates that it may be of 11th-12th (13th) century date, such as an everted flared rim). In addition, some of the cooking vessels and jars, which are hand-made, may have wheel-turned rims. The distinctive 'wiping' marks seen on many coarseware vessels on the junction of the neck and shoulder where the rim was joined is a feature which seems to continue throughout the medieval period (Jennings 41).

A large group of medieval pottery has been classified as Local medieval unglazed ware. Although this term has been used to describe fine to medium wheel thrown sandy fabrics often containing sparse fragments of mica, the pottery demonstrates a wide variety in appearance, both in colour, firing and inclusions. The term 'LMU' is a collective one used to describe this pottery which was made in a distinctive range of forms, but which is likely to represent the products of many different kiln sites. Two likely sources have already been identified. Local medieval unglazed wares are thought to have been made around the Woodbastwick and Potter Heigham areas, where waster sherds have been found (Jennings 41). Field-walking at Hemblingham to the south of Woodbastwick has also produced waster sherds of medieval and late medieval date which are similar in appearance to LMU (J Ames, pers. comm.) It is inevitable also, that there is some overlap between the two groups of general MCW and LMU, as some sherds are borderline in appearance.

A wide range of different LMU rim types for the cooking vessels and jars were recorded. The typology used is that which was initially established by Jennings (Jennings 41) and developed further by Anderson (Anderson in Shelley, forthcoming).

A small quantity of Grimston unglazed ware or coarseware was identified from the overall assemblage. This fabric has been described as 'a soft fabric with abundant quartz and flint inclusions (Little 84). Although found in small quantities on sites in Norwich, it is a larger component of assemblages found to the west of the county such as Kings Lynn (Clark and Carter, 184-5) and Castle Acre (Milligan

1982). It is likely however, that this fabric is underrepresented in the catalogue, and that some sherds, which are Grimston coarseware, have been classified as Medieval coarseware.

Grimston-type ware forms by far the largest glazed ware fabric overall from the Pipeline, confirming the success of the glazed-ware industry in reaching to all parts of the region and well beyond. A range of vessel types were recorded, from the standard jugs to a more unusual vessel from Site 25 136-138 [25183], the handle of a pipkin, usually considered to be a later form. There are several examples of highly decorated Grimston wares, such as fragments of face jugs, which are of a later date. Some sherds from 39 84A [57893] are decorated with applied cream slipped pads possibly in imitation of a floral design. These are also considered to be a late decorative variant, perhaps as late as the 15th C (Clarke and Carter 235). In addition evidence of pottery production was found on site 22/148, context [22174]. Several fragments of fired clay made in a Grimston-type ware fabric were identified as having been used in a kiln for stacking pots.

Small quantities of other glazed wares are present in the assemblage, such as Scarborough ware and a possible Yorkshire whiteware. A few sherds have been classified as 'unprovenanced glazed' ware and require further identification. The number of imported wares is extremely low for the medieval period, which is not unexpected.

The sites from which most of the medieval pottery was found have been summarised below, with recommendations on the pottery and the level of further work required.

Site 13/202 (NHER 37622 TTL)
A total of 17 fragments of medieval pottery weighing 0.78kg were recovered from the site. Some of the sherds were actually associated with the Saxon grave fills and may be intrusive. A small quantity of the material was identified in other features such as pit fills. Three of the smaller fragments require closer scrutiny as they may be of Saxon date rather than being medieval coarsewares.

Recommendations
The medieval pottery should be re-examined to ensure accuracy of dating and to confirm whether certain sherds are intrusive in Saxon grave fills. Otherwise the medieval pottery can be listed and presented in tabular form.
Further work
No illustrations

Site 22/148 (NHER 37623 BTE)
A total of 652 fragments of medieval pottery weighing 5.692kg were recovered from this excavation. The pottery is associated with several phases of small scale settlement within an enclosure, and a later phase characterised by substantial pitting, some of which contained quantities of metalworking debris. Many of the pit fills also contained substantial amounts of medieval pottery, dating to the 13th-14th century. The assemblage comprises a wide range of domestic medieval pottery, which is mainly medieval coarsewares. A most unusual fragment of kiln furniture, apparently made from a Grimston-type ware fabric was identified in pit fill [22174]. Very few non-local or fineware fragments were recovered from these deposits.

Recommendations
The assemblage should be written up properly as a component of an individual site report on a small medieval settlement in Norfolk. The later metal working evidence is significant, and the presence of possible kiln furniture in a Grimston-type fabric. Bintree is some way from Grimston and it may be that another production site is in the locality.

Further work: analysis and report-writing
Illustrations: Up to 15 illustrations and 1 photo and/or illustration of the ?kiln furniture

Site 25/136-138 (NHER 37624 and 37625 FLS)
Five hundred and eighty-seven sherds of medieval pottery weighing 3.991kg were identified from the open area excavation. The pottery is mainly associated with Phase 3, which comprises two discrete periods of medieval enclosed settlement. The ceramics are associated with pits, posts and ditches. Several unusual forms were identified during the initial analysis, such as a Medieval coarseware jug/bottle, and a Grimston-type ware pipkin.

Recommendations
The assemblage should be written up properly as a component of an individual site report on this medieval settlement.

Further work: checking fabric identifications, analysis and report-writing
Illustrations: Up to 12 illustrations are suggested

Site 27/128 (NHER 37626 THM)
A large quantity of medieval pottery was recovered here (826 fragments weighing 6.679kg). The ceramics were recovered from features belonging to seven medieval phases, which include evidence of a number of rectangular or sub-rectangular enclosures and a series of ditches. Finally a number of substantial pits were identified. A very large quantity of coarsewares and Local medieval unglazed ware was present, and some Grimston-type ware, including several vessels decorated with iron oxide slip indicating a 13th-14th century date range.

Recommendations
The medieval assemblage should be written up as a component of an individual site report on a multi-phased enclosed area.

Further work: analysis and report writing
Illustrations: Up to 6 illustrations are suggested.

Site 28/119 (NHER 37628 WDG)
Three hundred and eighty fragments of medieval pottery weighing 2.454kg were identified from this site. The material was recovered from the fills of pits and ditches with a D-shaped enclosure forming a later phase of activity. In addition to quantities of coarsewares and LMU, a fragment of a Grimston facejug, a sherd decorated with applied scales, and developed forms of LMU indicate some 13th-14th century evidence. A single fragment of a non-local glazed ware in the form of Scarborough ware is present.

Recommendations
The medieval pottery should be considered in relation to the excavated features and written up accordingly as part of an overall contribution to the site report. Overall the assemblage appears to be of 13th-14th century date and contains some good examples of 'late' LMU types and glazed wares.

Further work: analysis and report-writing
Illustrations: Up to 12 illustrations are recommended.

Site 38/90 (NHER 37939 JTT)
A total of 481 fragments of medieval pottery weighing 2.895kg were recovered. The pottery is associated with a concentration of medieval activity in the southeastern corner of the site and a range of pits elsewhere across the site. Although much of the pottery consists of the usual range of fabrics, an addition to the coarseware range is Yarmouth-type ware. The general frequency of cooking vessel shape, with everted flared rims indicates that some of the deposits date from 11th-13th century rather than later. A fragment of a Glazed whiteware jug with a possible Yorkshire origin was recovered.

Recommendations
The medieval pottery should be considered in relation to the excavated features and written up accordingly as a discrete report to be included in the overall site report. The assemblage appears to be mainly of 11th-13th century date rather than later.

Further work: analysis and report writing
Illustrations: Up to 5 illustrations are recommended.

Site 39/89 (NHER 37940 JTT)
Twenty-six fragments of medieval pottery weighing 0.201kg were identified. The pottery was recovered from several features including a medieval ditch system and a rectangular enclosure with ditch.

Recommendations
The medieval pottery could be summarised in tabular form or summarised in a paragraph, relating it to the archaeological features.

Illustrations: None

Site 39/84A (NHER 39520 JTT)
One thousand and ten sherds of medieval pottery weighing 5.987kg were recovered from the site. Intensive evidence of medieval land-usage was recorded, making up three major phases of activity. The assemblage comprises mainly medieval coarsewares, Local medieval unglazed wares, and Grimston glazed wares with a range of dateable form types and decorative techniques. Pottery was also recovered from a number of pits assigned to Phase 3, the function of which is still unclear.

Recommendations
The medieval pottery analysis should be written up as an individual component of an overall site report. The assemblage is of a considerable size and merits full consideration in the light of settlement patterns along the valley of the Bure.

Illustrations: Up to 20 illustrations are recommended

Site 39/88B (NHER 39518 JTT)
A much smaller quantity of medieval pottery was identified from this site (107 fragments weighing 0.391kg). Once again the main fabric types present are Medieval coarsewares including Grimston unglazed ware, Local medieval unglazed ware and Grimston-type ware. A small amount of residual Saxo-Norman pottery points to a likely mid 11th century date for the earliest activity on the site. Evidence for a possible early medieval enclosure was recorded, and a later phase of enclosure, with further medieval ditches forming a later phase.

Recommendations
The medieval pottery should be considered in relation to the excavated features and written up accordingly as a discrete report to be included in the overall site report or site summary.

Illustrations: Up to 2 illustrations are suggested

Site 47/34 (NHER 37631 WLN)
Four hundred and seventy-four fragments of medieval pottery weighing 3.833kg were recovered from this excavation. The site was predominantly medieval in date, apart from Phases 1 and 6/7. Some medieval vessels present in pit fill [47160] were allocated small find numbers since they are reasonably substantial. Several deposits contain pottery which is clearly of a later medieval date (14th-15th century). A fragment of an unidentified glazed jug was present in [47109].

Recommendations
The medieval pottery should be considered in relation to the excavated features and written up accordingly as a discrete report to be included in the overall site report. Some of the assemblage dates to the later part of the medieval period, in contrast to other sites.

Illustrations: Up to 12 illustrations, including SF 74001 and SF 74002 are suggested.

Site 50/26 (NHER 37996 SLD)
A hundred and sixty-two fragments of medieval pottery were identified from the site, weighing 0.897kg. The pottery is associated with Phase 3 - the use of the site during the medieval period as a possible stock enclosure, and a scattering of pits which may signify evidence of a settlement nearby. A limited range of fabrics is once more represented, with large quantities of LMU both of the earlier form-types dating to the 11th-13th century, and the more developed rim types typical of 13th-14th century.

Recommendations
The medieval pottery should be considered in relation to the excavated features and written up accordingly as a discrete report to be included in the overall site report or summary.

Illustrations: Up to 6 illustrations are recommended.

Other smaller sites along the Pipeline
Some of the smaller sites along the Pipeline have also produced small quantities of medieval pottery which have not been included in the above. These are listed below:

Site Number:
37/192 (NHER 37847 TTL)
30/115 (NHER 37914 WDG)
31/114 (NHER 37914 WDG)
39/78 (NHER 37952 JNW)
44/52 (NHER 37630 CLB)
45/45 (NHER 37731 SFF)
46/38 (NHER 37987 ANT)
49/28A (NHER 37633 FLD)
51/23 (NHER 38000 FLD)
52/20 (NHER 37635 FLD)
54/12 (NHER 38009 KNP)

It is recommended that the pottery from these sites does not require further work other than to be presented as a short summary in the final reports on those sites

General overview of the pottery

Recommendations
Although large quantities of medieval pottery have been recovered from surface recovery and field walking in rural Norfolk there is usually little opportunity to investigate such areas through controlled archaeological excavation. The Pipeline project has therefore offered a valuable opportunity to do this, with the result that several medieval sites have been identified.

In addition to contributing to a discussion of the nature and extent of the individual settlements or areas of activity, it is recommended that the medieval pottery from these sites should be discussed in the context of the immediate landscape and known settlement patterning surrounding the Bure and the Wensum. In addition, some comparative work can be done between selected assemblages from the different sites, and overall dating differences between sites can be discussed. The pottery can be compared to other relevant excavated ceramic assemblages such as Red Lion Street, Aylsham, where a considerable quantity of medieval pottery was recently recovered (Goffin, in Bates forthcoming).

In addition, a consideration of the differences in main pottery fabrics from the different plots along the pipeline should be considered. Are there detectable differences for example in ceramic assemblages of similar date depending on whether they are from sites in West Norfolk (such as sites NHER37617, 37821 and 37827) or further east (such as NHER37987, 37631 and 37996)? Is there any significance in the presence of certain non-local fabrics on some sites? How does the lack of imported wares compare with other similar sites?

This work should be synthetic and aim to summarise the significance of some substantial groups of medieval pottery, an analysis of which it is hoped will make a significant contribution to our knowledge of medieval rural Norfolk.

In addition a further topic for future investigation well beyond the scope of this project may be suggested. The large quantity of medieval coarsewares and Local medieval wares which have not been studied in any detail could be used in a research project investigating the sources and production of these wares. Synthetic work on similar projects has been undertaken elsewhere, such as the medieval greywares research for the London and South Hertfordshire production sites (J Pearce, pers comm.).

Further work
Overview and discussion on the significance of the pottery in relation to medieval settlement patterns and landscape, comparison between other sites along the Pipeline and with other published or nearly published sites, discussion of distribution of fabric types.

Post-medieval

A total of 71 fragments of post-medieval date weighing 1.861kg were recovered from the following sites:

Section	Plot		Context		Fabric	Form	No of sherds	Weight (g)
22	148		22029	PM	CREA	BOWL	16	106
22	148		22101	PM	LMT	JAR	17	1136
27	128		27000	PM	GRE	BODY	1	16
27	128		27329	PM	GRE	BODY	1	3
38	90		38000	PM	GRE	ST JAR	1	36
38	90		38001	PM	GRE	BASE	1	34
39	89		39829	PM	IGBW	BODY	1	2
39	84A		57225	PM	LMT?	BODY	1	4
39	84A		57613	PM	GRE	BODY	1	2
44	48		44077	PM	WEST	CPT	1	38
44	52	Ev Trench 50	830	PM	GRE	BODY	1	1
44	52	Watching brief	44859	PM	IRON	DISH?	1	29
45	44	Ev trench 86	416	PM	GRE?	BODY	1	1
45	46	Ev trench 81	815	PM	BBAS	BODY	1	15
45	46	Ev trench 81	815	PM	CREA	PLATE	1	9
45	46	Ev trench 81	815	PM	CREA	JAR?	4	36
45	45	Watching brief	45851	PM	RAER	DJUG	1	167
46	38		46000	PM	PORC?	SPOUT?	1	9
46	38		46000	PM	TPW	BODY	1	2
47	34	Ev trench 56	286	PM	LMT	BODY	1	3
47	34		47000	PM	LMT	BODY	1	11
47	34		47047	PM	LMT	BODY	2	30
47	34		47048	PM	LMT?	BODY	4	72
47	34		47073	PM	LMT	BOWL	2	28
49	28A	Watching brief	49850	PM	KOLN/FREC	BODY	1	2
49	28A	Watching brief	49850	PM	LMT	BODY	1	33
49	28A	Watching brief	49850	PM	MISC	BODY	1	5
50	26		177	PM	LMT?	BODY	1	3
50	28A	Ev trench 59	175	PM	LMT	BODY	1	1
51	23	Watching brief	51850	PM	GRE		1	
45	43	Watching brief	45852	PM?	MISC	BODY	2	2

Summary

A small quantity of the pottery overall is transitional in date, and spans the late medieval/early post-medieval period (15th-16th C). The group includes some locally made glazed redwares, which are present with Rhenish stoneware such as Raeren and Koln/Frechen, most notably from Site 49/28A. Some sherds of Dutch-type redware may be late medieval rather than early post-medieval, dating to the 15th century. A substantial part of a LMT jar with horseshoe handles was present in 22/148 [22101], the fill of a recut ditch around an enclosure. The remainder of the overall assemblage comprises sherds which are mainly later, that is the 18th-19th century. The small group of later ceramics from 45/45 [815] dates to the late 18th C.

Recommendations

Such small quantities of post-medieval material were recovered that they do not merit individual elements in any pottery reports. A summary of the dating evidence supplied by individual fabrics may be included in any other tabulated data or summary discussion.

Illustrations: The only post-medieval pottery illustration which is suitable for illustration is the LMT jar from Plot 22/148. This is not an unusual form, but is a comparatively well-preserved example.

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SPECIAL FINDS ASSESSMENT

Special Finds Assessment

By Julia Huddle

The metalwork and possible loom weights

Methodology
Each special find was looked at with the aid of x-rays and recorded in a Microsoft Word table using information supplied in two Microsoft Excel tables (Special Finds Catalogue and Context Information for Specialists). The metalwork is recorded by pipeline 'site' or 'plot number' and by special find number. Quantities and weights, also supplied, are included. The site phase was added where available. The material is catalogued (see 'comments'), with dates suggested where object parallels have been found and bibliographies given as appropriate. A summary of each site is included at the end of each site catalogue giving recommendations for further analysis/work as thought necessary

NHER Code	Sub-division	Context No.	Special Find No.	Material Type	Prov. Period	Count	Phase	Weight (gms)	Comments
37622	13/202	13045	70461	Iron object	Saxon	18+		975	Shield boss. Extremely delicate. See Ken Penn's report
37622	13/202	13040	70462	Iron object	Saxon	7		30	Knife? See Ken Pen's report
37622	13/202	13045	70471	Iron object	Saxon	1		6	See Ken Pen's report
37622	13/202	13045	70473	Iron object	Saxon	5		104	Knife blade. See Ken Pen's report
*37622	13/202	13069	70474	Iron object	Saxon	4		17	Knife blade. See Ken Pen's report
37622	13/202	13100	70483	Iron object					See Ken Pen's report
37622	13/202	13104	70486	Iron object	Saxon	2		23	Knife blade. See Ken Pen's report
37622	13/202	13104	70487	Iron object	Saxon	1		19	Knife blade. See Ken Pen's report
37622	13/202	13115	70489	Iron object	Saxon	3		17	See Ken Pen's report
37622	13/202	13118	70490	Iron object	Saxon	2		12	Knife blade. See Ken Pen's report
37622	13/202	13293	70507	Iron object	Saxon	2		6	See Ken Pen's report
37622	13/202	13293	70508	Iron object	Saxon	3		9	See Ken Pen's report
37622	13/202	13293	70509	Iron object	Saxon	1		52	Knife blade. See Ken Pen's report
37622	13/202	13124	70512	Iron object	Saxon	10		188	See Ken Pen's report
*37622	13/202	13159	70518	Iron object	Saxon	1		178	Spear head. See Ken Pen's report
37622	13/202	13159	70519	Iron object	Saxon	1		31	Tool haft with ?mineralised wood remains. See Ken Pen's report
*37622	13/202	13159	70520	Iron object	Saxon	1		22	Knife blade. See Ken Pen's report
37622	13/202	13171	70524	Iron object	Saxon	7		26	Knife blade. See Ken Pen's report
37622	13/202	13278	70530	Iron object	Saxon	1		15	Knife blade. See Ken Pen's report
37622	13/202	13285	70541	Iron object	Saxon	1		53	Knife blade. See Ken Pen's report
37622	13/202	13033	70545	Iron object	Saxon	11		175	See Ken Pen's report
37622	13/202	13033	70546	Iron object	Saxon	11		116	See Ken Pen's report
37622	13/202	13292	72004	Leather object	Undetermined	4		2	Possible leather frags. See Ken Pen's report

The material above has been seen by Ken Penn and is included in a separate report.

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* Tittleshall

* Tittleshall

Site 22/148 (NHER 37623 BTE)

NHER Code	Sub-division	Context No.	Special Find No.	Material Type	Prov. Period	Count	Phase	Weight (gms.)	Comments
37623	22/148	22015	70150	Iron object	Undetermined	3	3	22	Possible knife blade fragment with broken blade and incomplete whittle-tang. Undated
37623	22/148	22049	70151	Iron object	Undetermined	1	5	3	Nail, with flat round head & incomplete shank. Undated
37623	22/148	22047	70152	Iron object	Undetermined	6	4	36	?Knife blade fragment, broken both ends and ?associated fragments. Undated
37623	22/148	22130	70154	Iron object	Undetermined	1	'Discounted data unreliable'	4	Nail, with flat round head, incomplete shank. Undated
37623	22/148	22118	70155	Copper alloy object	Undetermined	1	4	2	Incomplete buckle-plate with slot for pin, three rivet holes one with rivet in situ; front decorated with stamped 8-petalled flower within beaded border. Medieval.
37623	22/148	22119	70156	Copper alloy object	Undetermined	1	4	3	Bent and crumpled sheet fragment. Undated
37623	22/148	22115	70157	Iron object	Undetermined	1	4	6	?Fiddle-key nail with incomplete shank ?Medieval
*37623	22/148	22119	70158	Copper alloy object	Undetermined	2	4	2	Sheet fragments x 2; one with 2 rivet holes, one with single rivet hole ?buckle plate fragments. Undated
37623*	22/148	22121	70159	Iron object	Undetermined	1	4	592	Horseshoe with three square nail holes either side, four with nails in situ. One ?right-angled calkin remaining on one side but ?broken. Possibly Type 4 following Clark (1995, 85-91) and those from London suggests an introduction of the type during ceramic phase 9 (1270- 1350), in the 15th century contexts it is universal (object covered in soil - description taken from x-ray). Bibliography: Clark, J., (ed.), 1995, Medieval Finds From Excavations in London: 5. The Medieval Horse and its Equipment c.1150-c.1450.

* Bintree
* Bintree

Summary
A total of 10 Special Finds were recorded here comprising 20 pieces altogether. The material was recovered from Phase 3 (medieval) through to phase 5 (broadly post-medieval) and includes nails, sheet fragments and two possible knife blades. One buckle-plate, a horseshoe and a horseshoe nail, all from period 4, are dated to the medieval period. None of the finds recovered are unusual and in fact are the type that one may expect from a small farmstead.

Further Work
All the material has been fully catalogued and no further work is recommended. It is suggested that the finds recovered are recorded in the final report perhaps by way of a table, similar to those included here.

Site 39/89 (NHER 37940 JTT)

NHER Code	Sub-division	Context No.	Special Find No.	Material Type	Prov. Period	Count	Phase	Weight (gms.)	Comments
37940	39/89	39824	70340	Iron object	Undetermined	1	3 Medieval	3	Unrecognisable corroded fragment
37940	39/89	39830	70341	Iron object	Undetermined	1	Subsoil	12	Unrecognisable corroded fragment

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Summary
Only two Special Finds were recovered here, one from Phase 3 and one from the subsoil, both are unidentified object fragments.

Further Work
No further work is recommended. It is suggested that the finds recovered are recorded in the final report perhaps by way of a table, similar to those included here.

* Itteringham

Site 24/144 (NHER 37892 FLS)

NHER Code	Sub-division	Context No.	Special Find No.	Material Type	Prov. Period	Count	Phase	Weight (gms.)	Comments
37892	24/144	24238	72504	Iron object	Undetermined	1	2 (Roman Period)	15	?Nail shank
37892	24/144	24122	72506	Heat affected clay		5	1 (Iron Age)	597g	Incomplete triangular loom weight with the lower third missing it comprises three joining pieces and two scraps and weighs 597g. The weight was probably perforated three times, once through the top of each corner. One complete perforation survives intact whilst partial remains of the others also survive. The weight is made of a partially fired poorly mixed quartz sand rich fabric with large flint inclusions. The flints within the weight have not been affected by heat suggesting that low temperatures were achieved during firing. Discussion The weight was found within the fills of a heavily truncated pit assigned to phase 1. Many similar weights were found at Danebury. Small find 72506 corresponds to Danebury type 1 (Poole 1984 403, fig. 7.74, 7.57), the most common to be found on Iron Age sites. The form is believed to date to the later Iron Age but beyond this is not closely datable. References Poole, C. 1984. 'Objects of baked clay' in B. Cunliffe Danebury: an Iron Age hillfort in Hampshire. Volume 2. The excavations, 1969-78: the finds. Council for British Archaeology Research Report 52. 398-407 The above catalogue entry is by Sarah Percival

Summary
Two Special Finds were recovered here, one from Phase 1 (Iron Age) and one from Phase 2 (Roman Period), the latter producing a possible nail shank. The find from an Iron Age deposit is an incomplete triangular loom weight of a type typically found on Iron Age sites.

Further work
No further analysis is required on the loom weight and the weight does not need to be illustrated. It is suggested that the finds recovered are recorded in the final report perhaps by way of a table, similar to those included here.

Site 25/136 & 138 (NHER 37624 & 37625 FLS)

NHER Code	Sub-division	Context No.	Special Find No.	Material Type	Prov. Period	Count	Phase	Weight (gms.)	Comments
37624 & 37625	25/136-138	25033	70650	Copper alloy object	Undetermined	1	3 Medieval	4	Incomplete buckle-plate with notch for pin and one surviving hole for (missing) rivet.
37624 & 37625	25/136-138	25033	70651	Copper alloy object	Undetermined	1	3 Medieval	1	Decorated strip fragment with rebated rivet hole and notched edges; one side decorated with incised dotted lines, possible mount.
37624 & 37625	25/136-138	25074	70652	Copper alloy object	Undetermined	1	3 Medieval	6	Vessel rim fragment, with simple everted rim; sooted surfaces.
37624 & 37625	25/136-138	25074	70653	Iron object	Undetermined	2	3 Medieval	7	U-shaped staple. One arm incomplete. Discussion: Iron staples such as these could have supported tethering rings, or have held chains and hasps in place around buildings.
37624 & 37625	25/136-138	25064	70654	Iron object	Undetermined	1	3 Medieval	11	Nail shank, slightly bent and of square section.
37624 & 37625	25/136-138	25080	70655	Iron object	Undetermined	3	3 Medieval	42	Knife fragment with incomplete blade and broken whittle-tang.
37624 & 37625	25/136-138	25080	70656	Iron object	Undetermined	1	3 Medieval	38	Knife fragment with incomplete blade and whittle-tang.
37624 & 37625	25/136-138	25084	70657	Iron object	Undetermined	1	3 Medieval	5	'Fiddle-key' nail, shank double-clenched. Discussion: For discussion of these type of horseshoe nails from early-medieval deposits see Clarke (1995, 86, fig 64). Bibliography: Clark, J., (ed.), 1995, Medieval Finds From Excavations in London: 5. The Medieval Horse and its Equipment c.1150-c.1450
37624 & 37625	25/136-138	25115	70658	Iron object	Undetermined	1	3 Medieval	4	Incomplete strip. Found during metal detecting.
37624 & 37625	25/136-138*	25139	70659	Iron object	Undetermined	1	3 Medieval	83	Disc with central hole ?washer. Diameter: 56mm; Thickness: 10mm; central hole diameter: 25mm. Found during metal detecting. ?Intrusive

* Foulsham

NHER Code	Sub-division	Context No.	Special Find No.	Material Type	Prov. Period	Count	Phase	Weight (gms.)	Comments
37624 & 37625	25/136-138	25137	70660	Iron object	Undetermined	1	3 Medieval	98	Horseshoe fragment, broken at toe, wide web and 3 rectangular nail holes, one on worn edge. Calkin present. Discussion: Possibly Type 4 following Clark (1995, 85-91), those from London suggests an introduction of the type during ceramic phase 9 (1270- 1350), in the 15th century contexts it is universal. Bibliography: Clark, J., (ed.), 1995, Medieval Finds From Excavations in London: 5. The Medieval Horse and its Equipment c.1150-c.1450 Found during metal detecting.
37624 & 37625	25/136-138	25119	70661	Iron object	Undetermined	1	3 Medieval	6	Nail ?Horseshoe nail with clenched shank and sub-rectangular head. Found during metal detecting.
37624 & 37625	25/136-138	25001	70662	Heat affected clay			Subsoil		Comprises three fragments weighing 97g. One incomplete circular perforation survives indicating that the pieces are probably from a loom weight. The pieces are made from low-fired sandy fabric with some possible grog inclusions and are not closely datable. By Sarah Percival

Summary

Three fragments of a possible loom weight, dated to the Iron Age period, were recovered from subsoil. The remaining twelve finds are from Phase 3 and amount to fifteen pieces altogether. Most of the objects are of a personal or domestic nature, such as the buckle-plate, a vessel and two knives. Items associated with buildings include nails and a U-shaped staple. A horseshoe and a horseshoe nail complete the assemblage here.

Further Work

No further analysis is required on the material, including the loom weight, and none of the material need be illustrated. It is suggested that the finds recovered are recorded in the final report perhaps by way of a table, similar to the one above.

Site 27/128 (NHER 37626 THM)

NHER Code	Sub-division	Context No.	Special Find No.	Material Type	Prov. Period	Count	Phase	Weight (gms.)	Comments
37626	27/128	27080	72100	Iron object	Undetermined	3	Medieval pit (no phase)	12	Knife blade fragments x 2, includes tip of blade
37626	27/128	27154	72101	Iron object	Undetermined	2	6 Medieval	59	Formless fragment
37626	27/128	27114	72102	Iron object	Undetermined	2	4 Medieval	163	Plate fragment
37626	27/128	27124	72103	Iron object	Undetermined	1	4 Medieval	20	Shank of rectangular cross section with slightly burred head, bent at tip ?punch. Length 90mm Discussion This and SF 72104 with slightly burred heads are possible punches, the heads of which become burred through use. Those from medieval contexts at York are thought to have been used for metalworking (Ottaway and Rogers 2002, 2720). Bibliography Ottaway, P. & Rogers, N., 2002, Craft, Industry and Everyday Life: Finds from Medieval York. The Archaeology of York. The Small Finds 17/15
37626*	27/128	27124	72104	Iron object	Undetermined	1	4 Medieval	26	Shank of rectangular cross section with slightly burred head, bent at tip - ?small punch. Length 39mm
37626	27/128	27180	72106	Iron object	Undetermined	1	No phase Medieval	196	Large nail or bolt with round, slightly domed head and circular-sectioned incomplete shank.
37626	27/128	27511	72107	Copper alloy object	Undetermined	1	6 Medieval	2	Strip, looped at one end ?buckle pin
37626	27/128	27381	72108	Iron object	Undetermined	28		233	Metal working debris X 4; Plate fragments X 16, includes one possible knife blade fragment; Nails X 2; Nail shanks X 6.
37626	27/128	27315	72109	Iron object	Undetermined	17	No phase Medieval	135	Nails x 2; ?nail fragments x 9; formless fragments x 4; ?metalworking debris X 1; Object fragment X 1, with collar and rectangular hole -unidentified.
37626	27/128	27362	72110	Iron object	Undetermined	1	No phase	21	Incomplete knife blade, tip missing and part of blade edge broken; incomplete bent whittle-tang.
37626	27/128	27449	72111	Iron object	Undetermined	1	6 Medieval	7	Nail with flat circular head, tip missing.

* Themelthorpe

NHER Code	Sub-division	Context No.	Special Find No.	Material Type	Prov. Period	Count	Phase	Weight (gms.)	Comments
37626	27/128	27449	72112	Iron object	Undetermined	2	6 Medieval	6	Nail shank X 1 ; ?nail head X 1.
*37626	27/128	27511	72113	Iron object	Undetermined	7	6 Medieval	128	Object fragments X 7, includes bar and rod fragments.

Summary
A total of thirteen Special Find numbers were taken out for this site although the number of items amounts to sixty-seven pieces. Some of the material is from phased areas of the site – Phase 6 & 4, others are not from phased areas but preliminary spot dating of the ceramics shows that they are attributable to the medieval period.

The objects identified are mostly nails (25); one possibly two knife blades were also recovered. The recovery of two probable punches from Phase 4, metalworking debris, plate, bar and rod fragments is of interest here given the concentrations of metalworking debris identified during the field walking (October 2002).

Further work
Apart from the two ?punches all the material is fully catalogued and it is not thought that any further analysis is required. If confirmation is sought on the two possible punches it is recommended that these are shown to a specialist familiar with these types of metalworking tools. None of the material need be illustrated and it is suggested that the finds recovered are recorded in the final report perhaps by way of a table similar to the one above.

* Themelthorpe

Site 28/119 (NHER 37628 WDG)

NHER Code	Sub-division	Context No.	Special Find No.	Material Type	Prov. Period	Count	Phase	Weight (gms.)	Comments
37628	28/119	28014	72600	Iron object	Undetermined	1	No Phase Medieval	12	Nail tip missing
37628	28/119	28016	72601	Iron object	Undetermined	1	No Phase Medieval	12	?Nail shank, of square section
37628	28/119	28045	72602	Iron object	Undetermined	1	1 Medieval	72	Horseshoe fragment with narrow web, broken at worn toe; two nail holes present, perhaps three with third having ?nail in situ. ?Round or sub-rectangular nail holes with deep countersunk sub-oval slots; lobate wavy edge; calkin present, type unknown. Discussion Type 2A or 2B 'formerly Norman' following Clarke (1995, 86, fig 62) and see those from London found in early medieval deposits and declining by the mid 14th century (ibid. 92, fig 74). See also Margeson 1993, 226, fig 173 no 1828) for an almost exact parallel (if two nail holes here) from a 12th/13th-century context.
37628	28/119	28000	72603	Iron object	Undetermined	1	5 Topsoil	248	Nail with large 'mushroom-shaped' head.

Summary
Only four special finds were recovered here one is from Phase 1, two are unphased but are indicated 'medieval' and the last is from Phase 5 (topsoil). They comprise three nails and a fragment of a horseshoe dated to the early-medieval period.

Further work
All the material is fully catalogued and it is not thought that any further analysis is required. None of the material need be illustrated and it is suggested that the finds recovered are recorded in the final report perhaps by way of a table similar to the one above.

Site 39/84A (NHER 39520 JTT)

NHER Code	Sub-division	Context No.	Special Find No.	Material Type	Prov. Period	Count	Phase	Weight (gms.)	Comments
39520	39/84A	57099	72700	Iron object	Undetermined	1	No phase given	34	Bar fragment of rectangular section, slightly expanded towards one end.
39520	39/84A	57118	72701	Iron object	Undetermined	1	No phase given	5	Nail shank, bent, of rectangular section tip missing
39520	39/84A	57179	72702	Iron object	Undetermined	5	No phase given	3	Strip fragments
39520	39/84A	57075	72703	Copper alloy object	Undetermined	5	No phase given	13	Formless fragments X 5. (Nothing showing on X-ray and items covered in soil).
39520	39/84A	57075	72704	Iron object	Undetermined	2	No phase given	90	Knife blade (in two parts) with whittle tang. Straight back from the shoulder to the tip and blade cutting edge tip rising to meet the back. Discussion: Following Ottaway's type series for knives this example falls under his type Back Form E (Ottaway 1992, 572) and two parallels from medieval deposits in York are known from 13th century contexts at Coppergate (Ottaway and Rogers 2002, 2753, fig 1358) Bibliography: Ottaway, P., 1992, Anglo-Scandinavian Ironwork from Coppergate. The Archaeology of York. The Small Finds 17/6 Ottaway, P. & Rogers, N., 2002, Craft, Industry and Everyday Life: Finds from Medieval York. The Archaeology of York. The Small Finds 17/15
39520	39/84A	57049	72705	Lead object	Undetermined	1	No phase given	28	Lead strip, twisted and bent.
39520	39/84A	57001	72706	Copper alloy object	Undetermined	1	No phase given Subsoil	3	Strap-loop with sub-rectangular frame and internal projections. Medieval
39520	39/84A	57802	72707	Copper alloy object	Undetermined	1	No phase given	5	Buckle with trapezoidal frame, three outside edges are bevelled; knops at each corner and copper alloy wire pin. ?Gilded and moulding around knops. Discussion: This medieval buckle would need cleaning for positive identification.
39520	39/84A	57753	72708	Copper alloy object	Undetermined	1	No phase given	6	Buckle with integral bevelled plate and copper alloy pin. Trapezoidal frame with two knops at pin-rest and hole for pin. Incomplete plate with single rivet and tapering notched sides; front decorated with two crosses each bounded with vertical linear border. Discussion: See the group from London from 13th/14th-century contexts, where it is suggested that these interesting buckles, with integral bevelled plates, had a special function (Egan & Pritchard, 1991, 106-1089, fig 68-9, nos 482-487) the latter in situ on a spur. Bibliography Egan, G., & Pritchard, F.,, 1991, Medieval Finds from Excavations in London: 3 Dress Accessories, London

NHER Code	Sub-division	Context No.	Special Find No.	Material Type	Prov. Period	Count	Phase	Weight (gms.)	Comments
39520	39/84A	57883	72709	Copper alloy object	Undetermined	1	No phase given	7	?Buckle plate with notch for (missing) pin and three rivet holes. Covered in soil
39520	39/84A	57001	72711	Copper alloy object	Undetermined	1	No phase given	3	Strap loop with trapezoidal frame, internal projections and three moulded knops in middle. Discussion: See those in medieval contexts from London (Egan & Pritchard 1991, 231-233, fig 149 nos 1254-1265). Bibliography Egan, G., & Pritchard, F.,, 1991, Medieval Finds from Excavations in London: 3 Dress Accessories, London
39520	39/84A	57001	72712	Lead object	Undetermined	1	No phase given	36	Rolled lead sheet forming a cylinder, possible weight.

Summary

A total of twelve Special Finds were seen from this site, amounting to 21 pieces altogether. No Phasing is available although the features excavated at this site were of medieval date or later. All the diagnostic finds are dated to the medieval period and as such form a small group of well dated, and in some cases interesting, artefacts. They include a knife, two strap-loops (used to hold down the ends of straps/belts) and two buckles one of which is possibly a spur buckle.

Further work

All the material (apart from a ?gilded buckle SF 72707) is fully catalogued and it is not thought that any further analysis is required. It is recommended however that the two buckles SF 72708 & 72707 should be illustrated as they are not closely paralleled elsewhere (the ?gilded buckle SF72707 should be cleaned prior to illustration). It is suggested that the finds recovered are recorded in the final report perhaps by way of a table similar to the one above.

NHER Code	Sub-division	Context No.	Special Find No.	Material Type	Prov. Period	Count	Phase	Weight (gms.)	Comments
39518	39/88B	39346	70261	Iron object	Undetermined	1	1	61	Incomplete ring of circular section, estimated (reconstructed) diameter circa 90mm
39518	39/88B	39423	70262	Copper alloy object	Undetermined	1	3	9	Cast ?harness mount with integral lugs on reverse and two moulded circles either side of pointed ends and central domed oval boss. Post-Medieval
39518	39/88B	39423	70263	Iron object	Undetermined	1	No phase given	40	Plate fragment
39518	39/88B	39423	70264	Lead object	Undetermined	1	No phase given	5	Lead waste ?spillage
39518	39/88B	39423	70265	Iron object	Undetermined	3	No phase given	11	?Fiddle-key nail with incomplete shank X 1; nail shanks X 2
39518	39/88B	39423	70266	Iron object	Undetermined	2	No phase given	46	Nail with ?incomplete shank X 1; badly corroded object fragment X 1
39518	39/88B	39423	70267	Iron object	Undetermined	1	No phase given	62	Annular ring ?tethering/suspension/harness ring
39518	*39/88B	39423	70268	Iron object	Undetermined	1		108	Broken ?strap with two nails in situ. Discussion: This incomplete L-shaped object with two nails in the short length may be part of a strap used on doors windows and furniture fittings, see one from Norwich (Margeson 1993, 154, fig 112, no 1201). Bibliography Margeson, S., 1993, Norwich Households, Medieval and Post-Medieval Finds from Norwich Survey Excavations 1971-78 (East Anglian Archaeol. 58)

Summary
A total of eight Special Finds are considered here and amount to eleven pieces in total. Two of the finds are from phased areas of the site although no indication is given as to the dating of these phased areas. Apart from a harness mount dated to the post-medieval period the material is undated and includes nails, annular rings and a nailed L-shaped strip.

Further work
All the material is fully catalogued and it is not thought that any further analysis is required. None of the material need be illustrated and it is suggested that the finds recovered are recorded in the final report perhaps by way of a table similar to the one above.

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* Itteringham

Site 44/48 (NHER 37729 SFF)

NHER Code	Sub-division	Context No.	Special Find No.	Material Type	Prov. Period	Count	Phase	Weight (gms.)	Comments
37729	44/48	328	70001	Iron object	Undetermined	13	Not phased	25	Evaluation Trench 72 Formless fragments X 13, little iron remaining
37729	44/48	44001	72800	Iron object	Undetermined	1	Not phased	22	Large nail with domed circular head and rectangular-sectioned shank.
37729	44/48	44001	72801	Iron object	Undetermined	3	Not phased	132	Unidentifiable object fragments X 3
37729	44/48	44177	72802	Copper alloy object	Post-Medieval-al	1	3: Post-medieval	7	Solid die-cut two-piece livery button with domed circular embossed head with back-to-back rampant lions. Late 18th –19th century.

Summary
Four Special Find numbers were taken out for this site, amounting to eighteen pieces altogether. Seventeen are from unphased areas of the site and apart from one nail are all undiagnostic finds. One late 18th-19th-century livery button is from a post-medieval context.

Further work
All the material is fully catalogued and it is not thought that any further analysis is required. None of the material need be illustrated and it is suggested that the finds recovered are recorded in the final report perhaps by way of a table similar to the one above.

NHER Code	Sub-division	Context No.	Special Find No.	Material Type	Prov. Period	Count	Phase	Weight (gms.)	Comments
37987	46/38	46001	72900	Cu alloy object	Undetermined	1	6: Modern	8	Modern door/window hinge with two rebated screw holes.
37987	46/38	46000	72901	Cu alloy object	Post-Medieval	1	6 Modern	8	Solid die-cut, two-piece flat circular embossed livery button, with griffin head over crown. 18th-19th century.
37987	46/38	46024	72902	Cu alloy object	Undetermined	1	5: Post-medieval	3	?Vessel fragment
37987	46/38	46024	72903	Lead object	Undetermined	1	5: Post-medieval	4	Incomplete lead strip, undiagnostic.
37987	46/38	46024	72904	Cu alloy object	Modern	1	5: Post-medieval	2	Eyelet with possible textile remains. Post-medieval
37987	46/38	46001	72905	Iron object	Undetermined	1	6 Modern	17	Annular ring. Suspension/tethering/harness ring
37987	46/38	46038	72907	Iron object	Undetermined	1	5: Post-medieval	31	Nail with domed circular head, tip missing.
37987	46/38	46055	72909	Iron object	Undetermined	1	3 Iron Age	742	Axe head, with solid blade and socketed head. Top and bottom of blade are parallel; narrow blade expands at junction with haft to form a ring-shaped socket. Length 117mm; Height: 55 at socket, 50mm at blade end; circular socket diameter: 30mm Discussion: Three socketed tools of Early Iron Age date were *found at Danebury, an Iron Age hillfort in Hampshire. They possess some features in common with the Antingham axe head, in that they all have a solid blade and a socketed head, designed to accommodate a haft (Sellwood 1984, 351-354, fig 7.12 nos 2.49, 2.50 & 2.51). Sellwood discusses the presence of such tools and their various uses principally as woodworking tools although adzes and picks were also used to dig away the chalk in pits (ibid. 354), as shown by tool marks on the sides and bottom of pits. John Davies chief curator of Norfolk Museums has kindly looked at the axe head from a pit with eleven sherds of Early Iron Age pottery (pers. comm. Sarah Percival) and comments that the occurrence of an axe head is very exciting, particularly if is indeed from a well dated context and that this example is a welcome addition to the few recovered elsewhere. Bibliography: Sellwood, L., 1984. 'Objects of iron' in B. Cunliffe, Danebury: an Iron Age hillfort in Hampshire. Volume 2. The excavations, 1969-78: the finds. Council for British Archaeology Research Report 52. 346-370

Summary
A total of eight Special Finds were recovered here and apart from one are all from post-medieval or modern contexts. One find an Iron Age axe head was recovered from Phase 3, an Iron Age pit and is of intrinsic and national importance (see catalogue entry and discussion above).

Future work
The axe head is an important find and should be looked at by a specialist in this field for full catalogue entry with object parallels and discussion. John Davies who has looked at the object would be happy to do the analysis of the object.

Conservation requirements
This object is very unstable and a lot of corroded iron has fallen off since it was (?initially) bagged and it is therefore recommended that it is sent to be conserved as soon as possible to be stabilised.

Axe head should be x-rayed from top and bottom view showing socket

Illustration
It is recommended that the object should be drawn by an illustrator at the NAU so as to be able to liaise with John Davies the recommended specialist for analysis of the axe head.

Site 47/34 (NHER 37631 WLN)

NHER Code	Sub-division	Context No.	Special Find No.	Material Type	Prov. Period	Count	Phase	Weight (gms.)	Comments
37631	47/34	47001	74000	Iron object	Undetermined	1	7 Modern	7	?Nail head
37631	47/34	47000	74005	Iron object	Undetermined	4	7 Modern	42	Object fragment. ?Part of knife blade with whittle-tang.
37631	47/34	47126	74006	Iron object	Undetermined	1	No phasing	15	?Nail fragment (not found on x-ray sheet).
37631	47/34	47126	74007	Iron object	Undetermined	1	5 (?) Late medieval or post-medieval	9	Nail fragment with incomplete shank
37631	47/34	47139	74008	Iron object	Undetermined	1	6	4	?Nail shank.
37631	47/34	47140	74009	Iron object	Undetermined	1	6	20	Nail with incomplete shank.
37631	47/34	47140	74010	Iron object	Undetermined	1	6	13	Nail, tip missing
37631	47/34	47140	74011	Iron object	Undetermined	1	6	48	Nail adhering to badly corroded object fragment.

Summary
A total of eight Special Finds are included here amounting to eleven pieces altogether, they were recovered from Phase 5 (Late-medieval or post-medieval) through to Phase 7 (modern). They include nails and part of a ?knife blade.

Further work
All the material is fully catalogued and it is not thought that any further analysis is required. None of the material need be illustrated and it is suggested that the finds recovered are recorded in the final report perhaps by way of a table similar to the one above.

BKL 02 Bulk Metal to be X-rayed and Assessed.

NHER Code	Sub-division	Context No.	Material Type	Prov. Period	Count	Phase	Weight (gms)	Comments
37631	06/226	6001	Iron object	Undetermined	1		32	Hafted tool? File of D-shaped section, handle missing with whittle tang no teeth visible on x-ray
37631	13/202	13045	Iron object	Undetermined	2		2	See Ken Penn's report. ?? Two fragments of iron from soil block. Possibly rivet
37631	13/202	13093	Iron object	Undetermined	2		2	Recovered from sample <71458>.See Ken Penn's report. Iron point length 13mm from soil block
37631	13/202	13124	Iron object	Undetermined	2		2	Recovered from sample <71468>. See Ken Penn's report. Iron rivet from ?comb, length 10mm; iron ?nail fragment Length 13mm from soil block
37631	22/148	22082	Iron object	Undetermined	4	4	30	One nail fragment X1; formless fragments X 3
37631	22/148	22110	Iron object	Undetermined	1	4	8	Formless fragment
37631	22/148	22332	Iron object	Undetermined	8	4	55	Formless fragment
37631	22/148	22332	Iron object	Undetermined	9	4	28	Recovered from sample <71152>. All badly corroded object fragments 2 are possible nail fragments
37631	25/136-138	25120	Iron object	Undetermined	1	3	8	Plate fragment
37631	27/128	27156	Iron object	Undetermined	1	6	15	Incomplete iron 'tube' with open seam.
37631	27/128	27315	Iron object	Undetermined	10	'Med'	179	Nail X 2; formless fragments x 8
37631	27/128	27380	Iron object	Undetermined	1	6	77	Plate fragment
37631	43/58	43879	Iron object	Undetermined	3	2	10	Formless fragments x 3

Summary

Excluding the material seen by Ken Penn (from site 13/202) ten bags of 'bulk metal' (not Special Finds) are included above and comprise thirty-nine assorted fragments of ironwork. They are from several sites (see numbers alongside context numbers). Apart from a file from site 6/226 which appears to be modern, none of the pieces are dated; they include nail, plate and several formless fragments.

Further work

None of the material is thought to merit further analysis; it appears to be either modern or undiagnostic. None of the material need be illustrated in order to be consistent it is suggested that the finds recovered here are recorded in the final report perhaps by way of a table similar to the rest of the material considered above.

In order to facilitate the production of final tables for the above material (all sites) the context information and Special Find catalogue, currently provided on separate EXCEL sheets for each site, should be converted into ACCESS tables in order to easily sort the Special Finds by site, context type and phase.

ANGLO-SAXON IRONWORK ASSESSMENT

Anglo-Saxon Ironwork Assessment

By Ken Penn

Introduction
This assessment concerns the iron finds from the Anglo-Saxon cemetery at Tittleshall (Site 13/202, NHER 37622 TTL), Norfolk, excavated by Network Archaeology. The cemetery belongs to the Migration Period, that is, the 5th and 6th centuries, and was placed around an earlier monument, a prehistoric barrow.

This assessment lists the iron finds, assigns tentative dates to them and notes the dating systems used to do this. Note is also made of the more significant or unusual iron finds: an ironbound tub, shield and remains of a possible chatelaine. The potential of these finds is more limited than the bronze finds (brooches in particular) but nonetheless has a certain value.

A note is made of the further cleaning and conservation work needed and the time needed to prepare illustrations for publication. .

There were about twenty-four graves, thirteen of which produced iron finds, with the remains of the iron-bound tub being found on the machined surface towards the end of excavation.

The assemblage as a whole
The twenty-four excavated burials lay around the flattened remains of a prehistoric barrow, but could be dated to the Anglo-Saxon period through the grave-goods. A late 5th and 6th century date is indicated.

The ironwork came from both male and female burials and was comprised mostly of knives and associated objects such as buckles or suspension rings. Exceptions to this include the iron-bound tub (context 13033), the shield (context 13045) and the spear (context 13159).

Iron rarely retains its form or identity and most of the objects were very corroded; some were obscured by the remains of textile, from lying next to the clothed body. The presence of textile remains on a number of objects has been noted in the catalogue (appendix).

The range of these objects, typically, is small, with knives, being 'worn' by both males and females, the most common object type. Corrosion and disintegration has obscured the identity of others. Besides the knives and other objects 'worn' on the body, true grave-goods included a shield, a spear and the iron-bound tub.

Dating indicators
Because of corrosion and damage, the iron objects have been difficult to identify to type with much certainty. However, beyond the general 5th and 6th century date, there is little further precision to dating, with many knives spears and shields undatable except to this general period. Later in this period, into the later 6th and 7th century, other more distinct types came into existence, but they are not found in this small assemblage.

Shields
Evison (1963) dealt mostly with the later forms of shield boss, the 'sugarloaf' and tall cone bosses. Dickinson and Härke have published their typology for all forms of shield bosses and fixings (1992). Härke had previously analysed the weapon graves at Westgarth Gardens (Härke 1988) and a recent correspondence analysis has involved a local typology of shield-bosses, which refines the general scheme of Dickinson and Härke.

In the four recently published cemeteries, shields were found with about 10% of all burials, probably about 20% of all male burials.

Dickinson and Härke (1992) distinguished eight shield boss forms (Groups 1-8) and noted that Swanton's spear typology correlates well with their scheme.

From her own work on the burials of the Conversion Period, Geake has suggested that bosses of Groups 3, 6 and 7 could go on longer into the 7th century than argued by Dickinson and Härke and sees 3 and 6 as 'transitional' between 6th century and Final Phase types (Geake 1997, 67).

Shield boss types: dating (Dickinson and Härke 1992; Geake 1997)

Grp	
1	up to the end of 6th
2	?6th
3	6th-7th, mostly mid-late 6th (Geake: into the 7th c)
4	early-late 6th
5	?
6	late 6th/early 7th (Geake: well into the 7th c)
7	early 7th (Geake: mid-late 7th c)
8	late 6th /early 7th

Spears
Swanton's typology (1973; 1974) was followed, with the refinements suggested by Dickinson (1976, 291-327), Dickinson and Härke (1992), and Geake (1997), although assignment of corroded and broken objects to types with any confidence is difficult and dating therefore correspondingly uncertain. Generally, some 20%-25% of burials in the four cemeteries were furnished with a spear, possibly a large proportion of all the adult males. (Of the spears found in the four cemeteries studies by the writer, most could not be identified to type or dated more closely than the 5th/6th centuries).

Knives
Knives are one of the commonest types of object found in Anglo-Saxon graves, buried with males and females, and are classified following Evison (1987, 113-16) into six types (Fig. 3).

It was not always easy to assign them to any particular type, because of wear, broken edges and corrosion, and because of the fact that some types cover most of the early Anglo-Saxon period. There is no diagnostically early, i.e. 5th-century type, but Types 4 and 5 appear to be 'late' in the period; Type 4 seems to begin in the early 7th century and Type 5 runs from the late 6th century onwards.

[Knives were not examined to identify the material of the handle or sheath, although mineral-preserved leather or hide sheaths and horn handles were recognised at Spong Hill].

Girdle-hangers and keys
Besides the brooches and other dress accessories, females were often buried with objects at the waist, suspended from a belt or contained within a bag, These girdle groups often included a knife and girdle hangers and/or keys.

Although a characteristic of women's graves in 'Anglian' areas, girdle-hangers are not particularly common objects. They are usually found in pairs at the waist, more often on the left side, presumably as they might be in life. In Anglian areas, such 'keys' may reflect married status, as 'mistress of the house' or keeper of the marital 'treasure', a signal of status as wives or hosts, or even have some sexual connotation (Evison 1987, 117-8; Hawkes 1973, 195-6; Hirst 1985, 87-8; Meaney 1981, 178-81). Bronze girdle-hangers were apparently non-functional objects, but iron keys seem to be functional.

As to end date, keys were in use possibly later than girdle-hangers, since at Hadleigh Road, Ipswich, keys but no girdle-hangers (or wrist clasps, cruciform or small-long brooches), were found (Ozanne 1963) and seen in the earlier Phase (i.e. Migration Period) at Barrington (Malim and Hines 1998, 274-5).

Elaborate vessels: the iron-bound tub
Vessels are frequently the only 'grave-goods' proper deposited with a burial and may therefore have been particularly significant, providing a context and accompaniment to 'dressed burial'. There was, perhaps, a greater degree of choice as to both the inclusion of a vessel and what sort of vessel was chosen, although one could suggest that all of them were connected primarily with eating and drinking, possibly in some intimate or formal context. Eating may have had a very specific social significance for certain groups and needed to be marked as part of social identity. At one extreme, the pot may imply no

more than a participant at the family table whilst the more elaborate vessels may indicate status or role as host: one who gave or provided food.

Large metal-bound tubs appear in graves later in the 6th century (perhaps as early as the mid-6th century: East 1983). Wooden buckets with bronze fittings seem to have been status objects, usually found with men, though occasionally females, and in well-equipped burials, including high-status burials such as Taplow and Broomfield. In either case, they are found in sex-specific burials.

Buckets and tubs were made individually and lack a general typology (Dickinson 1976, 362-72; Welch 1983, 149-51). Although called 'buckets', these objects were often quite small, about 100-150mm in height and diameter, and therefore may have been personal items of drinking equipment, rather than large-size containers. Their exact function is uncertain, although some connection with drinking and feasting seems likely, and may signal some connection with the drinking-hall, as host or guest (cf. Werner 1992), and their occurrence with high status objects points to their likely social significance.

In date, the large iron-bound tubs are usually thought to be late, i.e. late 6th –7th centuries, as seems to be borne out by the cases which can be assigned to a phase.

The special pieces

In this small collection of objects, mostly knives, few objects stand out as special or significant, the exceptions being:

Grave ?	Context 13033	?F	Iron-bound tub
Grave 13046	Context 13045	M	Shield
Grave 13125	Context 13124	F	Chatelaine?
Grave 13166	Context 13159	M	Spear

Summary table

The table presents a summary of the iron objects from the graves, with grave and context numbers for reference.

Grave ?	Context 13033	F?	Iron-bound tub
Grave 13039	Context 13040	F	Knife
Grave 13046	Context 13045	M	2 knives, tweezers, buckle, shield
Grave 13070	Context 13069	?	Knife
Grave 13077	Context 13093,13104	F	2 knives, point.
Grave 13116	Context 13115	?	Knife/steel
Grave 13119	Context 13118	F	Knife
Grave 13125	Context 13124	F	Knife with chatelaine?
Grave 13135	Context 13134, 13293	?	Knife, buckle etc
Grave 13166	Context 13159	M	Spear, knife, tool
Grave 13172	Context 13171	F	Knife, buckle
Grave 13277	Context 13278	?	Knife
Grave 13284	Context 13285	F	knife

Statement of potential

The potential of this small group, typical of burials of the period, is somewhat limited by its size and by the unexceptional nature of the objects, some of whose identity remains uncertain. The knives may be compared to knives from other East Anglian cemeteries recently studied by the writer (unpublished) where the size range of knives in use seems to be locally fixed. The tub is an unusual vessel but may be compared to vessels from Morning Thorpe locally, and is a welcome addition to the corpus of such vessels. The tub will need to be carefully 'reconstructed' from the surviving parts and the field photographs and drawings.

Mostly, these objects will confirm the dating gained from the brooches and other more distinctive objects.

Cleaning and Conservation

Further work on this material should include manual cleaning of objects still obscured by sand and soil, in particular, the shield boss, so as to be able to draw them. As noted below, drawing will rest largely upon the X-ray records.

Illustration
All objects will need to be drawn, but using the X-ray photographs in the main. The shield boss will need cleaning to allow its profile to be recorded. Drawings may remain mostly as outlines/sections, although where textile remains are present these will need some record.

Recommendations
Conservation/cleaning?
'Reconstruction' of tub
Identify/catalogue
Illustration
Research/report writing

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Appendix A: Catalogue

Context 13033 found on surface.
70456. Curved bars, fragment of ?rim, fragment of suspension plate and rivet.

Remains of ironbound tub.
70545. Curved bars, in pairs and singly, part of iron-bound tub?

Context 13040 Grave 13039
70462. Iron knife, length 120mm. Evison type 1 or 2?

Context 13045 Grave 13046
70471. Iron tweezers. Length 38mm.
70472 (1) iron bar, length 28mm. Encased in remains of textile. (2) iron ring/buckle, in textile. (3) fragment of iron sheet. (4) fragment of iron sheet.
70473. Iron knife, length 180mm. Evison type 1?
70473. Iron knife, length 105mm. Evison type 1?
70461. Shield boss, fragmentary. D&H group 1 or 2.
??two fragments of iron from soil block. Possibly rivet.

Context 13069 Grave 13070
70474. Iron knife, length 105mm. Evison type 1?

Context 13093 Grave 13077
71458 Iron point, length 13mm. From soil block.

Context 13104 Grave 13077
70486. Iron knife, length 95mm +. Evison type 1?
70487. Iron knife, length 105mm. Evison type 1.

Context 13115 Grave 13116
70489. Iron knife/steel? 70mm +.

Context 13118 Grave 13119
70490 Iron knife, c.110mm. Type 2?

Context 13124 Grave 13125
70512. Possible chatelaine. (1) Iron knife, length 130mm. Evison type 3? (2) iron ring, 30mm diameter. (3) Iron
ring, fragment, c.55mm diameter. (4) iron bar, curved; length c.30mm. (5) Iron bar, fragment, length 65mm, part of (5)? (5) Iron Hook, possibly part of key. Length 130mm.
71468. (1) iron rivet, from ?comb, length 10mm. (2) iron nail? Length 13mm, from soil block.

Context 13134 Grave 13135
Context 13293 Grave 13135
70507 (1) Iron ?ring, fragment, encased in remains of textile. (2) iron object, encased in remains of textile.
70508 (1) iron bar, encased in remains of textile. (2) iron bar, part of (3)? (3) Iron loop.

70509. Iron knife, length 125mm. Evison type 1?

Context 13159 Grave 13166
70518. Spear head, 280mm. Swanton C3 or C4
70519. Tool/ spearhead, fragment of socket, with remains of wood shaft.
70520. Iron knife, length 110mm. Evison type 1?

70521
70522

Context 13171 Grave 13172
70524. (1) Iron knife, length 125mm. Evison type 2?
(2) Iron loop with three small fragments iron. Buckle?

Context 13278 Grave 13277
70530. Iron knife, length 11mm. Evison type 1?

Context 13285 Grave 13284
70541. Iron knife, length 145mm. Evison type 3?

Context 13292
72004. Fragments of leather.

72504
Iron point, c.40mm. Missing

7001
Fragments of ?iron. Missing.

136-130
Iron sheet fragment. Missing.

ANGLO-SAXON DRESS ACCESSORIES, TEXTILES AND COSTUME ASSESSMENT

Anglo-Saxon Dress Accessories, Textiles and Costume Assessment

By Penelope Rogers

Introduction
This assessment is concerned with finds from the Anglo-Saxon cemetery, Site 13/202 (NHER 37622 TTL), in the parish of Tittleshall in Norfolk.

It covers three aspects of research:

* typology and dating of metal dress accessories, including brooches, pins, buckles and clasps
* identification of the textiles preserved in association with metalwork
* an analysis of the evidence for the clothing styles on the bodies.

Documentation concerning the site, the graves (including grave plans) and the finds (including X-rays) has been provided by Network Archaeology and their sub-contractors, for the purposes of the assessment.

The material has proved to represent a typical range of East Anglian finds of the late 5th and 6th centuries, but with some interesting variants, including an unusual form of great square-headed brooch. There are also two brooches which probably originated in the Saxon region.

During the assessment, provisional dates have been given to graves; significant items have been identified; and a research programme which will take the full range of material through to publication has been outlined.

Quantity of Material
The material provided for assessment may be divided into objects from sealed burials and objects from the sub-soil in the vicinity of the graves. From graves there are 16 brooches; four double pairs of sleeve clasps and one pair on its own (i.e. nine pairs altogether); three buckles and other belt fittings; two pins; and two pendants. From the sub-soil there are two brooches, of which one is Iron Age, and fragments of a third which joins on to one of the brooches in a grave; fragments of two sleeve clasps; and one Roman finger ring. This represents 33 items for study, of which 30 belong to the early Anglo-Saxon period.

Some other pieces of metalwork were included because they incorporated textile remains, making, altogether, 37 items with mineral-preserved textile. There was often more than one textile per item, making roughly 60 textiles for study. Experience shows that a certain number of extra items are likely to turn up during conservation of the ironwork, so that the final total may be in the region of 70 textiles.

There were 24 inhumations in the cemetery, but only 15 of these (mainly adult women) have useful evidence for costume, in the form of garment fasteners, necklaces, or textiles.

The 388+ beads, mostly from seven graves, have been examined separately by Birte Brugmann. Cross-reference will be made to her work within the costume research.

Date, provenance, contamination
The cemetery is in Phase 11 of the 13/202 site, representing '[Anglo-] Saxon activity'. It is thought to be complete, although some cremation burials may have been ploughed out.

Dates for the Anglo-Saxon metal garment accessories have been added to the attached table. These show a date-range beginning in the late 5th century and ending shortly after the mid 6th century (AD 560/570). Two graves with no brooches or clasps have been dated from beads alone to c.550-600 (Grave 13172) and c.580-650 (Grave 13284), thus extending the cemetery into the late 6th or early 7th century. The dateable graves with garment accessories therefore cover 100-150 years. This needs to be checked against the evidence of the iron weapons and knives.

Most of the material comes from sealed graves, but in a few cases there has been some disturbance. In Grave 13282, for example, part of the rim of a Saxon applied brooch (originally identified as a 'bracelet') was found in its original position on the body, but it proved to fit exactly the rim of applied brooch sf70457 recovered from the colluvium sealing the grave, context 13033.

Three items appear to be residual from earlier periods. The finger ring, sf 70453 from 13033, has been identified as Roman by Kevin Leahy, Scunthorpe Museum. A pin from a bow brooch, sf 70548, also from 13033, is comparable with a number of Late Iron Age (1st century BC) examples from other sites. A complete bow brooch, sf 70488, from Grave 13101, is Romano-British. This last came from the base of the grave, at the edge of the grave cut, and was described by the excavators as 'possibly displaced from earlier grave'. This matter should be examined further; because Romano-British bow brooches do sometimes appear as garment fasteners on Early Anglo-Saxon dress.

Range of material
The Anglo-Saxon dress accessories include:

- a great square-headed brooch of hybrid form, closest to Hines XXI;
- seven annular brooches, mostly of Anglian flat narrow-banded type (Hirst IV),
- but in one instance a Saxon flat wide-banded type (Hirst III);
- a penannular brooch of uncertain date (sub-Roman or early Anglo-Saxon);
- three cruciform brooches of various types (see list);
- a cross-potent small-long brooch;
- a curious small square-headed brooch with a horse's head foot like a cruciform;
- an applied brooch of Saxon origin
- sleeve clasps of Hines types B7, B12, B13a and b, B20;
- a spangle-headed pin (without the spangle) and an iron coil-headed pin;
- two probable pendants/necklace fittings, one of which is a pierced coin;
- three small buckles, one iron and two copper-alloy;

The textiles, on a preliminary examination, include the usual range of Anglo-Saxon tabbies and twills, with at least one example of 2/1 twill and one of tabby repp. Some appear to be well enough preserved to allow fibre identification (wool or linen) but none is large enough to allow dye analysis.

Grave plans show the objects to be mostly in the usual positions for Anglian clothing, although some of the children's graves are anomalous.

Preservation and bias
There is an inevitable bias towards women's clothing, because women wore more brooches and clasps and these tend to have the best preserved textiles. Nevertheless, there is some useful evidence from two graves with male gender accessories (although not necessarily male by biology) and four child burials.

Means of collecting data
Some of the material will need to be studied before conservation, some after conservation, and some both before and after. Guidance for the conservator on this point has been added to the attached table. This will mean that objects will need to be transported between Norwich and York several times, although every attempt will be made to keep this to a minimum.

The preliminary collection of data on brooches and textiles will be by low-power microscopy, making use of X-rays.

The metal artefacts will be classified and dated by reference to standard works (see bibliography) combined with published studies of cemeteries in the region.

Identification of fibres and other organics will be by high-power (x 100-x 640 magnification) transmitted-light microscopy, using a polarising analyser.

XRF analysis of metal objects will aim (i) to investigate technological details such as plating and (ii) the alloys used in the main brooch types for comparison with C. Mortimer's research on other cemeteries. It will be carried out by Phil Clogg, University of Durham. 20 items have been itemised for XRF in the attached table and an allowance has been made for another four to answer questions which may arise during research.

Costume will be analysed by (i) dividing the graves into male, female and child/juvenile, (ii) reviewing the lay-outs of graves for each group and then (iii) adding in the brooch and textile evidence; (iv) the results are then compared with those for other cemeteries.

It will be important to exchange ideas on dating of individual graves with the artefact researcher responsible for weapons and knives (and any other specialists involved). This should be allowed for in the project timetable. The dating from the beads by Birte Brugmann has already been incorporated.

The three Iron Age and Roman items are probably best dealt with by an artefact researcher with specialist knowledge of these periods. We can recommend Dr Hilary Cool, Nottingham, for this work.

Statement of potential
Some of the items are of national interest to the archaeological community and it is important that they are fully researched and published.

The most significant is the great square-headed brooch, sf 70453 from Grave 13039. No two great square-headed brooches are ever alike, but this one has particularly interesting features, including two pairs of inward-facing bird heads, a feature commonly seen in metalwork from the Cambridgeshire region, and a flared foot which is reminiscent of the elaborate 'florid' cruciform brooches of the same period. If a 'signature' image is needed to advertise the site, this would be a good candidate.

There is also a curious small hybrid brooch from a child's grave, Grave 13097, sf 70479, which has the square head seen in panelled small-long brooches and the horse's head foot which is standard in cruciform brooches.

The artefacts have the capacity to feed information into national studies of individual artefact-types and also, as a collection, allow comparison with collections from other cemeteries of Norfolk and Cambridgeshire. Research of the comparanda in this way will help clarify the position of the BKL02/202 cemetery in terms of date, social status and cultural connections.

The textiles will feed into the author's national survey of textiles and clothing from Anglo-Saxon cemeteries (planned to run January 2004-March 2005) and will in turn receive feedback from this project.

When the evidence of the brooches, clasps, pins and beads is allied to the grave plans and the textiles, it should be possible to reconstruct the clothing in at least some of the women's graves. This, too, will contribute to the author's survey and allow the general features of the BKL02/202 costume to be placed in national context.

Full publication of the material is recommended.

The research outlined will meet the following aims of the Project Design's Research Agenda:

General Objectives, 4, 6, 7, and 8, by exploring the material culture (4), identifying residual items (6), considering the bias in survival of material (7) and disseminating the products of the research in a publication (8);

Specific Objectives 4, 13 and 14, by identifying the small number of Iron Age and Romano-British finds, one of which is in an Anglo-Saxon grave (4), by studying costume evidence as an indicator of date, status and cultural affinities (13) and by comparing the results of the study with those of other cemeteries of the region (14).

Conservation
Recommendations and requests for investigative work by the conservator have been entered in Appendix A1 and A2, item-by-item.

Collaboration with the conservator will be necessary throughout the project.

It is requested that the great square-headed brooch, sf 70453, be given priority. The organics on the front of the brooch have already been recorded and the conservator can begin with this item as soon as the funding for the project has been obtained.

Publication

Publication of the site through East Anglian Archaeology would be appropriate. The EAA editor, Jenny Glazebrook, is experienced in the publication of Anglo-Saxon cemeteries and would probably be able to give advice at an early stage.

The author would offer to contribute two separate texts on (i) the brooches, clasps, pins etc, which would incorporate any technical reports by the conservator and XRF analyst, (ii) costume, incorporating a textile report. Catalogue entries for publication in the grave inventory would also be provided.

Illustrations should include:

(i) approximately eight professional photographs, a further ten digital close-ups (to be discussed with the conservator), three or four X-rays,
(ii) small-find drawings of most objects for the grave catalogues
(iii) weave diagrams
(iv) three diagrams of brooch development (to be done through our own illustrator),
(v) motifs of the square-headed brooch rendered in black-and-white (through our own illustrator)
(vi) 15 two-colour grave plans to a standard format (our own illustrator),

We would use Rob Oldfield (Rob Oldfield Design) for (iv), (v) and (vi) because he is currently working with us on similar material and is based here in York.

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Appendix A1: Preliminary catalogue of grave-related items, including recommendations for conservation and XRF analysis

Grave	Skeleton (s)	Fill	Special Find	Material Type	Prov. Period	Count	Weight	PWR provisional dates	PWR identification	Requests for conservation	XRF analysis	Comments
13039	(F)/ (M) = gender of grave goods Female (F) 30-40							mid 6th = c.540-560/70 mid 6th	BB = bead dates from B. Brugmann		PWR to arrange this	
13039	13041	13040	70453					mid 6th	Square-headed brooch, hybrid type, closest Hines XXI	Important find - see separate sheet - give priority	XRF x 3	Square- headed brooch with textile impressions front and rear
13039	13041	13040	70454	Copper alloy object	Saxon	4	21	6th	Annular brooch, flat narrow-banded, Leeds F/Hirst IV	Clean one patch of decoration (crossways lines) on front. Leave textile	XRF - greyish	Annular brooch with mineralised textile remains.
13039	13041	13040	70456	Imported stone	Saxon	19	4		BB = Bead Group A2 (AD 480-570)			Amber beads.
13039	13041	13040	70456	Glass	Saxon	12	5					Glass beads.
13039	13041	13040	70458	Copper alloy object	Saxon	1	18	6th	Annular brooch matching 70454	Clean one patch of decoration (crossways lines) on front. Leave textile		Annular brooch with mineralised textile remains.
13039	13041	13040	70459	Copper alloy object	Saxon	1	<1		Probably leaf-shaped pendant (from necklace)	No work necessary		Strap end.
13039	13041	13040	70462	Iron object	Saxon	7	30					Knife?
13039	13041	13040	70462	Copper alloy object	Saxon	3	4		Belt fittings	No work necessary		Knife sheath fittings?
13039	13041	13040	70469	Copper alloy object	Saxon	7	5	late 5th - mid 6th	Sleeve clasps, Hines B7 (most common type)	PWR to record organics first. Pair of clasps (male & female) - fit frags together	XRF x 1	Wrist clasps.
13039	13041	13040	70470	Knapped flint	Undetermin	1	26					Possibly natural.

Grave	Skeleton (s)	Fill	Special Find	Material Type	Prov. Period	Count	Weight	PWR provisional dates	PWR identification	Requests for conservation	XRF analysis	Comments
					ed							
13039	13041	13040	72000	Textile	Saxon	51	12			No work necessary		Textile and poss. leather remains recovered from sample <71450>.
13046	? (M) 55+											
13046	13044	13045	70460	Copper alloy object	Saxon	1	3		Tweezers. Someone else to study.			Tweezers.
13046	13044	13045	70461	Iron object	Saxon	18+	975					Shield boss. Extremely delicate.
13046	13044	13045	70471	Iron object	Saxon	1	6					
13046	13044	13045	70472	Textile	Saxon	6	59					Iron with mineralised textile.
13046	13044	13045	70473	Iron object	Saxon	5	104					Knife blade.
13051	child 6-7 (F)							early-mid 6th				
13051	13301	13052	70466	Copper alloy object	Saxon	1	8	6th	Annular brooch, flat narrow-banded, Leed F/Hiirst IV	PWR to record textile first. Clean to reveal decoration vis on NX6177*	XRF x 1	Annular brooch.
13051	13301	13052	70467	Copper alloy object	Saxon	2	9	6th	Annular brooch, flat wide-banded, Leeds F/Hirst III	PWR to record textile first. Clean to reveal decoration vis on NX6173*	XRF x 1	Annular brooch.
13051	13301	13052	70468	Copper alloy object	Saxon	1	2		Pierced coin, prob part of necklace (coin not here)	PWR would like to see this object at some stage		
13051	13301	13052	72002	Textile	Saxon	4	1		Tabby repp, esp common mid 6th			Textile remains recovered from sample <71453>.
										70466/67** Can		

Grave	Skeleton (s)	Fill	Special Find	Material Type	Prov. Period	Count	Weight	PWR provisional dates	PWR identification	Requests for conservation	XRF analysis	Comments
										you tell whether broken pin attachments occurred pre-burial?		
13067	no bones?											
13067	n/a	13076	70475	Pottery	Saxon	6	494					Almost complete pot.
13070	? (?) adult											
13070	13073	13069	70474	Iron object	Saxon	4	17					Knife blade.
13077	adult (F)							early-mid 6th				
13077	13096	13104	70480	Copper alloy object	Saxon	1	9	???	Penannular brooch. Dating source of debate.	Clean for photography	XRF x 1	Annular brooch.
13077	13096	13104	70484	Copper alloy object	Saxon	1	34	early-mid 6th	Small cruciform, integral devloped knobs, shovel foot, Hines Bb?	PWR to record textile first. Clean front for photo. Re-X-ray to show pin attachment	XRF x 1	Square headed brooch, with iron pin and mineralised textile remains.
13077	13096	13104	70485	Copper alloy object	Saxon	1	9	6th	Annular brooch, flat narrow banded, Leeds F/Hirst IV	PWR to record textile first. Clean a patch of ?ornament (crossways lines)		Annular brooch.
13077	13096	13104	70486	Iron object	Saxon	2	23					Knife blade.
13077	13096	13104	70487	Iron object	Saxon	1	19					Knife blade.
13085	child 6-7											
13085	13084	13083	70476	Copper alloy object	Saxon	14	58		Possibly a scabbard mouth? Not a dress fitting	PWR to record textile before conservation		Belt fittings with poss. preserved leather and iron object.

Grave	Skeleton (s)	Fill	Special Find	Material Type	Prov. Period	Count	Weight	PWR provisional dates	PWR identification	Requests for conservation	XRF analysis	Comments
13085	13084	13083	70476	Copper alloy object	Saxon	1	<1					Recovered from sample <71456>.
13085	13084	13083	72005	Textile	Undetermined	1	<1					Mineralised textile recovered from sample <71455>.
13092	*no skel sheets*											
13092	13091	13090	70477	VOID								VOID
13092	13091	13090	70478	Pottery	Saxon	48	646					Almost complete pot.
13097	child 7-8 (F)							early-mid 6th				
13097	13294	13098	70479	Copper alloy object	Saxon	1	31	early-mid 6th	Small-long, square notched head and horse-head foot	PWR record pre-cons. Clean front for photo. Decoration on headplate?Re-X-ray pin attachment. Check not two different brooches welded together.	XRF x 1	Square headed brooch, with iron pin and mineralised textile remains.
13101	female? (F) 30-40											
13101	13099	13100	70483	Iron object								
13101	13099	13100	70488	Copper alloy object	Saxon	1	16	Roman	T-shaped Romano-British bow brooch	PWR to record pre-cons. Someone else to study		Brooch.
13116	mature adult											
13116	13117	13115	70489	Iron object	Saxon	3	17					
13119	male (F) adult							end 5th - early				

Grave	Skeleton (s)	Fill	Special Find	Material Type	Prov. Period	Count	Weight	PWR provisional dates	PWR identification	Requests for conservation	XRF analysis	Comments
	(7)							6th				
13119	13120	13118	70490	Iron object	Saxon	2	12					Knife blade.
13119	13120	13118	70491	Copper alloy object	Saxon	1	3		applied bar from sleeve clasp 70492 or 70493	70491,70492,70493,70495 are all part of the same pair. 70494 is different	XRF x2 (bar &clasp)	
13119	13120	13118	70492	Copper alloy object	Saxon	1	2	end 5th - 6th	Sleeve clasp, Hines B13a (male)	PWR record textile pre-conservation. Investigate bright area - solder?		Clasp frag.
13119	13120	13118	70493	Copper alloy object	Saxon	1	2	end 5th - 6th	Sleeve clasp, Hines B13a (female)	Investigate whether bright area on X-ray is solder or plating		Clasp frag.
13119	13120	13118	70494	Copper alloy object	Saxon	1	6	end 5th - 6th	Sleeve clasp, Hines B20 (male)	PWR record textile pre-conservation	XRF x 1	Clasp frag.
13119	13120	13118	70495	Copper alloy object	Saxon	1	3		applied bar from sleeve clasp 70492 or 70493			
13119	13120	13118	70502	Glass	Saxon	8	15		BB Bead Group A1 (450-530)			Glass beads.
13119	13120	13118	70502	Imported stone	Saxon	2	2					Amber beads.
13125 A	?male 30-40							early-mid 6th				
13125	13126,13132, Plan 46	13124	70496	Copper alloy object	Saxon	8	2		fragments probably of bars from sleeve clasps			
13125	13126,13132, Plan 46	13124	70496	Copper alloy object	Saxon	5	<1					Recovered from sample <71468>.
13125	13126,13132, Plan 46	13124	70497	Pottery	Saxon	68	803					Decorated pot.
13125	?female (F) 40-							early-mid 6th				

Grave	Skeleton (s)	Fill	Special Find	Material Type	Prov. Period	Count	Weight	PWR provisional dates	PWR Identification	Requests for conservation	XRF analysis	Comments
B	50											
13125	13133,13132, Plan 49	13124	70498	Glass	Saxon	3	<1		BB Bead Group A2 (480-570)			Glass bead, burnt?, recovered from sample <71467>.
13125	13133,13132, Plan 49	13124	70498	Imported stone	Saxon	50	29					Amber beads.
13125	13133,13132, Plan 49	13124	70498	Glass	Saxon	13	9					Glass beads.
13125	13133,13132, Plan 49	13124	70498	Imported stone	Saxon	2	3					Amber beads, recovered from sample <71492>.
13125	13133,13132, Plan 49	13124	70498	Imported stone	Saxon	54	10					Amber beads, recovered from sample <71468>.
13125	13133,13132, Plan 49	13124	70498	Glass	Saxon	12	5					Glass beads, recovered from sample <71468>.
13125	13133,13132, Plan 49	13124	70498	Worked stone	Saxon	1	<1					Poss. bead, recovered from sample <71468>. Appears to be made of ironstone.
13125	13133,13132, Plan 49	13124	70499	Silver object	Saxon	2	3					Coin, possibly solid silver.
13125		13124	70501	Copper alloy object	Saxon	1	13	1st half of 6th	Spangle-headed pin (spangle absent)	No work needed		Pin.
13125		13124	70505	Copper alloy object	Saxon	5	24	6th	Annular, flat narrow-banded, punched, Leeds F/Hirst IV	PWR to record pre-cons. Clean part of front to reveal decoration		Annular brooch with iron pin and mineralised textile remains.
13125		13124	70506	Copper alloy object	Saxon	5	20	6th	Annular brooch, flat narrow-banded, plain, Leeds F/Hirst IV	PWR to record pre-cons. Clean part of front to show plain		Annular brooch with iron pin and mineralised textile remains.
13125		13124	70512	Iron object	Saxon	10	188					

Grave	Skeleton (s)	Fill	Special Find	Material Type	Prov. Period	Count	Weight	PWR provisional dates	PWR identification	Requests for conservation	XRF analysis	Comments
13125		13124	70513	Glass	Saxon	4	2					Glass beads.
13125		13124	70513	Imported stone	Saxon	21	9					Amber beads.
13125		13124	70514	Pottery	Saxon	39	14					
13125 C	no bones?							end 5th - 6th				
13125	Plan 59	13124	70515	Imported stone	Saxon	42	24		BB Bead Group A2 (480-570)			Amber beads.
13125	Plan 59	13124	70515	Glass	Saxon	18	24					Glass beads.
13125	Plan 59	13124	70516	Copper alloy object	Saxon	31	15	end 5th - 6th	Sleeve clasps, fragmentary, prob Hines B13a	PWR to record pre-cons. Clean to reveal construction.		Wrist clasps with mineralised textile remains.
13125	Plan 59	13124	70517	Iron object	Saxon	1	8		D-shaped buckle	Clean to reveal organics, before PWR examines. Is there a belt plate?		Possible textile remains.
13125	Plan 59	13124	70528	Glass	Saxon	1	2					Glass bead.
13125	Plan 59	13124	70528	Imported stone	Saxon	5	3					Amber beads.
13135	? (F) 30-40							early-mid 6th				
13135	13134	13293	70500		Saxon	9	88	early-mid 6th	Cruciform brooch, Aberg III / Leeds IVb / Mortimer C2	PWR pre-cons. Clean front for photo, zigzag edge of wings. Clean patch back for XRF	XRF x 1	Square headed brooch, with iron pin and mineralised textile remains.
13135	13134	13293	70503	Imported stone	Saxon	2	3		BB Bead Group A2 (480-570)			Amber beads.
13135	13134	13293	70504	Glass	Saxon	1	<1					Glass bead.
13135	13134	13293	70507	Iron object	Saxon	2	6					
13135	13134	13293	70508	Iron object	Saxon	3	9					
13135	13134	13293	70509	Iron object	Saxon	1	52					Knife blade
13135	13134	13293	70510	Copper alloy object	Saxon	2	10	end 5th -mid 6th	Sleeve clasps Hines B12	Clean for photo	XRF x 1	Wrist clasps.
13135	13134	13293	70511	Copper alloy object	Saxon	22	17	end 5th -mid 6th	Sleeve clasps Hines B12,	Tidy up organics before		Wrist clasps with mineralised textile

Grave	Skeleton (s)	Fill	Special Find	Material Type	Prov. Period	Count	Weight	PWR provisional dates	PWR identification	Requests for conservation	XRF analysis	Comments
									matching 70510	PWR investigates (possibly not textile)		remains.
13135			72001						Organics = decayed bone and roots			
13166	female? (M) 55+											
13166	13167	13159	70518	Iron object	Saxon	1	178					Spear head.
13166	13167	13159	70519	Iron object	Saxon	1	31					Tool haft with ?mineralised wood remains.
13166	13167	13159	70520	Iron object	Saxon	1	22					Knife blade.
13166	13167	13159	70521	Iron object	Saxon	1	17		Pin, coil-headed	Investigate cross-section of shaft		Pin.
13166	13167	13159	70522	Silver object	Saxon	2	3		Shield mount?	PWR to record pre-conservation		Silver plated copper alloy coins.
13166	13167	13159	70522	Copper alloy object	Saxon	1	2		Shield mount?			Coin?
13166	13167	13159	70522	Iron object	Saxon	31	7		Shield mount?			Some pieces with possible mineralised textile.
13166	13167	13159	70522	Leather object	Saxon	7	3					Possible leather remains.
13172	? (F) adult							mid 6th-early 7th				
13172	13173	13171	70523	Glass	Saxon	1	<1		BB Bead Group B1 (550-600)			Glass bead.
13172	13173	13171	70523.1	Imported stone	Saxon	1	<1					Amber bead.
13172	13173	13171	70523.2	Glass	Saxon	1	<1					Glass bead.
13172	13173	13171	70523.3	Glass	Saxon	1	<1					Glass bead.
13172	13173	13171	70523.4	Glass	Saxon	1	<1					Glass bead.

Grave	Skeleton (s)	Fill	Special Find	Material Type	Prov. Period	Count	Weight	PWR provisional dates	PWR identification	Requests for conservation	XRF analysis	Comments
13172	13173	13171	70523.5	Imported stone	Saxon	1	<1					Amber bead.
13172	13173	13171	70523.6	Imported stone	Saxon	1	<1					Amber bead.
13172	13173	13171	70523.7	Glass	Saxon	1	<1					Glass bead.
13172	13173	13171	70523.8	Glass	Saxon	1	<1					Glass bead.
13172	13173	13171	70523.9	Imported stone	Saxon	1	<1					Amber bead.
13172	13173	13171	70524	Iron object	Saxon	7	26					Knife blade.
13172	13173	13171	70525	Copper alloy object	Saxon	3	2		Fragments of perforated cu/a fitting	No work needed		Clasp frags.
13172	13173	13171	72006	Textile	Undetermined	1	<1					Mineralised textile recovered from sample <71475>.
13277	juvenile 12											
13277	13279	13278	70529	Pottery	Bronze Age	21	103					
13277	13279	13278	70530	Iron object	Saxon	1	15	knife not here				Knife blade.
13282	female (F) 30-35							late 5th-early 6th				
13282	13280	13281	70531	Copper alloy object	Saxon	3	<1					Recovered from sample <71488>.
13282	13280	13281	70531	Copper alloy object	Saxon	1	52	late 5th - 1st half 6th	Cruciform brooch, Aberg II / Mortimer B2L	PWR record pre-cons. Re-X-ray to show pin attachment (hinge). Clean front for photo	XRF x 1	Square headed brooch, with iron pin and mineralised textile remains.
13282	13280	13281	70532	Imported stone	Saxon	22	6		BB Beads Group A1 (450-530)			Amber beads.
13282	13280	13281	70532	Glass	Saxon	48	19					Glass beads.
13282	13280	13281	70532	Copper alloy object	Saxon	1	<1		small fragment of cu/a			
13282	13280	13281	70533	Imported stone	Saxon	3	3					Amber beads.
13282	13280	13281	70533	Glass	Saxon	3	7					Glass beads.
13282	13280	13281	70534	Copper alloy object	Saxon	8	20	late 5th-early	Small-long	PWR record	XRF x 1	Square headed

Grave	Skeleton (s)	Fill	Special Find	Material Type	Prov. Period	Count	Weight	PWR provisional dates	PWR identification	Requests for conservation	XRF analysis	Comments
								6th	brooch, cross-potent with triangular foot	pre-cons. Re-X-ray to show pin attachment (hinge). Clean front for photo		brooch, with iron pin and mineralised textile remains.
13282	13280	13281	70535	Iron object	Saxon	3	66		Keys/latchlifters and suspension ring	PWR to record pre-conservation		With mineralised textile remains.
13282	13280	13281	70536	Copper alloy object	Saxon	2	1	late 5th-mid 6th	Collar from an applied disc brooch, joins sf70457	Reveal decoration on collar. Look for runes/decorative scratches on back of disc	XRF x 2	
13282	13280	13281	70537	Imported stone	Saxon	1	2					Amber bead.
13282	13280	13281	70537	Glass	Saxon	17	14					Glass beads.
13282	13280	13281	70538	Copper alloy object	Saxon	1	<1					Coin?
13282	13280	13281	72003	Glass	Saxon	5	2					Glass beads recovered from sample <71488>.
13282	13280	13281	72003	Imported stone	Saxon	4	2					Amber beads recovered from sample <71488>.
13284	? (F) adult							Later 6th to mid 7th				
13284	13286	13285	70539	Silver object	Saxon	7	3		BB Bead Group B2 (580-650)			Bead, silver plated ?ceramic core.
13284	13286	13285	70539	Imported stone	Saxon	3	3					Amber beads.
13284	13286	13285	70539	Imported stone	Saxon	1	2					Amber bead, recovered from sample <71489>.
13284	13286	13285	70539	Glass	Saxon	28	15					Glass beads.
13284	13286	13285	70540	Glass	Saxon	5	8					Glass beads.
13284	13286	13285	70541	Iron object	Saxon	1	53					Knife blade.
13288	? (F) adult							end of 5th -				

Grave	Skeleton (s)	Fill	Special Find	Material Type	Prov. Period	Count	Weight	PWR provisional dates	PWR identification	Requests for conservation	XRF analysis	Comments
								6th				
13288	13287	13292	70542	Copper alloy object	Saxon	2	4	end of 5th - 6th	Sleeve clasps, fragmentary, probably Hines 13a			Clasp frags.
13288	13287	13292	70543	Copper alloy object	Saxon	21	7	end of 5th - 6th	Sleeve clasps, probably Hines 13a, matching 70542	Is there evidence for a rivet in the hook part? Piece together bars if poss		Clasp frags. and associated organic remains.
13288	13287	13292	70544	Copper alloy object	Saxon	1	7		Buckle, small, kidney-shaped	Clean for photo		Brooch/buckle with iron pin.
13288	13287	13292	72001	Copper alloy object	Undetermined	6	1		Organics			Wood? with copper alloy frags.
13288	13287	13292	72004	Leather object	Undetermined	4	2					Possible leather frags.

Appendix A2: Preliminary catalogue of non-grave related items, including recommendations for conservation and XRF analysis

Context No.	Context Type	Special Find No.	Material Type	PWR provisional dates	PWR identification	Requests for conservation	XRF analysis
13033	Colluvium	70451	Copper alloy object	6th	Large flat, narrow-banded annular brooch, Leeds F, Hirst IV		
13033	Colluvium	70452	Copper alloy object	Roman	Finger ring	Check bezel for incised motif	XRF x 1
13033	Colluvium	70457	Copper alloy object	5th-6th	Saxon applied disc brooch, fits sf 70536, from grave	PWR to record textile pre-conservation	
13033	Colluvium	70464	Copper alloy object	?	Fragment of cu/a plate		
13033	Colluvium	70482	Copper alloy object	5th-6th	Applied bar from an Anglo-Saxon sleeve clasp		
13033	Colluvium	70548	Copper alloy object	Iron Age	Pin and spring of Iron Age bow brooch, prob 1st C BC		
13032		70527	Copper alloy object	5th-6th	Fragments of sleeve clasps, thin plate, straight back, large bosses		

13045		70450	Copper alloy object	?5th-6th	Remains of tweezers		

ANGLO-SAXON BEAD REPORT

Anglo-Saxon Beads Report

By Birte Brugmann

Introduction
Note: This report is concerned with finds from the Anglo-Saxon cemetery, Site 13/202 (NHER 37622 TTL), in the parish of Tittleshall in Norfolk.

The Bacton to King's Lynn Gas Pipeline produced 388+ beads found in seven inhumation graves (13039, 13119, 13125, 1335, 13172, 13282, and 13284), in a pit (13200) and in the machined subsoil (13003). More than half of the beads were found in a single grave (13125 with 315+ beads). 58% of the beads are made of amber (225 beads), 41% of glass (159 beads), 1% of rock crystal (4 beads) and a single bead is made of a ((??)) core sheeted with silver.

According to N. Stoodley (1999, 35) associations of more than one bead in Anglo-Saxon graves suggest female use. This is confirmed by the skeletal evidence from Graves 13039, 13125 and 13282 but not by Grave 13119 with five beads found in the neck area of a skeleton identified as an adult male. The sleeve-clasps in the same grave suggest that this individual was buried either dressed as an individual of female gender or in some other form buried with female kit.

Grave 13125 contained the remains of three individuals, a probable female (13133), a probable male (13126) and an adult of undetermined sex (13132). The position of most of the beads suggests they were associated with the probable female (see below). The sex of the individuals from Graves 13172 and 13284 could not be determined but was probably female on the basis of the grave goods. The individuals in Graves 13039, 13135, 13172, 13282 and 13284 all died as adults, one of them at a mature age (Grave 13125).

Glass beads
The seven graves produced 159 glass beads, numbers in a single grave ranging from one bead in Grave 13135 to 77 beads in Grave 13282. Nineteen beads (11%) are decorated with applied trails and/or dots; all others are monochrome and made of translucent or opaque glass.

Almost half of the 159 glass beads (48%) are covered by a typology developed for a chronological framework of glass beads from Anglo-Saxon inhumation graves (Brugmann in press). The purpose of the study of a national sample of glass beads, including the Norfolk cemeteries at Spong Hill, Morning Thorpe and Bergh Apton, was to develop a selective typology based on attributes indicating related manufacture, and to use these types for a chronological study. If possible, types were defined to match existing type definitions of glass beads dated by contexts from continental graves because these types can link Anglo-Saxon and continental chronological frameworks. This approach led to a patchwork of type definitions based on manufacturing techniques and further defined by shape, size, colour or decorative pattern, largely depending on existing typologies from various sources. A systematic typology covering glass beads from Anglo-Saxon graves in general would have been beyond the scope of the project.

Table 1 provides a type series for the BKL 02 beads which follows the selection and definition of attributes as they were used for the typology in Brugmann (in press) and for the beads from Dover, Buckland II, Kent (Parfitt forthcoming), and Blacknall Field, Wilts. (Annable & Eagles forthcoming), with one exception. A differentiation between 'globular' and 'barrel-shaped' beads is not made to avoid inconsistencies. Beads are described as globular that could be argued to have a 'barrel-shaped' longitudinal cross section due to a large perforation. 'Barrel-shaped' beads with perforated sides marvered flat are described as 'globular, perforated sides marvered flat'.

Forty-three of the 159 glass beads (27%) are 'Blue' beads (Table 1.1) wound of translucent blue glass. 'Blue' beads are not datable as such but large numbers, such as the 34 beads in Grave 13282 are common in Glass Bead Group A1, the earliest of the groups defined on the basis of a national sample (Brugmann in press) and dated roughly to the second half of the 5th and the first half of the 6th century. In East Anglian graves large numbers of 'Blue' beads are often associated with 'Traffic Light' beads (Table 1.20) named after the combination of translucent green, opaque red and opaque yellow glass, usually green and yellow twisted or streaked trails applied to a body wound of red glass. The main distribution of 'Traffic Light beads' in East Anglia and the North (ibid. fig. 109) suggests that this glass bead type was made in this region. Grave 13282 did not produce any 'Traffic Light' beads but two beads of this type were found in Grave 13119 in combination with an opaque red bead.

The 'Blue' beads in Grave 13282 were associated with three short beads with translucent green 'wide' crossing trails (i.e. crossing three times; Table 1.33), and dots, a type which is not defined in Brugmann (in press) but has attributes which are common in bead type associations of Group A1 in Anglian England (but rarer in the Saxon West), and are in shape and mostly also colour combination different from the later imported type 'Koch 20' with wide crossing trails and dots (Brugmann in press). The only other bichrome beads in Grave 13282 are a white bead with red dots (Table 1.36) and a blue 'Mottled' bead with irregularly applied red and white dots (Table 1.13), a common bead type across early medieval Anglo-Saxon and Merovingian Europe and generally found with beads of Group A (ibid.)

All other glass beads from this grave are beads wound of monochrome opaque glass, red (Table 1.30), green (Table 1.26), yellow (Table 1.32), or white (Table 1.31) and seven beads made of dark glass that appears black (Table 1.24-25). These beads are mostly globular, or less carefully shaped and therefore not symmetrical, and a few of them have a ribbed cross section. Short to medium monochrome opaque beads are a common feature of Bead Group A1, adding to the typical character of the bead assemblage in Grave 13282. A cylindrical bead so carefully made of translucent green glass that it is not obvious whether it was wound or drawn (Table 1.18), is probably of Roman manufacture and an heirloom in this context.

Three graves, 13039, 13125 and 13135 produced bead assemblages with attributes of Glass Bead Group A2, introduced in the late 5th century and going out of fashion in the second half of the 6th century. Typical of this phase are so-called 'gold-in-glass' beads ('Segmented Constricted', Table 1.2) made of layers of drawn glass and constricted at the perforated sides. The name 'gold-in-glass' refers to the golden (or silver) hue to well-preserved beads and to the inclusion of gold in some but not all beads of this type (see Hirst 1985, 77 ff.). Beads of this type were already in use in Late Roman times, and it seems possible that some survived in particular in the Saxon West until a revived import made the type common in the 6th century. Finds of particularly small beads made of drawn glass and constricted at the perforated sides, but with a wider range of colours were also in use in late Roman times and seem to have survived in small numbers. A blue bead from Grave 13125 (Table 1.21) may be such a late Roman type. In the Anglian East and North, 'gold-in-glass' beads are, however, less common than in the Saxon West and seem to have been introduced to Anglian bead fashion only at a time that also saw the production of a related bead type drawn and constricted at the perforated sides, but cylindrical and made of blue glass ('Constricted Cylindrical', Table 1.3). A variant of these beads are cylindrical beads with or without a blue layer slightly constricted, but not enough to form globular segments ('Constricted Cylindrical beaded', Table 1.4).

Most of the 'Constricted' Segmented or Cylindrical beads were found in Grave 13125 containing the remains of three individuals. The 212+ glass, amber and rock crystal beads in this grave were retrieved in four main groups (SF 70498, 70513, 70515, 70528), the first one in four parts, three of them individual samples (71467, 71468, 71492). SF 70498, Sample 71468, SF 70513 and SF 70515 included 'Constricted' beads and were probably all part of the same bead assemblage associated with SK 13133, a probable female. The drawn 'constricted' beads were associated with wound monochrome opaque beads (green, red, yellow and white) and a few 'Blue' beads but also with a number of wound translucent beads (blue-green, green and a small blue 'Miniglob' found in large numbers at Blacknall Field, Wilts: Table 1.22,23,27; Brugmann in press; Annable & Eagles forthcoming). A 'Blue' bead (and five amber beads) found within a 100mm² area at the extreme head end of the grave (SF 70528) probably was part of the same assemblage because this bead has perforated sides marvered flat, a rare attribute with 'Blue' beads from Anglo-Saxon contexts (Brugmann in press), but also found with two 'Blue' beads from SF 70498.

The four polychrome beads from Grave 13125 include a translucent blue-green bead with a small piece of opaque white and blue-green twisted trail marvered into the surface (Table 1.38), and an opaque yellow bead with an applied spiral trail of red glass (Table 1.35). Of particular interest are two small beads with a main distribution in Norfolk, an opaque yellow cylindrical bead with an irregularly applied opaque red trail (Table 1.15) and a short white bead with one concave perforated side and an irregularly applied translucent blue trail (Table 1.14). These types have been found in association with beads of Group A2 at Morning Thorpe, Bergh Apton and Spong Hill. The only two beads in the national sample found outside Norfolk are from Lakenheath RAF, Eriswell, Suffolk (Brugmann in press Fig. 141). The finds of two such beads at a further Norfolk site support the evidence for two bead types mainly distributed and probably also made in Norfolk at a time when the Anglian production of 'Traffic Light' beads had ceased.

The fragments of green glass from Grave 13125, which may be burnt fragments of a translucent green glass bead was found with the leg bones of SK 13132 and are unlikely to be part of the bead assemblage from Grave 13125 associated with SK 13133.

The three beads from Grave 13135, two of them made of amber, include a 'Constricted' cylindrical bead that is of the same make as 'Constricted Segmented' beads and may originally have had a blue layer. The 28 beads from Grave 13039 include ten 'Constricted Segmented' beads combined with a single polychrome bead, white with a translucent meandering trail and red dots (Table 1.34). The 'Constricted' beads in the assemblages from Graves 13135 and 13039 suggest they are of the same Phase A2 as the beads from Grave 13125.

Grave 13172 produced a glass bead assemblage which includes a white and a yellow 'Cylindrical Pentagonal' bead with perforated sides marvered flat (Table 1.5), probably imported from the continent in the second half of the 6th or early 7th century as part of a new bead fashion that made use of opaque wound beads mostly white, yellow and red in colour (Bead Group B1). Most of the presumed imports have been found in Kent and East Anglia (Brugmann in press Fig. 67). The 'Cylindrical Pentagonal' beads from Grave 13172 were associated with a translucent yellow ribbed 'Melon' bead (Table 1.11) probably also imported from or via the continent but as part of a trade that moved fewer beads across the Channel and distributed them more evenly across Anglo-Saxon England (ibid. Fig. 78). These three beads were associated with three globular glass beads, an opaque yellow bead, an opaque red bead and a white bead with an irregularly applied opaque red trail (Table 1.37).

The glass bead group last in the sequence found at BKL 02 comes from Grave 13284. It includes a red 'Cylindrical Round' bead (Table 1.6) related in manufacture to the 'Cylindrical Pentagonal' beads in Grave 13172, and small red beads with white narrow crossing trails and white beads with translucent blue narrow crossing trails ('Koch 34'; Table 1.9), which were probably imported as part of the same, though partly later continental production as the 'Cylindrical' beads. Three beads with variations of these patterns (Table 1.10, 10a) are probably of related manufacture. An opaque red bead with opaque white circumferential trails close to the perforation and five dots on the equator is a rare find in Anglo-Saxon England and may be of the same manufacture as a type with the same colour combination and decorative pattern found in the South of Germany (Table 1.8; Koch 1997 Pl. 7, type 16.7).

The wound 'Segmented Globular' bead (Table 1.19) made of two opaque yellow segments was probably also imported from the continent as part of the same production and trade as the 'Cylindrical Pentagonal' and 'Koch 34' beads (Brugmann in press). The 'Koch 34' beads and the 'Segmented Globular' bead are types defining Bead Group B2, a later development of Group B1 dated in the late 6th and the first half of the 7th century. A 6th-century date for the bead assemblage from Grave 1384 is, however, ruled out by the association of these beads with two 'Doughnut' beads (Table 8), an Anglo-Saxon type made of a piece of translucent glass pierced from one side. These beads were introduced towards the end of the bead fashion represented by Group B and mainly characteristic for glass bead assemblages worn in the so-called 'Final Phase' introduced in the mid-7th century (Bead Group C; Brugmann in press).

Of particular interest is a large ribbed 'melon' bead from Grave 13284, which seems to imitate a 'Roman Melon' bead (Table 1.17; Brugmann in press), a common type of large opaque light blue, green or turquoise ?faience bead frequently found in small numbers in Anglo-Saxon bead assemblages and often very worn. The greenish-blue ('petrol') semi-translucent glass apparently used for the imitation of such a 'Roman Melon' bead is found with beads in the Anglo-Saxon Bead Groups B2 and C (the 'Final Phase' not represented at BKL 02), such as a globular bead (Table 1.28) from Grave 13284.

Two of the three glass beads found in the subsoil (13033), a 'Koch 34' type and an 'Orange' bead made of opaque orange glass (Table 1.16; Bead Groups B2 and C) were probably also imported from the continent. Most 'Orange' beads were found in Kent and East Anglia (ibid. Fig. 68). The translucent yellow short bead (Table 1.12) also found in the subsoil may be a variant of the 'Melon' bead from Grave 13172 (see above) and also be part of a Group B assemblage. In this case all three beads may be derived from Grave 13284 or represent a destroyed grave of the same Bead Phase B2.

Table 1: BKL 02. Glass bead typology covering all sufficiently preserved glass beads from the site. Bold script marks glass bead types defined in Brugmann (in press). Italic script marks type definitions summarising beads with particular attributes but not necessarily of related manufacture.

type no	type name	no of beads	no of segments	diameter of perforation	diameter of body	Length of body	proportion	bead making technology used for body	shape	translucency	body colour	technique used for decoration	motif
bead types defined in Brugmann (in press) and related types													
1	Blue	43	1	2.0-6.0	7-17	3-8	very short to medium	wound	annular or globular	translucent	blue	none	none
1a	Blue?	2	1	4.0-4.5	13	11	medium	wound, perforated sides marvered flat	asymmetrical globular	translucent	blue	none?	shattered surface or white inclusions
2	Constricted Segmented	14	1-3		4-5	3-12		drawn layers, perforated sides constricted	globular		light	none	none
3	Constricted Cylindrical	2	1		3-4	12-13	very long	drawn, perforated sides constricted	cylindrical	blue	blue	none	none
4	Constricted Cylindrical, beaded	2	1		4	9-22	very long	drawn layers, perforated sides constricted	cylindrical, beaded		light	none	none
5	Cylindrical Pentagonal	2	1	3.0-4.0	7-8	7-9	medium	wound, perforated sides marvered flat	cylindrical, pentagonal cross section	opaque	white or yellow	none	none
6	Cylindrical Round	1	1	2.5-3.5	7	8	medium	wound, perforated sides marvered flat	cylindrical, round cross section	opaque	red	none	none
7	Doughnut	2	1	1.5-2.0	9-14	3-5	(very) short	pierced	asymmetrical	translucent	blue-green or blue	none	none
8	Koch 16.7	1	1	3.5-4.0	12	8	short	wound, perforated sides not marvered flat	globular	opaque	red	applied	opaque white circumferential trail close to perforation and five dots on equator
9	Koch 34 (WhiteRed & BlueWhite)	3	1-2	2.5-6.0	7-12	5-11		wound	globular	opaque	white or red	applied	narrow crossing trails (opaque white on red or translucent (green-)blue on white)
10	Koch34 var	1	1	3.0	8	5	short	wound	globular	opaque	white	applied	translucent green-blue wavy trail

type no	type name	no of beads	no of segments	diameter of perforation	diameter of body	Length of body	proportion	bead making technology used for body	shape	translucency	body colour	technique used for decoration	motif
10a	Koch 34 var?	2	1	3.5-5.5	12-13	9-10	short - medium	wound, perforated sides can be marvered flat	globular	opaque	white	applied	one to three opaque red circumferential trail(s) on translucent blue narrow crossing trails
11	Melon	1	1	3.5-4.0	13	11	medium	wound, traces of winding on one perforated side	asymmetrical globular, 6-ribbed cross section	translucent	yellow	none	none
12	Melon ?variant	1	1	3.0-4.0	13	7	short	wound, traces of winding on one perforated side	globular	translucent	yellow	none	none
13	Mottled	1	1	3.0	13	8	short	wound, perforated sides marvered flat	globular	translucent	blue	applied	irregular dots, red on white
14	Norfolk BlueWhite	1	1	2.0-3.0	8	4	short	wound, one perforated side concave, perforation on other sharp	globular	opaque	white	applied	translucent irregular blue-green trail
15	Norfolk YellowRed	1	1	2.0-4.0	6	13	very long	wound, perforated sides not marvered flat	cylindrical	opaque	yellow	applied	opaque red irregular trail
16	Orange	1	1	4.0-5.0	10	10	medium	wound, perforated sides marvered flat	globular ('barrel-shaped')	opaque	orange	none	none
17	Roman Melon imitation	1	1	9-11	19	15	medium	wound, concave around perforation	globular, 11-ribbed cross-section	semi-translucent	greenish blue ('petrol')	none	none
18	Roman var	1	1	2.0	6	3	short	wound?, perforated sides flat (cut or marvered?)	cylindrical	translucent	green	none	none
19	Segmented Globular	1	2	2.0	6	7	long	wound	globular	semi-translucent	greenish blue ('petrol')	none	none
20	Traffic Light	2	1	2.0-4.5	12-13	9-11	short - medium	wound, perforated sides not marvered flat	globular	opaque	yellow or red	applied	translucent green and opaque yellow or red

type no	type name	no of beads	no of segments	diameter of perforation	diameter of body	Length of body	proportion	bead making technology used for body	shape	translucency	body colour	technique used for decoration	motif
other bead types													
drawn monochrome													
21	blue Constricted Segmented	1	1		5	4		drawn, constricted perforated sides	globular	translucent	blue	none	none
wound monochrome													
22	blue-green cylindrical	2	1	2.0-4.0	12-14	8-9	short	wound, perforated sides marvered flat	cylindrical, round or ribbed cross section	translucent	blue-green	none	none
23	blue-green globular	2	1	2.5	7	6	medium	wound	globular	translucent	blue-green	none	none
24	dark annular	2	1	4.5-6.0	12	5-6	short	Wound, perforated sides concave	annular		dark	none	none
25	dark other	7	1	1.5-3.5	6-10	3-8	short-medium	wound	globular or asymmetrical, round or ribbed cross section		dark	none	none
26	green opaque	11	1	1.0-4.0	6-10	3-9	short - medium	wound	globular or asymmetrical, round or 4-ribbed cross section	opaque	green	none	none
27	green translucent	2	1	3.0-4.0	8	8	medium	wound	Cylindrical, 4-ribbed cross section; other shapes	translucent	green	none	none
28	greenish-blue semi-translucent	1	1	2.5-3.0	8	7	medium	wound	globular	semi-translucent	greenish-blue ('petrol')	none	none
29	Miniglob	1	1	1.5-2.0	5	5	medium	wound, edge of perforation sharpish	globular, slightly pear-shaped	translucent	blue	none	none
30	red opaque	21	1	1.0-5.0	5-13	3-8	very short - medium	wound	globular, asymmetrical	opaque	red	none	none
31	white opaque	4	1	2.0-3.0	6-8	3-4	short	wound	globular	opaque	white	none	none

type no	type name	no of beads	no of segments	diameter of perforation	diameter of body	Length of body	proportion	bead making technology used for body	shape	translucency	body colour	technique used for decoration	motif
32	yellow opaque	8	1	1.0-4.0	6-9	4-7	short - medium	wound	globular, cylindrical or asymmetrical, round or ribbed cross-section	opaque	yellow	none	none
wound polychrome													
33	wide crossing trails	3	1	1.0-3.5	8	3-5	short	wound	globular	opaque	white or yellow	applied	translucent green wide crossing trails and three dots
34	meander	1	1	2.5-5.0	14	11	medium	wound	globular	opaque	white	applied	white and translucent blue streaked wavy trail (meander) and three opaque red dots
35	spiral	1	1	2.5-3.5	7	6	medium	wound	globular	opaque	yellow	applied	red spiral trail
36	dots	1	1	2.0-3.0	9	3	very short	wound	globular	opaque	white	applied	three opaque red dots
37	Irregular trail	1	1	4.0-5.0	11	8	short	wound	globular	opaque	white	applied	opaque red irregular trail
38	twisted trail	1	1	1.5-3.0	7	7	medium	wound	cylindrical	translucent	blue-green	applied	small piece of translucent blue-green and opaque white twisted trail

Amber beads
The 225 amber beads from the site add up to c. 86 grams (including soil in some of the perforations). The 168 amber beads from Grave 13125 account for 68g, the remaining 18g are shared by six graves with groups of two to 27 beads (and the single bead from the pit). Most of the beads show signs of wear at the perforated sides, suggesting that they were strung in a way that allowed the beads to rub against each other.

The beads fall into five main types:
carefully shaped 'spindle-shaped' beads, often very worn and considered to be of a 5th and early 6th-century date (see Brugmann in Parfitt forthcoming),
carefully shaped 'globular' beads with a round longitudinal and an (almost) round cross section,
'rounded' beads with a rounded show-side but an irregular cross section,
medium to long 'facetted' beads without any regular longitudinal section, and
short beads, either with an 'irregular' shape such as 'wedge-shaped' or regularly shaped such as short cylinders.

A detailed analysis of the amber beads from Lower Buckland, Dover, Kent, suggests that different types of amber beads were used in combination with Glass Bead Groups A2 and B (Brugmann in Parfitt forthcoming). It was possible to demonstrate a tendency for the small drawn glass beads of Group A2 to be associated with small rounded amber beads and the more substantial glass beads of Group B with larger facetted amber beads. The same tendency can be observed in the material from BKL 02. The group of 166 amber beads from Grave 13125 associated with glass beads from Group A2 is comprised of 114 rounded, eight (almost) globular, 34 facetted and four spindle-shaped beads with an average weight of 0.4g. The 17 amber beads from Grave 13039 include ten rounded, four facetted and a large short, irregular bead and have an average weight of 0.2g. The four beads from Grave 13172 associated with glass beads of Group B1 are all facetted with an average weight of 0.8g, as have the two facetted and two rounded amber beads associated with glass beads of Group B2 from Grave 13284.

The glass beads of Group A1 in Grave 13282 are associated with eleven spindle-shaped, eleven globular or rounded beads and five short amber beads. The spindle-shaped beads support an early date for the glass bead assemblage and the relatively high number of short beads support the observation made at Blacknall Field, Wilts., that beads of Group A1 tend to be associated with relatively high numbers of short amber beads, often 'wedge-shaped' (Annable & Eagles forthcoming). This applies also to the association of the glass beads of Group A1 with two short amber beads in Grave 13119.

Bead numbers and the weight of amber bead assemblages should not be taken as a straightforward indicator of wealth. This is suggested by the change in bead fashion associated with Glass Bead Groups A2 and B. Furthermore, small numbers of amber beads often include carefully shaped ones, suggesting a primarily amulettic character of such assemblages (see Meaney 1984).

Rock crystal
Grave 13282 produced a pair of polyhedral rock crystal beads and a single short globular rock crystal bead with a worn ridge on the equator. The short globular rock crystal bead from Grave 13125 is also worn at the equator. The four beads cover the three most common shapes of rock crystal beads known from Anglo-Saxon graves (see Meaney 1981, 77ff; Huggett 1988, 70). Globular beads with or without a ridge usually occur singly in bead assemblages, polyhedral occasionally in pairs (see, e.g., Blacknall Field Grave 31; Annable & Eagles forthcoming). The wear on all four beads is also a common feature of such beads which cannot be explained by wear on a string together with other beads. It therefore seems that these beads had some previous or additional use which put more strain on the objects.

Silver
Beads covered with or made of silver sheet are known from Bead Group B2 but more common in Group C as part of the so-called Final Phase not represented at BKL 02. Silver beads usually are shaped in the form of bells set against each other to form a globular bead with a ridge, or of two almond-shaped halves (see, e.g. Geake 1997 Fig. 4.6), which probably had a core of some perishable material. A 'barrel-shaped' core sheeted with silver as in Grave 13284 is an unusual construction. The worn perforation of the core shows that it was worn in life and not made for burial. The silver sheeting of this bead (0.3 g) is more substantial than that of some bell- or almond-shaped beads, indicating that

this bead is not simply a second-rate imitation of a conventional silver sheet bead. It may, however, be a local product.

The context

In all seven graves beads were found in the neck or chest area. In Grave 13125 beads were also positioned at the extreme head end of the grave (SF 70528), which may be due to a disturbance caused by what seems to be the burial of thee individuals with an unclear stratigraphic relationship. Most of the beads can be assigned to SK 13133: SF 70498 with 121 beads concentrated around the neck area of this individual and found with brooches and a pin, SF 70513 with 25 beads from the lower fill near the base of the grave and by the right shoulder area of the body stain, and SF 70515 with 61 beads in the neck and chest area of the body stain of the same individual. It seems that the most substantial amber beads in the collection were worn in the neck and chest area (SF 70498 and 70515) but the glass beads do not show a distribution among the retrieved groups of beads that would suggest a particular order related to types. Beads probably not related to SK 13133 are Sample 71467, three fragments of ?burnt green glass found close to the remaining leg bones of SK 13132 and related to a 'rectangular area of dark staining' thought by the excavators to be possibly either leather or textile, and Sample 71472 from a stained area around the jaw of SK 13126.

In Grave 13282 beads were not only scattered in the head and chest area but the excavators noted that beads were also found in a symmetrical arrangement in a line along the chest front including the pair of polyhedral rock crystal beads and in another line South-East of the head including a single rock crystal bead. The excavation records suggest that 'symmetrical' refers to a pairing of bead types according to shapes and colours. This is a common feature in bead assemblages of Group A1 (see Annable & Eagles forthcoming) and may also have been used for the beads in Grave 13119 with a pair of amber beads, a pair of 'Traffic Light' beads and a single monochrome bead which may have been the centre piece.

The beads in Grave 13172 were plotted individually, showing a line of beads apparently reaching as low as the area of the pelvis. It seems that the bead types were lined up in no particular order. The beads in Grave 13284 were found not only in the neck area but also in the pelvic region. Beads reaching down the body this low seem to mark a change in bead fashion from Group A2 to B that went beyond the use of new types of beads and changed the way beads were worn (see work by Penelope Walton Rogers).

Dating the BKL 02 graves on the basis of the beads only could be misleading. The association of beads and brooches, however, support the argument for a chronological sequence of the graves to some extent. An early date for the association of Glass Bead Group A1 and the assemblage of amber beads including spindle-shaped and short beads in Grave 13282 is supported by the early type of cruciform in this grave. In Grave 13135 with a glass bead of Groups A2 a later type of cruciform brooch was found. The annular brooches in Graves 13039 and 13125, a mainly 6th-century type, match the general date suggested by the beads of Group A2. The beads of Group B are not associated with brooches, which is not surprising as the combination of beads with brooches becomes rare towards the end of the 6th century.

Summary

The seven graves at BKL 02 with beads fall into four of the six Anglo-Saxon bead groups defined on the basis of a national sample of 32,000 beads:

Group A1	(AD c. 450-530)	13119 and 13282
Group A2	(AD c. 480-570)	13039, 13125 (SK 13133) and 13135
Group B1	(AD c. 550-600)	13172
Group B2	(AD c. 580-650)	13284

The glass bead assemblages display some regional characteristics such as bead types in Group A which were probably made in Anglian England or specifically Norfolk, and bead types in Group B which were probably imported in particular to Kent and East Anglia from or via the continent. This suggests that the community burying at BKL02 was supplied by the same regional manufacture and trade as the communities burying at the well-known Norfolk sites at Spong Hill, Morning Thorpe and Bergh Apton. The silver-sheeted bead from BKL 02 may indicate a local initiative in bead making inspired by some standardised types of silver beads found at other sites.

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Appendix A: Bead catalogue

Bead descriptions:
Descriptions are based on visual examination of the beads as they were made available for study in November 2003.

Measurements
The diameter of the beads is given in 5 mm ranges. For size ranges of individual glass bead types see Table 00.
The proportion of the beads indicates their length:

very short	1:4
short	1:2
medium	1:1
long	1.5:1
very long	2:1

Shapes
Glass beads: The outline of the longitudinal section of most of the Blacknall Field beads is rounded or square. A rounded section is described as globular or annular depending on the proportion of the bead and the size of the perforation. Short or very short beads with a perforation that measures c. half the diameter of the cross section of the bead or more are described as annular; all other beads with a rounded longitudinal section are described as globular, including those that may described as barrel-shaped due to a large perforation or flattened perforated sides. Such 'barrel-shaped' beads, medium in proportion, are described as 'globular, perforated sides marvered flat'. Beads with a square longitudinal section are described as cylinders. The cross section is described only if it is not round but ribbed or square. Some beads are described as polyhedral in reference to both their longitudinal and cross sections.
Amber beads: see text.

Segments
Glass beads are made of one segment if not described otherwise.

Perforations
Perforations have a round cross-section if not described as square. Abrasions on amber beads that have changed cross sections are not described. For the diameter of perforations of glass beads in relation to bead sizes see 'shapes'. 'Sharp edges to perforation' refers to a technical detail that may in the future help to distinguish between earlier and later wound monochrome beads on a statistical basis.

Colours
The colour descriptions are based on visual examination in daylight and differentiate between white, yellow, green, blue, red (brown/"terracotta"/brick-red) for opaque beads and brown (including "pink") for translucent beads, "light" used for the colour variations in so-called "gold-in-glass" beads and translucent "white" beads, and "dark" for any beads that appear black in daylight. For the difficulties that would be attached to a more detailed description see Brugmann (in press).

Bead types
The glass bead types referred to in the catalogue in italics are described in detail in Table 00. For brevity, the catalogue omits attributes of glass beads if these are defined as part of the type description given in Table 00.

Glass bead making techniques
See the type descriptions in Table 00.

Opacity and translucency
See the type descriptions in Table 00.

Weight
The beads were not cleaned before weighing, so that the weight given can include soil stuck in perforations.

The unedited descriptions of the individual beads, which are more detailed than in the published catalogue, are held in the project archive in printed form.

The descriptions of the position of beads are copied from the special find record sheets. Age and sex of skeletons are copied from the skeletal inventory.

Grave 13039 (F 30-40)

SF 70456 28 beads from neck area (above brooch)

Amber	17+ beads, total weight 2.9 g; all beads show signs of wear
	1 short, irregular; diam. 11-15 mm
	1 medium, facetted; diam. 3-5 mm
	3 medium, facetted; diam. 6-10 mm
	1 medium, incomplete but functional, old break; diam. 6-10 mm
	2 medium, rounded; diam. 3-5 mm
	8 medium, rounded; diam. 6-10 mm
	fragments probably from two beads
glass	11 beads
type Constricted Segmented	6 with 1 segment, medium, globular; diam. 3-5 mm
	3 with 2 segments, very long, globular; diam. 3-5 mm
	1 with 3 segments, very long, globular; diam. 3-5 mm
other beads:	
meander	1 medium, globular; diam. 11-15 mm

Grave 13119 (M middle adult)

SF 70502 beads found at upper torso/neck of inhumation by sieving a small area after the grave had been recorded

amber	2 beads, total weight 1.5 g, perforation worn
	1 very short, cylindrical; diam. 11-15 mm
	1 short, fragment
glass	3 beads
type Traffic Light	1 medium, globular; diam. 11-15 mm
	1 short, globular; diam. 11-15 mm
other bead:	
red opaque	1 short, globular; diam. 11-15 mm

Grave 13125 (SK 13126 M? 30-40; SK 13132 undetermined adult; SK 13133 F?40-50)

SF 70498, 70513, 70515, 70528: 213 beads ((or 215, please have 'possible' beads nos 1 and 4 checked)); total weight of the 168 amber beads: 68 g.

SF 70498 121 beads concentrated around neck area of SK13133 and brooches & pin

amber	50 amber beads, total weight 27.3 g; all beads show signs of wear
	1 short, irregular; diam. 16-20 mm
	1 short, irregular; diam. 29 mm
	1 medium, cylindrical; diam. 16-20 mm
	13 medium, facetted; diam. 6-10 mm
	2 medium, facetted; diam. 11-15 mm
	1 medium, globular; diam. 6-10 mm
	1 medium, rounded; diam. 3-5 mm
	22 medium, rounded; diam. 6-10 mm
	2 medium, rounded; diam. 11-15 mm
	2 medium, rounded (almost globular); diam. 6-10 mm
	1 medium, rounded (almost globular); diam. 11-15 mm
	1 medium, rounded, incomplete but functional; diam. 6-10 mm
	1 long, facetted; diam. 6-10 mm
	1 fragment; diam. 6-10 mm
glass	13 beads
type Blue	1 short, annular, perforated sides marvered flat; diam. 11-15 mm
	2 very short, annular, perforated sides marvered flat; diam. 11-15 mm
type Constricted Cylindrical	1 very long, cylindrical; diam. 3-5 mm
type Constricted Cylindrical beaded	1 very long, cylindrical, beaded; diam. 3-5 mm
type Norfolk YellowRed	1 very long, cylindrical, perforated sides not marvered flat; diam. 6-10 mm
other beads:	
green opaque	2 medium, asymmetrical, 4-ribbed cross section; diam. 6-10 mm
	1short, irregular; diam. 6-10 mm

green translucent — 1 medium, cylindrical, 4-ribbed cross section; diam. 6-10 mm
red opaque — 1 short, globular, sharp edges to perforation; diam. 6-10 mm
yellow opaque — 1 medium, globular; diam. 6-10 mm
spiral — 1 medium, globular, sharp edges to perforation; diam. 6-10 mm

Sample 71467 — from around the remaining leg bones of SK 13132, relates to a 'rectangular area of dark staining' thought to be possibly either leather or textile
Glass — 1 bead?
green ?translucent — three fragments, ?burnt

Sample 71468 — head area of SK 13133: area of body stain
Amber — 47 beads, total weight 7.6 g; beads show signs of wear
6 medium, facetted; diam. 6-10 mm
13 medium, rounded; diam. 3-5 mm
21 medium, rounded; diam. 6-10 mm
1 medium, rounded; diam. 11-15 mm
1 long, facetted; diam. 3-5 mm
1 very long, spindle-shaped; diam. 3-5 mm
1 very long, spindle-shaped; diam. 6-10 mm
1 bead fragment, no measurements
1 bead fragment; diam. 3-5 mm
1 bead fragments of one bead or more
glass — 8((+??)) beads
type Blue — 1 short, annular; diam. 6-10 mm
type Constricted Segmented — 2 medium, globular, 1 segment; diam. 3-5 mm
1 very long, globular, 2 segments; diam. 3-5 mm
1 very long, globular, 3 segments; diam. 3-5 mm
green translucent — fragments of probably not more than one bead
red opaque — 1 short, globular; diam. 6-10 mm
white opaque — 1 short, globular, sharp edges to perforation; diam. 6-10 mm
glass bead? — fragment of translucent glass
((have 'ironstone?' object no. 4 checked, probably no bead))

Sample 71472 — from stained area around the jaw of SK 13126
Amber — 2 beads, total weight 1.5 g, slightly worn perforated sides
1 medium, facetted; diam. 6-10 mm
1 medium, facetted; diam. 11-15 mm

SF 70513 — 25 beads from lower fill near base of cut 13125 by right shoulder area in body stain

Amber — 21 amber beads, total weight 8 g; worn mostly at perforated sides
2 medium, facetted; diam. 6-10 mm
1 medium, facetted; 16-20 mm
1 medium, facetted (reused fragment?); diam. 6-10 mm
1 medium, rounded; diam. 3-5 mm
13 medium, rounded; diam. 6-10 mm
2 medium, rounded; diam. 11-15 mm
1 medium, rounded (almost globular); diam. 6-10 mm
glass — 4 beads
type Blue — 1 short, annular; diam. 6-10 mm
type Constricted Cylindrical — 1 very long, cylindrical; diam. 3-5 mm
type MiniGlob — 1 medium, globular (pear-shaped); diam. 3-5 mm
other beads:
yellow opaque — 1 medium, cylindrical, 4-ribbed cross section, perforated sides not marvered flat; diam. 6-10 mm

SF 70515 — 61 beads possibly associated with two garment dressings 70516 & 70517 (chest and neck area of skeleton)

amber — 43 beads, total weight 22 g; worn perforations and perforated sides
1 very short, irregular; diam. 21 mm
1 short, cylindrical; diam. 16-20 mm
1 short, irregular; diam. 11-15 mm
2 short, irregular; diam. 16-20 mm

	4 medium, facetted; diam. 6-10 mm
	1 medium, facetted; diam. 11-15 mm
	1 medium, facetted; diam. 16-20 mm
	1 medium, globular; diam. 6-10 mm
	27 medium, rounded; diam. 6-10 mm
	1 medium, rounded (almost globular); diam. 6-10 mm
	1 medium, rounded (almost globular); diam. 11-15 mm
	1 long, facetted; diam. diam. 6-10 mm
	1 long, spindle-shaped diam. 6-10 mm
rock crystal	1 bead
	1 short, globular; diam. 21 mm
glass	17 beads
type Blue	1 short, annular, 6-10mm
	1 short, annular, perforated sides marvered flat; diam. 11-15 mm
	1 short, globular, perforated sides marvered flat; diam. 11-15 mm
type blue Constricted Segmented	1 medium, globular; diam. 3-5 mm
type Constricted Cylindrical beaded	1 very long, cylindrical, beaded; diam. 3-5 mm
type Norfolk BlueWhite	1 short, globular; diam. 6-10 mm
other beads:	
blue-green cylindrical	1 short, cylindrical, 7-ribbed cross section, perforated sides marvered flat; diam. 11-15 mm
	1 short, cylindrical, perforated sides marvered flat; diam. 11-15 mm
blue-green globular	1 globular, fragmented
	1 medium, globular; diam. 6-10 mm
green opaque	1 medium, cylindrical, 4-ribbed cross section; diam. 6-10 mm
red opaque	1 medium, asymmetrical; diam. 6-10 mm
	1 medium, globular, sharp edges to perforation; diam. 6-10 mm
	2 short, globular; diam. 6-10 mm
	1 short, globular (irregular); diam. 6-10 mm
twisted trail	1 medium, cylindrical, perforated sides not marvered flat; diam. 6-10 mm

SF 70528	6 beads found randomly within 10 cm² area at extreme head end of grave cut
Amber	5 beads, total weight 1.4 g; in particular perforated sides worn
	3 medium, rounded; diam. 6-10 mm
	1 medium, rounded; diam. 11-15 mm
	1 medium, very worn spindle-shaped?; diam. 6-10 mm
glass	1 bead
type Blue	1 short, globular, perforated sides marvered flat; diam. 16-20 mm

Grave 13135 (undetermined 30-40)

SF 70503, 70504	3 beads
SF 70503	2 beads below cruciform brooch; long glass bead inserted through amber bead
Amber	1 bead, weight 1.0 g; perforation very worn
	1 short, irregular; diam. 16-20 mm
glass	1 bead
type Constricted ?Cylindrical	1 very long, cylindrical; diam. 3-5 mm
SF 70504	below cruciform brooch and close to beads 70503
amber	1 bead, weight >0.0 g; perforation very worn
	1 very long, spindle-shaped; diam. 3-5 mm

Grave 13172 (undetermined adult)

SF 70523.0-9	10 beads chest area of body stain
amber	4 beads, total weight 3.2 g; worn perforations and perforated sides
	2 medium, facetted; diam. 6-10 mm (no. 2; 6)

1 medium, facetted; diam. 11-15 mm (no. 10)
1 medium, rounded; diam. 11-15 mm (no. 7)
glass 6 beads
type Cylindrical Pentagonal 2 medium, cylindrical, pentagonal cross-section, perforated sides marvered flat; diam. 6-10 mm (no. 4; 8)
type Melon 1 medium, asymmetrical globular, 6-ribbed cross section; diam. 11-15 mm (no. 9)
further types:
red opaque 1 short, globular; diam. 6-10 mm (no. 1)
yellow opaque 1 short, globular; diam. 6-10 mm (no. 3)
irregular trail 1 short, globular; diam. 11-15 mm (no. 5)

Grave 13282 (F 30-35)

SF 70532, 70533, 70537, 72003: 107 beads; 27 amber, total weight 6.3 g

SF 70532 70 beads scattered round head area

amber 20 beads, total weight 2.9 g; beads show signs of wear
1 short, irregular; diam. 6-10 mm
2 short, irregular; diam. 11-15 mm
2 medium, globular; diam. 6-10 mm
3 medium, rounded; diam. 6-10 mm
3 medium, rounded (almost globular); diam. 6-10 mm
5 very long, spindle-shaped; diam. 3-5 mm
4 very long, spindle-shaped; diam. 6-10 mm
glass 50 beads
type Blue 16 short, annular; diam. 6-10 mm
1 short, annular; diam. 11-15 mm
5 short, globular; diam. 6-10 mm
1 short, irregular (from traces of winding); diam. 6-10 mm
1 very short, annular; diam. 6-10 mm
type Roman variant 1 short, cylindrical; diam. 6-10 mm
other beads:
dark 1 short, globular, 6-ribbed cross section, sharp edges to perforation; diam. 6-10 mm
5 short, globular, sharp edges to perforation; diam. 6-10 mm
green opaque 1 short, globular; diam. 6-10 mm
2 short, globular, perforated sides marvered flat; diam. 6-10 mm
3 short, globular, sharp edges to perforation; diam. 6-10 mm
red opaque 1 short, globular; diam. 3-5 mm
1 short, globular; diam. 6-10 mm
1 short, globular, perforated sides marvered flat; diam. 6-10 mm
4 short, globular, sharp edges to perforation; diam. 6-10 mm
yellow opaque 1 short, globular; diam. 6-10 mm
1 short, globular, 5-ribbed cross section, perforated sides marvered flat; diam. 6-10 mm
dots 1 very short, globular, sharp edges to perforation; diam. 6-10 mm
wide crossing trails 1 short, globular, perforated sides marvered flat; diam. 6-10 mm
2 short, globular, sharp edges to perforation; diam. 6-10 mm

SF 70533 5 beads in line SE of head found in a symmetrical order [squiggle] glass bead centre

amber 2 beads, total weight 0.8 g; one bead definitely worn
1 short, irregular; diam. 6-10 mm
1 medium, rounded; diam. 6-10 mm
rock crystal 1 bead
1 short, globular with ridge; diam. 16-20 mm
glass 7 beads
type Blue 1 short, annular; diam. 6-10 mm
1 short, globular; diam. 6-10 mm
type Blue? 2 medium, asymmetrical globular, perforated sides marvered flat ('barrel-shaped'), shattered surface or inclusions; diam. 11-15 mm
type Mottled 1 short, globular (irregular), perforated sides marvered flat; diam. 11-15 mm

other beads:
dark annular — 2 short, annular; diam. 11-15 mm

SF 70537 — 18 beads in a line along chest front, symmetrical arrangement

amber — 1 bead, weight 0.2 g; slightly worn
1 medium, rounded (almost globular); diam. 6-10 mm
rock crystal — 2 beads
2 medium, polyhedral; diam. 11-15 mm
glass — 15 beads
type Blue — 1 medium, globular; diam. 6-10 mm
4 short, annular; diam. 6-10 mm
1 short, globular; diam. 6-10 mm
1 very short, annular; diam. 6-10 mm
other beads:
dark — 1 medium, asymmetrical, 6-ribbed cross section; diam. 6-10 mm
red opaque — 1 short, asymmetrical; diam. 6-10 mm
1 short, globular; diam. 6-10 mm
1 short, globular, perforated sides marvered flat; diam. 6-10 mm
white opaque — 3 short, globular; diam. 6-10 mm
yellow opaque — 1 short, cylindrical, perforated sides marvered flat; diam. 6-10 mm

SF 72003 — 9 beads
Sample 71488 — chest/head area of poorly preserved SK 13280

Amber — 4 beads, total weight 0.9 g; perforations worn
1 short, irregular, probably from larger non-functional fragment; diam. 6-10 mm
1 medium, rounded; diam. 3-5 mm
1 very long, spindle-shaped; diam. 3-5 mm
1 very long, spindle-shaped; diam. 6-10 mm
glass — 5 beads
type Blue? — 1 fragment
other types:
green opaque — 1 short, globular; diam. 6-10 mm
red opaque — 1 very short, globular; diam. 6-10 mm
yellow opaque — 1 short, asymmetrical; diam. 6-10 mm
1 short, globular; diam. 6-10 mm

Grave 13284 (undetermined, adult)

SF 70539; 70540: 19 beads, 4 amber, total weight 2.2 g

SF 70539 — 14 beads east of cranium, neck area

amber — 3 beads, worn
1 medium, facetted; diam. 11-15 mm
1 medium, rounded; diam. 11-15 mm
1 medium, rounded (almost globular); diam. 6-10 mm

silver & ?amber — 1 bead
1 silver sheeting (0.3 g) on barrel-shaped ?amber core (1.0 g) with worn drop-shaped perforation, slightly asymmetrical; diam. 11-15 mm
glass — 9 beads
type Blue? — fragments of a bead
type Doughnut — 1 short, asymmetrical; diam. 11-15 mm
type Koch 16.7 — 1 short, globular; diam. 11-15 mm
type Koch 34 WhiteRed — 1 long, globular; diam. 6-10 mm
type Koch 34 variant — 1 short, globular; diam. 6-10 mm
type Koch 34 variant? — 1 short, globular; diam. 11-15 mm
type Roman Melon imitation — 1 medium, globular, 11-ribbed cross-section; diam. 16-20 mm
type Segmented Globular — 1 with 2 segments, medium, globular; diam. 6-10 mm
other beads:
greenish-blue translucent — 1 medium, globular; diam. 6-10 mm

Sample 71489	'mid-body' area of SK 13286
amber	1 bead, worn
	1 medium, facetted; diam. 11-15

SF 70540 pelvic region

Glass	5 beads
type Cylindrical Round	1 medium, cylindrical, perforated sides marvered flat; diam. 6-10 mm
type Doughnut	1 very short, asymmetrical; diam. 6-10 mm
type Koch 34 BlueWhite	1 medium, globular, perforated sides marvered flat ('barrel-shaped'); diam. 11-15 mm
type Koch 34 variant?	1 medium, globular; diam. 11-15 mm
other bead:	
red opaque	1 short, globular, perforated sides marvered flat; diam. 11-15 mm

Pit 13200

SF 70526 fill

amber	1 bead
	1 medium, facetted; diam. 6-10 mm

Subsoil 13033

SF 70549 found by machine

Glass	3 beads
type Koch 34BlueWhite	1 short, globular; diam. 6-10 mm
type Melon ?variant	1 short, globular; diam. 11-15 mm
type Orange	1 medium, globular, perforated sides marvered flat ('barrel-shaped'); diam. 6-10 mm

COINS REPORT

Coins Report

By Adrian Marsden

Discussion

A total of three coins were recovered from Site 13/202 (NHER 37622 TTL) .The so-called 'coin', SF 70499, proved on inspection to be a silver disc with a raised, repousse nipple. Two of the three remaining coins are small late Roman bronzes of the fourth century; these have both been pierced for suspension as pendants. Such coins are well known from Saxon cemeteries and have occurred at many sites across Norfolk and East Anglia1. These cemeteries invariably date from the late fifth to the early seventh centuries.

These coin pendants appear to have been a common item of jewellery in this period and also occur in conjunction with beads. The drilling is often, but by no means always, placed at the twelve o'clock point of either the obverse (heads) side of the coin or the reverse. This implies that in some cases the artistic qualities of the coin design itself were of interest to the wearer. Of the two examples here, one (SF 70468) is drilled at a position that corresponds to about 4 o'clock (obverse) and eight o'clock (reverse) so in this instance it seems the coin was appreciated only as a metallic disc. The other example (SF 70538) is so corroded that no details of the original design are legible.

These two coin pendants would surely have originally formed part of the grave goods of their Saxon owner. The drilling of coins in this fashion is a purely Saxon phenomenon; at least no examples have so far occurred in Roman contexts, and all recorded examples with contexts have been associated with Saxon sites. The legible example (SF 70468) dates to the mid-fourth century and the other (SF 70538), although no details are clear, belongs to the second half of the third, or the fourth century. Most of the coins found re-used as pendants in this way are late Roman bronzes of this period.

The third coin is undoubtedly an intruder in the sense that it postdates the other assemblages from the cemetery. This is a silver penny of Edward II dating to the early fourteenth century and must surely represent a casual loss at some date not very many years after its issue; the condition of the coin is good and it has seen little circulation. The worn appearance has been caused not by wear in use but rather by the use of worn dies during its striking.

Catalogue of the Coins from Site 13/202 (NHER 37622 TTL)

SF 70468

House of Constantine (a son of Constantine I), AE3, 335-341.
Obverse: [....] Laureate and cuirassed bust, right.
Reverse: [GLORIA EXERCITVS] Two soldiers standing either side of standard.
Late Roman Bronze Coinage I. Uncertain mint. Die axes 12, c16mm diameter, weight 1.24g. Pierced approximately 1mm from the edge of the flan.

SF 70538

Uncertain emperor, fragment of AE3 size coin, c260-378.
Obverse: Illegible.
Reverse: Illegible.
Uncertain mint. An oval shaped fragment of a copper alloy coin. Die axes?, c13.5mm x 10mm, weight 0.77g. Pierced approximately 1mm from the edge of the flan.

SF 72710

Edward II, silver sterling penny, c1310-1314.
Obverse: +EDWARANGLDNShYB Crowned bust facing.
Reverse: CIVITASLONDON Long cross design, three pellets in each angle.
North II, 1060/2, class 11a2. London mint, Die axes 12, 18mm diameter, weight 1.37g.

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[1] For example graves 66 and 73 from the Saxon cemetery at Morning Thorpe, Norfolk. See Rogerson, A. and White, S. G. in Green, B. (ed) *The Anglo-Saxon cemetery at Morning Thorpe, Norfolk* (East Anglian Archaeology 36, 1987).

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CERAMIC BUILDING MATERIAL ASSESSMENT

Ceramic Building Material Assessment

By Lucy Talbot

Introduction
A total of 204 fragments of ceramic building material (CBM) weighing 23.293 kg was recovered during the field walking, evaluation and excavation. A catalogue of the material is presented in Appendix 1.

The majority of the assemblage is of post medieval or modern date, although Roman material was collected from sites 37757/ 37892FLS and possibly 37758/ 37624 and 37625.

Condition
With the exception of the more modern fabrics, most of the material is either slightly worn or very abraded.

Methodology
The assemblage was quantified (count and weight in grams) by basic fabric type and forms. Fabrics were identified by visual appearance and main inclusions, based on the Norfolk type series. The assemblage was recorded by hand on proforma sheets by context and then transferred to a spreadsheet.

Fabrics
Two Roman fabrics and eight post medieval or modern fabrics were identified as follows:

Roman

F1
Fine silty sand, pink/orange fabric, with sparse ferrous and occasional grog, quartz and small to medium flint inclusions (max.11mm). Sparse medium to coarse moulding sand.

F2
Coarse sandy orange fabric, with sparse ferrous and occasional quartz and medium to large flint inclusions (max. 31mm). Medium to coarse moulding sand. Reduced core.

Post Medieval

F3
Fine silty sand, buff/ pink/ orange fabric, poorly mixed with sparse grog and flint inclusions (Max.6mm). Fine moulding sand.

F4
Coarse sandy, buff/ dark orange fabric. Poorly mixed, but well fired with sparse ferrous and occasional grog and quartz inclusions. Reduced core.

F5
Coarse sandy yellow/ pink fabric, well mixed with occasional ferrous and grog inclusions. Fine moulding sand.

F6
Coarse sandy yellow fabric, with few or no inclusions. Fine moulding sand.

F7
Coarse sandy bright orange fabric, well mixed, with few sparse grog and occasional quartz and flint inclusions (Max.21mm). Fine to medium moulding sand.

F8
Coarse sandy dark orange/ purple fabric, well mixed, often over fired. With sparse flint (Max. 5mm) and occasional quartz inclusions. Medium to coarse moulding sand.

F9

Fine sandy, bright orange extremely well fired fabric. Well mixed with few sparse ferrous and chalk inclusions.

Forms
The majority of the Roman material appears to be fragments of bonding tile, whilst the post medieval and modern pieces include brick, plain roof tile and pan tile. A possible floor tile fragment and a complete unglazed ridge tile were also recovered, along with a small quantity of undiagnostic pieces.

Summary of distribution by site along the pipeline

Site 1/251 (NHER 37617 WNE)
The site produced two small fragments of very abraded eighteenth century brick weighing 0.005kg from a post-hole fill and a buried soil horizon.

Site 08/217-219 (NHER 37826 & 37827 LEX & 37828 WAS)
Seven pieces of post medieval and modern pan tile weighing 0.023kg were recovered.

Site 13/202 (NHER 37622 WNE)
A single piece of post medieval plain roof tile was collected from topsoil and weighed 0.0013kg.

Site 22/148 (NHER 37623 BTE)
Five fragments of post medieval brick weighing 0.389kg were recovered from a ditch fill and unstratified material. A single piece of pan tile (0.027kg) was found in another ditch fill.

Site 24/144 (NHER 37892 FLS)
The site produced fifteen fragments of Roman and post medieval brick and bonding tile, weighing 6.678kg. Whilst the entire assemblage is fragmentary, two pieces of conjoining bonding tile were recovered from contexts [24079] and [24081] the fills of kiln feature (24078).

Site 25/136 & 138 (NHER 37624 & 37625 FLS)
This site produced eighteen fragments of building material weighing 0.291kg from various contexts. The group consists of fifteen pieces of post medieval brick and plain roof tile (0.234 kg) and two undiagnostic pieces of possible Roman date (0.057kg).

Site 27/128 (NHER 37626 THM)
Seventeen pieces of post medieval brick, plain roof tile, pan tile and an undiagnostic fragment weighing 0.647kg were recovered from a pit fill, a ditch fill and topsoil/subsoil.

Site 28/119 (NHER 37628 WDG)
The site produced twenty pieces of post medieval brick, pan tile and undiagnostic material and two complete bricks weighing 7.752kg. The fragments were collected from a ditch fill and unstratified topsoil. The complete bricks were recovered from a wall feature (28067). Their complete dimensions are recorded in the catalogue.

Site 38/90 (NHER 37939 JTT)
Sixteen pieces of post medieval brick, pan tile and possible floor tile weighing 0.158kg, were recovered from ditch fills and unstratified layers.

Site 39/84a (NHER 39520 JTT)
The site produced a single fragment of post medieval brick and two of pan tile weighing 0.107kg from a pit fill and a ditch fill.

Site 39/88b (NHER 39518 JTT)
This site produced a single piece of post-medieval brick weighing 0.443kg recovered from a ditch fill.

Site 39/88 (NHER 37942 JTT)
A single fragment of very abraded undiagnostic post medieval material was recovered from an unknown context and weighed 0.193kg.

Site 44/48 (NHER 37729 SFF)
A single, complete post-medieval brick was retrieved from a drain structure (44231) and weighs 3.137kg. Complete dimensions are recorded in the catalogue.

Site 46/38 (NHER 37987 ANT)
Twenty one post medieval and modern brick, plain roof tile, pan tile and undiagnostic pieces weighing 0.256kg were recovered from ditch fills and topsoil.

Site 50/ 26 (NHER 37996 FLD)
The site produced six small fragments of pan tile and brick weighing 0.040kg, from a pit fill, ditch fill and topsoil.

Watching Brief
The watching brief produced thirty-one pieces of brick, pan tile and undiagnostic fragments weighing 0.858kg from various contexts along the pipeline. The majority of the assemblage is of post medieval date; however, three pieces of possible Roman fabric were also recovered.

Evaluation
Evaluation work produced thirty-six fragments of post medieval brick, pan tile and undiagnostic pieces weighing 2.276kg. The lack of context information for this phase of work prevents any further discussion.

Statement of potential
The relatively small quantity of ceramic building material recovered from the excavations indicates that there is little potential for further study, after the initial dating and fabric and form identification. The exception to this is the Roman ceramic building material associated with the possible Roman kiln on Plot 24/144. This may have been used in the construction of the kiln itself, although no evidence of use such as mortar was recorded on the fragments. Such tiles for example may have been used to build up the arches on which the superstructure rested.

Recommendations for further work
It is recommended that no further work be carried out on the post medieval and modern material. However, the small quantity of Roman material from Plot 24/144 should be considered in relation to the possible kiln and other parallels sought. A small paragraph could be included in any discussion on the possible kiln construction.

Illustrations: None

FIRED CLAY ASSESSMENT

Fired clay assessment

By Richenda Goffin

Introduction

A total of 2347 fragments of fired clay fragments were recovered from the excavations along the Pipeline, weighing a total of 23,991g. The term 'fired clay' is a collective one which encompasses a range of fragmentary material which may be structural or artefactual in origin. Some of the 'heat affected clay' may have originally derived from wattle and daub structural elements, whilst other material is likely to represent hearth and kiln debris. In addition, although any obvious artefacts such as ceramic weights have been separated from this assemblage and added to the small finds catalogue, it is possible that there may be some mould fragments in the assemblage.

Table 1: Distribution of fired clay from the sites along the Pipeline

Section	Plot	No of frags	Weight (g)
1	251	24	125
1	253	4	108
6	226	19	66
8	217-219	2	02
13	202	21	87
22	148	47	285
24	144	226	7556
25	136+138	8	21
25	136-138	476	2064
27	128	459	4483
28	119	12	42
36	97	58	1180
38	90	39	291
39	84A	86	451
39	88-88b	28	136
43	58	519	1944
44	48	4	9
45	46	34	69
46	38	6	59
47	34	53	940
49	28A	5	52
50	26	217	4021

Methodology

The material was recorded by basic fabric groups, which are listed below. The clay was quantified by the number of fragments present in each context by fabric and their overall weight in grams. Other attributes such as structural impressions and surface treatment have been noted, along with any recommendations for illustration or photography. The fired clay was recorded on proforma sheets by context, and this information was transferred to a spreadsheet (Appendix 1).

The assemblage

The fragments have been catalogued into nine broad fabric groups, based on observations on the type of clay matrix and the main inclusions, (their basic type, frequency and size). Only a relatively small quantity of fabric types was used and there is considerable likelihood of overlap between some of the fragments, as some small pieces may not large enough to contain diagnostic inclusions, which would place them in one particular category.

The condition of the fragments is variable, although most of the assemblage comprises small to medium pieces. There are few large fragments, many of which are related to the kiln debris from site 24/144.

Collection policy

The majority of the fragments were recovered through hand retrieval. However, some sampling of the material was undertaken, notably on Site 1/251, 13/202, 22/148, and above all from Site 43/58.

Summary of fabric types

Fabric 1
Mainly hard-fired grey sandy fragments with occasional flint inclusions up to 15mm in length. Much of this is kiln material found in Site 24/144.

Fabric 2
Sandy fragments with few prominent inclusions

Fabric 3
Silty with calcareous inclusions, mostly chalk but some shell

Fabric 4
Sandy/silty fabric with small sparse flint up to 3mm and occasional voids created by burning out/leaching of organic material.

Fabric 5
Silty fabric with few prominent inclusions, sometimes clearly visible silty bands which are buff and orange in colour.

Fabric 6
Silty fabric w chalk inclusions up to 20mm, and flint up to 10mm, with organic voids.

Fabric 7
Fine dark matrix with many very tiny organic voids. Likely to be degenerated soil adhering to the fired clay rather than a real clay fabric.

Fabric 8
Dark, highly organic fabric, a small group in 25 136-138

Fabric 9
Fine silty fabric, with organic voids. Buff external surface and dark grey internally. Possibly not structural, but artefactual, as they could be fragments of mould or similar.

The range of material

Structural impressions
Only a small quantity of the fired clay/daub showed any evidence of concave impressions created by rods or withies from clay and timber structures (17 fragments overall) The majority of the diameters of these impressions ranges mainly between 6mm to 10mm, but two others measure 16mm and 18mm. The smaller impressions are likely to represent evidence of the rods forming the infilling of wattle panels, whilst the larger diameters are likely to be the frame or support around which the infilling was set. The most complex fragment in terms of structural impressions was recovered from site 27/128. This fragment which comes from a cleaning layer over the possible medieval kiln/oven or corn dryer [27137] shows at least three small rod impressions (8-10mm) running approximately parallel to each other and a bigger rod (c16mm) set back c20mm away from the others.

Textile impressions
All the fired clay was examined for any indication of the impressions of textile, but none was observed. Such fragments are rare, but they do occur sometimes on fragments of structural daub. It seems likely that they represent the impressions from woven material which was used to cover apertures such as windows and doors (Goffin, 1986 117).

Kiln material
A quantity of baked clay material was recovered from a possible pottery kiln of Roman date on Site 24/144 (Fabric type 1) (119 fragments weighing 4.803kg). Some of the fragments are comparatively large in size and well preserved. The clay is mainly buff or dark grey in colour and varies between being comparatively soft and crumbly to being hard and well-baked. Some fragments found in [24117], [24240] and [24256] have been highly fired and resemble ceramic building material in their hardness. Although usually the fabric is a fine sandy one with occasional flint inclusions, some of the less well

heated fragments also contain variable quantities of organic/calcareous material which has subsequently disappeared. It may be that there are actually two different fabrics rather than one which has a variable appearance depending on how close the clay was to the source of heat inside the kiln/oven. Many fragments have an outer surface which has been clearly wiped, and there are several examples where finger and thumb marks which are still visible. This feature is not unusual in kiln material assemblages.

These fragments were recovered from deposits of ?kiln material resulting from the collapse of the superstructure of the kiln or drying oven, and also from pits found in close proximity to the kiln. Many of the fragments are a uniform grey colour, rather than having buff/brown and dark grey margins, which may perhaps suggest that they were in immediate contact with the reducing atmosphere of the source of heat or firing chamber.

The most significant fragment was recorded in [24256] (unstratified). Here a piece of smoothed wiped clay in a hard-fired grey fabric has a clear aperture or hole in the region of 60mm in diameter which has been forced into the surface. Several interpretations of this fragment are possible. The first is that it is part of a perforated plate from a vented clay floor within a kiln, as recovered from the kiln 228 at Two Mile Bottom (Bates 66). A perforated floor was also identified from kiln 906 at Heath Farm, Postwick (Lyons 51). It is also possible that it represents part of a ventilation hole in the capping of the kiln superstructure. It seems less probable that it came from the lining of the kiln wall and was a perforation used for the insertion of an element inside the kiln such as a fire bar or moveable platform. The fragment may have come from the structure which was recorded on site, or may have come from a nearby kiln.

One fragment from [24117], the fill of a pit which post-dates the ?kiln, has a concave impression c18mm in diameter running along one of its edges. It is likely that it forms part of the construction of the kiln. Withy impressions similar to this, but with a smaller diameter have been recorded in the flue wall of kiln 906 at Heath Farm, Postwick, making up the flue arch (Bates 40). Wattle impressions with an average diameter of 18mm were present also on the underside of the kiln floor of kiln 906. These are thought to have been used in order to support the kiln floor during its construction, and would have burnt away when the kiln was fired (Lyons 51).

Material from corn dryer or kiln (Site 27/128)
A small quantity of fired clay was found in the foundation trench for the domed structure which may have been a corn dryer, kiln or oven (26 fragments @ 0.154kg). No material appears to be actually closely associated with the structural elements of this feature, its use and disuse.

One fragment recovered from a medieval pit fill [27137] shows at least three small rod impressions (8-10mm) running approximately parallel to each other and a bigger rod (c16mm) set back c20mm away from the others. This may represent evidence of the actual construction of this feature.

Limewash and surface coating
A small quantity of fragments with possible evidence of surface rendering was identified. The most likely fragments were recovered from 22/148 [22291], the fill of a large deep pit in Phase 5. Four fragments with flat surfaces do appear to show the worn remains of a thin surface treatment which could be limewashing. However in view of the insubstantial nature of the remains, it is always possible that it is some kind of calcareous coating, which could even be post-depositional, rather than a deliberate application. One further example of a fragment which may possibly have had some surface treatment was identified from a second site, 25 136-8 [25181]. Several fragments from this context have a flat worn surface, and one of these appears to have been lightly covered with the patchy remains of an external coating which is very worn and insubstantial. No fragments were identified which have indisputable deposits of visible surface limewash, with or without brush marks. Such treatment would have been applied to protect external walls from the elements. Limewashed fragments have been identified on daub from Roman and Saxon excavations, and are more commonly found from the remains of clay and timber buildings of the medieval period. (At the Middle Saxon settlement site of Maiden Lane in London for example, 90 fragments of limewashed daub were identified (Goffin 1986 115)).

Hearth material from Site 43/58
A total of 519 fragments weighing 1.944kg was recovered from several contexts which made up the fills of a furnace or smelting hearth. The fragments are mainly of Fabric type 4 but some Fabric 5 is also present. The dating of this industrial feature is unclear. A fragment of ?tap slag was also recovered with the fired clay.

Mould fragments?
A few fragments, provisionally differentiated by being recorded as Fabric 9, may be fragments of mould from the manufacture of artefacts rather than fired clay from archaeological features (5 fragments weighing 64 grams). This material was made of a fine silty matrix, which had consistent small organic voids. All fragments had very dark grey cores and buff exterior surfaces, which are characteristics found on mould fragments.

Summary of distribution by site across the Pipeline

Site 2/253 (NHER 37821 RGH)
19 fragments of fired clay weighing 0.066kg were found during the excavation. The fragments are made in a range of fabrics, including Fabric 3, which also contains shell inclusions. No impressions were observed on any of the fragments. The material was mainly recovered from ditch and pit fills dating to the Iron Age and Roman periods. One fragment was found in a posthole fill [6116].

Recommendations: No further work.

Site 1/251 (NHER 37617 WNE)
A total of 24 fragments of fired clay weighing 0.125kg was recovered from the site. The material is mostly made in one main fabric variant, and no features of note such as impressions were observed during the assessment. The fragments were recovered from the fills of ditches and pits, and buried soil horizons. Some of these features have been provisionally dated to the late Neolithic to Early Bronze Age.

Recommendations: No further work.

Site 13/202 (NHER 37622 TTL)
Twenty-one fragments of fired clay weighing 0.087kg were recovered from this site. The fired clay is made from several different fabric types. Some of the material was associated with the ditch fill of the ring ditch of the round barrow. Other fragments were recovered from the grave fills of two Saxon inhumations.

Recommendations: No further work

Site 22/148 (NHER 37623 BTE)
Forty-seven fragments of fired clay were recovered from the site, weighing 0.285kg. Most pieces are made in Fabric 3, and shell was also observed to be present in one instance. Four fragments in [22291] may possibly have had some kind of surface treatment (see below). The fragments were mainly recovered from ditch and pit fills of probable medieval date, and some were unstratified.

Recommendations: No further work

Site 24/144 (NHER 37892 FLS)
A total of 226 fragments of fired clay weighing 7.556kg was retrieved from this excavation. Much of the material was derived from features associated with the Roman drying oven or possible kiln. This assemblage is discussed more fully under 'kiln material'. In addition, other fragments of fired clay were recovered from pits and ditches which may be of Iron age or Roman date.

Recommendations: Re-examination of fabrics and writing-up. See under overall recommendations of kiln material

Site 136 & 138 (NHER 37624 & 37625 FLS)
476 fragments weighing 2064kg were recovered overall. A number of fragments of probable daub were found associated with ditch and well fills of probable Late Iron Age to Early Roman date. Some

of these have flat surfaces, and there is slight evidence of possible surface treatment on one of the fragments from [25181] – see limewash. The fragment may represent sparse evidence of a structure associated with the possible settlement within the rectangular enclosure. The remainder of the fragments were found in features assigned to Period 3 which is medieval in date. The fragments were found in ditches and pits and may be residual.

Recommendations: Possible summary? 0.25 day

Site 27/128 (NHER 37626 THM)
A total of 459 fragments weighing 4.483kg was recovered from the site. A high number of the fragments are made in Fabric type 6, with calcareous chalk inclusions and some flint. Some of the clay has flat surfaces and evidence of possible structural impressions. Much of the material was recovered from different phases of medieval ditches and pits, and fragments were also found in two postholes [27310], and [27439]. In addition fired clay was also found associated with the foundation trench [27207] for the possible kiln or corn dryer (see discussion).

Recommendations: Possible summary?

Site 28/119 (NHER 37628 WDG)
A small quantity of fired clay made from a number of different fabrics was recovered from this site (12 frags weighing 0.042kg). None of the pieces have impressions or features of note. The fragments are associated with medieval pit fills and ditches.

Recommendations: No further work

Site 36/97 (NHER 37629 ZVL)
Fifty-eight fragments of fired clay of several different fabrics weighing 1.180kg was recovered. Few fragments have distinguishing features. Most of the material was found in different pit fills which are provisionally dated to the Early Iron Age. Eleven fragments were recovered from a pit fill [36072] phased to the earliest phase (later Bronze Age or Early Iron Age).

Recommendations: No further work

Site 38/90 (NHER 37939 JTT)
Thirty-nine fragments of fired clay weighing 0.291kg were found from this site. Many of the fragments are made from Fabric type 5, although other variants are also present. Few fragments of any distinction were recorded, although there is a very slight possibility that some mould pieces may be present.

The fragments are associated with a mass of pits which are of medieval date and a small amount of postholes such as [38041] and [38173].

Recommendations: Check no mould fragments present, if so re-catalogue – see overall recommendations.

Site 39/88 & 88b (NHER 37942 & 39518 JTT)
Twenty-eight fragments of fired clay weighing 0.136kg were recovered from the site overall. They are made mainly in Fabric types 5 and 4, and few additional features were noted. The material was found mainly in the fills of pits, ditches and gullies ranging from the earliest phase of the site Phase I (?Saxo-Norman) through to Phase 4 ?medieval.

Recommendations: No further work

Site 39/84A (NHER 39520 JTT)
The site produced a total of 86 fragments of fired clay weighing 0.451kg. Few diagnostic fragments were noted, but twenty-eight fragments in [57031] have a particularly high chalk content.

The fragments were associated with many ditches and pits forming several phases of medieval activity.

Recommendations: No further work

Site 43/58 (NHER 37972 CLB)
A total of 519 fragments weighing 1.944kg was identified from this excavation. All the material was sampled from different contexts making up the fills of a furnace or smelting hearth. A fragment of ?tap slag was also recovered in amongst the fired clay. The fragments were mainly of Fabric type 4 but some Fabric 5 was also present.

Recommendations: Possible inclusion in summary description of hearth/furnace (see overall recommendations).

Site 45/46 (NHER 37730 SFF)
Thirty-four fragments of fired clay weighing 0.069kg were recorded from this site. All the material was made in the silty fabric type 5, and there are no distinguishing attributes on the fragments.

Recommendations: No further work

Site 46/38 NHER 37987 ANT)
A total of six fragments weighing 0.059 kg was recovered from the site. No features of any note such as structural impressions were identified.

Five fragments were recovered from an Iron Age pit, and a single fragment from a possible post-medieval pond fill.

Recommendations: No further work

Site 47/34 (NHER 37631 WLN)
Fifty-three fragments weighing 0.940kg were recovered from the excavation. The fired clay is mainly made of Fabric types 4 and 5, and has few features which are worthy of note. The fragments are associated with pits and ditches of medieval date and later.

Recommendations: No further work

Site 49/28A (NHER 37633 FLD)
Five fragments weighing 0.052kg were identified from the excavation. No features of any note were identified after fabric cataloguing.

Recommendations: No further work

Site 50/26 (NHER 37996 SLD)
Two hundred and seventeen fragments of fired clay weighing 4.021kg were recovered from this excavation. The fragments are mainly made from Fabric type 5, and very fine circular voids were also noted on some of the pieces. No features such as impressions were recorded.

Some of the material is associated with features such as pits of possible Bronze Age date. Other fragments were found in ditches and pits which are medieval.

Recommendations: No further work

Overall statement of potential and recommendations

The fabrics
A range of different types of fired clay fabrics were identified and have been described in broad terms above. It is likely that the clay fabrics were made from nearby deposits, but that some additional material may have been added to improve the properties of the clay for the purposes of building. The addition of calcareous and organic material for example, would have facilitated the evaporation of dampness in the clay and prevented shrinkage and cracking.

In view of the lack of close association with structural evidence, it is not recommended that further analytical work is done on the fired clay fabrics. The exception to this is the ?kiln debris material (see recommendations, below).

Fragments with structural impressions
The low frequency of fragments with structural impressions and the comparatively small size of these fragments indicates that there is little potential for any reconstruction of the details of the composition of wattle and daub elements. There are few fragments which can be directly associated with groups of postholes or beam slots which form evidence of discrete structures. Post-built structures were recorded on Plot 22/148, which are likely to be indications of an early medieval settlement. However the daub from this site was all recovered from pits and ditches, and none of the material showed any evidence of structural impressions.

The high recovery rate of fragments from secondary deposits such as ditch and pit fills and the consequent issues of residuality indicate that the much of this material has limited potential for further analysis, after recording for the finds archive.

Table 2: Summary of site provenance of daub fragments with impressions

Plot	Plot	Context	No of frags	Type of feature	Phase	Period
24	144	24083	1	Ditch		?Roman
25	136-138	25247	1	Pit	3	Medieval
25	136-138	25281	1	Well/pit	2	Late IA/Roman
27	128	27132	2	Ditch		Medieval
27	128	27137	7	Pit		Medieval
27	128	27203	2	Pit		Medieval
27	128	27210	3	Pit		Medieval

Analysis of limewash
A small number of fragments with the possible remains of surface treatment such as limewash were identified. These were found principally on fragments from a Phase 5 pit fill from Plot 22/148. This material could be analysed, but in view of the ephemeral nature of the remains and the lateness of the phase in which the fragments were recovered, it is not recommended.

Recommendations
It is suggested that the fired clay from the majority of the sites only merits a brief summary, which can be presented in tabular form if necessary as an appendix, with fabric descriptions, for inclusion in the eventual different levels of reports.

In the case of the hearth/furnace debris recovered from Plot 43/58, a paragraph on the type of material present could be included in any discussion on this feature.

It is recommended that the fired clay and kiln debris associated with the ?Roman kiln from Site 24/144 is studied in greater detail. The fabrics should be more closely recorded, and the diagnostic fragments mentioned above should be described and discussed in view of their likely function. Comparisons should be made with other relevant published kiln sites and associated drying ovens in the region.

The possibility of petrological analysis of the fragments of kiln material in order to compare them with pottery wasters made in a blue-grey sandy greyware fabric recovered on site (A Lyons, pers comm.) should be considered.

The results of this work should be included in any published discussion on the Roman ?kiln/pottery drying oven and any waster sherds.

The fragments made in Fabric 9 should be re-examined to establish whether they could be mould fragments.

It is recommended that up to 2 illustrations may be needed, both of fragments from the ?kiln site on Plot 24/144. One of these is the perforated fragment.

It is suggested that sample fragments of all fabric types should be retained, as well as any pieces which have diagnostic features such as structural impressions. The ?kiln material should also be retained, and

the fired clay from the furnace/hearth. Otherwise much of the fired clay material can be discarded after it has been recorded.

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STRUCK FLINT ASSESSMENT

Struck Flint Assessment

By Sarah Bates

Methodology
Each piece of flint was examined and recorded by context in an ACCESS database table. The flint was recorded by pipeline 'site' or 'plot number', by NHER site number and, where relevant, by Registered Find number. Where material was from the evaluation or watching brief stages of the project the plot and NHER numbers were pre-fixed by 'e' or 'w' respectively so that material from different phases and sites can be distinguished and yet retrieved independently from the database. The material was classified by category and type (see Appendices 1 and 2) with numbers of pieces and numbers of complete, corticated, and patinated pieces being recorded. Retouched and utilised flints have been bagged separately within the main bags (except where context assemblages are small). Numbers and weights of burnt flint were recorded (category: burn, type: fragment) with material then being discarded.

Additional descriptive comments were made as necessary. Flints selected for possible illustration have been high-lighted * or ? (in order of priority) in the database table (these are maximum numbers; it is not envisaged that all of these pieces will be illustrated.

Non-struck flint was included in a separate column (Non struck) in the database and has been discarded. Numbers of non-struck flints will not, therefore, affect totals by Number.

This assessment report is primarily by site with flint from the different phases of work being described separately. Summary Tables show the main types and numbers of flint for each site/phase of work (except where numbers are very small) and all the flint by site and by context (with pre-fixes, see above, for the different phases of work) is included in Appendix C1 – C21, at the end of this report.

Site 1/251 (NHER 37617 WNE)
A total of 151 pieces of struck flint and a single burnt fragment were recovered from general contexts during the excavation of the site (see below for Registered Finds). A number of other pieces have been discarded as non-struck. The assemblage consists largely of unmodified flakes. These vary in nature and a few irregular hard hammer struck pieces are present. Many, however, are thin flakes which were probably struck by soft hammer. A fairly large number of blades are also present.
A large amount of the flint from this site is patinated (70% of the assemblage by number) and this may relate partly to the chalky nature of the natural soils in the area of the site. In some cases the patina may be due to the flint having been burnt; some of the flint is clearly burnt and has a cracked or crazed white appearance. Other pieces are an orangey pink colour and are probably also burnt or have been heat-affected in some way (although it is possible that some of the discolouration may be due to staining).

Table 1: Summary of flint

Type	Number
Flake	66
Blade-like flake	7
Blade	24
Spall	14
Chip	1
Bladelet	2
Shatter	13
Subcircular scraper	5
End scraper	1
Thumbnail scraper	1
Backed knife	1
Denticulate	1
Piercer	1

Retouched flake	1
Retouched fragment	1
Utilised blade	5
Utilised flake	7
Total	**151**
Burnt fragment	1

Retouched pieces include seven scrapers. One is classified as a thumbnail type and five as sub-circular, the latter all quite small. They are consistent with a Late Neolithic or Early Bronze Age date. A thick ovate cortical flake is retouched as an end scraper.

A backed knife is also likely to be of Neolithic or Bronze Age date.
A possible piercer on a thermal flake, two retouched flakes, one of thermal origin, seven utilised flakes and five utilised blades are also present.

Deposits of charcoal rich soil were excavated at this site. They are thought to be of possible Late Neolithic to Early Bronze Age date and to represent land clearance and occupation. The apparent burnt nature of much of the flint from the site may relate to associated burning processes. The burnt deposits sealed a few features and were post-dated by the majority of the features, thought to be of Early Bronze Age date, excavated at the site. Subsequently, a deposit of silt was post-dated by a recut of an earlier ditch. The ditch recut is thought to be of Later Bronze Age or Iron Age date. The precise context of the flint should be examined with the aim of establishing whether there is any consistency in the material originating from the different deposits and whether diagnostic debitage or datable pieces are likely to relate to different phases of activity at the site.

Registered finds
A number of flints were bagged separately as Registered Finds. These are included in Appendix 4. During analysis these finds should be described, dated where possible and considered alongside the other flint from the site.

Table 2: Flint recommended for Illustration, Site 1/251:

Context	Reg no	Type	Number	illus.
1122		backed knife	1	*
1311		Sub-circular scraper	2	?
1511		thumbnail	1	*
1034	70.352	piercer	1	?
1233	70.364	knife	1	?
1311	70.365	knife	1	*
1311	70.366	scale flaked knife	1	*
1248	70.371	end scraper	1	?
1121	70.372	retouched blade	1	?

Site 6/226 (NHER 37821 RGH)

Evaluation
Two shattered fragments, possibly knapping debris, were found during the evaluation of the site. One quite large piece has damage to one edge some of which is retouch and some of which may be due to use.

Excavation
A total of 12 pieces of struck flint and a possibly burnt fragment were recovered during the excavation of the site.

Table 3: Summary of flint

Type	Number
Flake	2
Blade-like flake	2
Blade	6
Shatter	1
End scraper	1
Total	**12**
Burnt fragment	1

The assemblage is small and is notable for the preponderance of blades and blade-like pieces. Most of these are small thin neat pieces and several from one context 6012 have the same speckled light brown cortex and may have been struck from the same core. One larger, thicker, blade has slight retouch along the edge of its sloping distal edge and has been classified as an end scraper. A quite large 'slab' of abraded and battered flint may have been burnt although its crazed appearance may be due to other thermal fracture (frost?).

The features and deposits excavated at the site date predominantly to the Roman period and it therefore seems is likely that the struck flint is residual. The similar type and nature of the flint from 6012, however, suggests that the material may be contemporary. The small neat blades are likely to be indicative an earlier Neolithic date and suggest activity in the vicinity during that period.

The flint should be considered in the light of any further dating evidence for the features excavated at the site. Illustration: none

Site 8/217-219 (NHER 37826 & 37827 LEX & 37828 WAS)

A total of 269 pieces of flint have been retained from those recovered during the excavation of the site. A few others have been discarded as non-struck.

Table 4: Summary of flint

Type	Number
Core/tool	1
Flake	111
Blade-like flake	13
Blade	77
Bladelet	12
Spall	40
Sub-circular scraper	1
Knife	2
?Scale flaked knife	1
Microlith	1
Retouched flake	4
Utilised blade	4
Utilised flake	2
Total	**269**
Burnt fragment	1

The largest part of the assemblage consists of unmodified flakes but a relatively large number of blades are also present. Both the flakes and blades are predominantly thin and many of them quite small. Edge damage is mainly rare or slight but much of the material is patinated, if only slightly, with some pieces being more heavily patinated. Some pieces have abraded platforms and the debitage mainly appears to be soft hammer struck and therefore likely to be of earlier Neolithic date. Relatively large numbers of flints were recovered from several contexts, notably from the fills of pits 8369 and 8275 both of which

are assigned to Phase 1 and probably date to the earlier Neolithic period. Also of note are the flints 8193 from the fill of a post-hole 8194 which is assigned to Phase 4 (Iron Age). The flints are all sharp thin pieces with several being blades or blade-like flakes. They are distinctive for all being a pinkish red in colour from having been burnt or heat-affected (it is possible that this was deliberate as a means of improving the quality of the flint for working - a technique considered to be associated with knapping during the Mesolithic or Earlier Neolithic periods). The nature of the flint suggests the material is of Neolithic date and its similarity and sharp condition suggests that it is probably in situ rather than re-deposited. The material from the post-hole seems unlikely to be of Iron Age date.

Relatively few retouched and utilised pieces are present. A sub-circular scraper has neat retouch around its distal edge 8363. It was found in the fill of a small ring ditch of probable Later Neolithic or Early Bronze Age date.

A bifacially struck piece 8276 with blades struck lengthways from both faces and flakes from one edge, also from both faces, may be a core or might be a tool of some kind – perhaps unfinished.

Three pieces have been classified as knives two of them from the fill 8370 of shallow pit 8369. One of these is a fairly large blade with both its edges utilised or slightly retouched, the other is a quite thick sub-rectangular/ovate flake with utilisation of its straight right edge and possible retouch, perhaps for use or bluntening the left edge. The third 'knife' is from the fill 8345 of possible storage pit 8316. It is a small blade-like flake with shallow retouch along one edge.

A microlith, of likely Mesolithic date, was found in the fill 8292 of ditch 8291. It was almost certainly residual there but indicates activity dating to that period in the vicinity.

A few other miscellaneous retouched and utilised pieces are also present.

At present the flint from sites 8/217-219 has been recorded together under one site number. The flint should be considered more closely by site and in relation to the different phases of activity which appear to have occurred across the areas. It seems likely that, if different prehistoric periods are represented at the sites, the flint may date to more than one period and it may be that more careful consideration of the lithics, their nature and their spatial distribution may assist in the further interpretation of the excavated features.

Registered Finds
A number of flints were bagged separately as Registered Finds. These are included in Appendix 19. During analysis these finds should be described, dated where possible and considered alongside the other flint from the site.

Table 5: Flint recommended for Illustration, Site 8/217-219:

Context	Reg no	Type	Number	illus.
8370		knife	2	*
8276		core/tool	1	?
8345		scale flaked knife	1	?
8001	72201	truncated blade	2	?
8001	72200	scraper	1	?
8001	72203	sub-circular scraper	1	?
8311	72205	bipolar	1	?
8380	72212	scale flaked knife	1	?
8378	72209	sub-circular scraper	1	?
8386	72207	scale flaked knife	1	*
8363	72211	leaf-shaped	1	*

Site 12/203 (NHER 37621 TTL)

Evaluation
Three flints were found during the evaluation of the site.

Table 6: flint from evaluation

Type	Number
Blade-like flake	1
Flake	1
End scraper	1
Total	3

The flints include a blade-like flake with and abraded platform and a neat end scraper on an ovate flake. The flints suggest a Neolithic date but were found respectively in the fills of an undated pit and an undated ditch.

Excavation
A blade and a flake were recovered during the excavation of the site. Both are small thin pieces, possibly struck by soft hammer. They were found in the fill of a large pit in which pottery of Iron Age date was found but it is considered possible that the pottery is residual. Other than a ditch of post-medieval date, other features excavated at the site are undated. The nature of the flint suggests that it pre-dates the Iron Age and therefore does not aid interpretation of the excavated feature. In which it was found. No further work on the flint is required.

Illustration: none

Site 13/202 (NHER 37622 TTL)

Evaluation
A single flake was found during the evaluation of the site.

Excavation
A total of 273 pieces of flint have been retained from those recovered during the excavation of the site. Several others have been discarded as non-struck.

Table 7: Summary of flint

Type	Number
Multi platform flake core	1
Flake	161
Blade	20
Bladelet	4
Blade-like flake	24
Bladelet	1
Shatter	9
Spall	42
End scraper	2
Sub-circular scraper	1
Backed knife	1
Scale flaked knife	1
Piercer	1
Retouched blade	2
Retouched flake	1
Utilised flake	1
Hammerstone flake	1
Total	273

One multi platform flake core is present 13102. It is on a very irregular fragment which was already patinated prior to its use as a core.

The largest part of the assemblage consists of unmodified flakes which are predominantly quite small in size, irregular in shape and often quite thick. Most of them have been struck by hard hammer in an irregular fashion, probably from quite small cores. They suggest a later prehistoric, Bronze Age or Iron Age, date for much of the flint. Some blades and blade-like flakes are also present however, and these include some neat pieces, a few with abraded platforms where they have been struck from prepared cores. They are likely to represent earlier, Neolithic, activity at the site.

Only a small number of retouched or utilised pieces are present. They include three scrapers. One is on sub-circular primary flake of thermal origin 13267 which has slight retouch around its edges. There is also a neat regular ovate/sub rectangular flake with retouched rounded distal end 13072, and a small ovate flake with slight retouch around its distal end 13124.

Two pieces are classified as knives. One is a small 'leaf-shaped' flake 13001with retouch/flaking on its dorsal surface. The other is the proximal part of a blade-like flake with both of its edges retouched/utilised 13001.

One piece has been classified as a piercer 13124. It is a thermal fragment and is edge damaged and heavily patinated but there is possible use related wear at one point.

Two retouched blades, a retouched flake and a utilised flake are also present.

One flake 13190 has a battered area at one end and may be from a hammerstone.

Most of the flint from this site seems most likely to date to the Bronze Age and Iron age phases of activity represented by the excavated features. The flint is summarised by phase in Table 19. It should be considered in relation to these phases and the contexts from which it was recovered.

Table 8: Flint totals by phase

Phase/Date	Number
Phase 2	40
Phase 4	31
Phase 6	3
Phase 8	1
Phases 7-10	40
Phase 10	10
Phase 11	127
Phase 14	5
N/A	6

One flint was recorded as a registered find but it was a non-struck piece and has been discarded.

Table 9: Flint recommended for Illustration, Site 13/202:

Context	Type	Number	illus.
13001	backed knife	1	?
13001	scale flaked knife	1	*
13072	end scraper	1	*

Site 22/148 (NHER 37623 BTE)
A total of 48 struck flints were recovered during the excavation of the site. A few others have been discarded as non-struck.

Table 10: Summary of flint

Type	Number
Struck fragment	3
Flake	7

Blade-like flake	1
Blade	2
Shatter	1
Spall	24
Thumbnail scraper	1
Denticulate	1
Retouched flake	2
Utilised blade	2
Utilised flake	3
Utilised fragment	1
Total	**48**

Half of the flint consists of small spalls, most of them from one context. Also present are very small numbers of flakes and blade-like pieces and three very small chunky fragments which appear to have been struck, although it might be that these have been accidentally damaged. A small 'thumbnail' type scraper, of probable Late Neolithic or Early Bronze Age date was found in ditch fill 22101 and part of a blade-like flake with a possible denticular edge in pit fill 22117. A total of six utilised pieces were found in the fills of pits and ditches and from an unstratified context.

The features excavated at this site were of medieval date and the flint is therefore residual in the excavated contexts. The struck flint represents activity in the vicinity of the site during the prehistoric period.

Registered finds
Only one registered find was recorded (see Appendix 7).

No further work on the flint is required

Illustration: none

Site 24/144 (NHER 37892 FLS)
A total of 36 pieces of struck flint and one burnt fragment of flint were recovered during the excavation of the site. A small number of non-struck pieces have been discarded.

Table 11 Summary of flint

Type	Number
Flake	15
Blade-like flake	1
Blade	7
Shatter	1
Spall	3
Piercer	3
End scraper	1
Notched blade	1
Retouched flake	1
Utilised blade	1
Utilised flake	1
Polished flake	1
Total	**36**
Burnt fragment	1

The assemblage consists largely of unmodified flakes, many of them showing evidence for having been struck by hard hammer. Several flakes are quite thick with wide areas of platform present and pronounced bulbs of percussion. A number of small blades are also present.

One flake has been struck from a polished implement likely to have been of Neolithic date. Part of the polished surface survives on the dorsal face of the flake which may represent trimming of the original tool or the reuse of a ?broken tool as a core.

Retouched pieces include three possible piercers and a possible notched flake – all of them quite irregular, an end scraper on a thick blade-like piece a retouched flake, a retouched blade and a utilised blade. The latter is a small neat piece with an abraded platform. It was probably struck by soft hammer and may be of earlier Neolithic date.

The flint from the site appears to be from more than one period. A few small blades may be of earlier Neolithic date and the polished flake is probably of broad Neolithic date. Some of the hard hammer struck flakes and the irregular retouched pieces could date to the Bronze Age or even to the Iron Age.

A number of features excavated at the site are of possible Iron Age date and the flint should be considered in relation to these features. However it seems likely that at least some of the lithic material- that of earlier diagnostic type and that recovered from excavated Roman deposits – is residual in the contexts in which it was found and represents activity in the vicinity of the site during more than one prehistoric period.

Registered finds
A number of flints were bagged separately as Registered Finds. These are included in Appendix 6. During analysis these finds should be described, dated where possible and considered alongside the other flint from the site.

Table 12: Flint recommended for Illustration, Site 24/144:

Context	Reg no	Type	Number	illus.
24000		piercer	2	?
24061		end scraper	1	?
24234	72.505	oblique	1	?

Site 25/136 & 138 (NHER 37624 & 37625 FLS)

Evaluation
A total of 23 flints have been retained from that recovered during the evaluation of the site (a few non-struck fragments have been discarded).

Table 13: Summary of flint

Type	Number
Flake	11
Shatter	8
Spurred piece	1
Retouched fragment	2
Utilised fragment	1
Total	**23**

The flint consists mainly of unmodified flakes and shatter pieces, some of which are of uncertain origin; they may be debris from knapping or could be of thermal origin. A thick, hard hammer struck flake 438 has abrupt retouch forming a slight spur on one edge.

Excavation
Eight pieces of struck, or possibly struck, flint have been retained from that recovered during the excavation of the site (eight pieces of non-struck flint were discarded after examination and it is possible that several of the pieces retained as possibly struck are also of natural origin).

Table 14: Summary of flint

Type	Number
Struck fragment	1
Flake	3
Blade-like flake	1
Blade	1
Shatter	1
Retouched fragment	1
Total	**8**

The flint includes a small patinated blade and a blade-like flake, both from the fill 25282 of a possible well of Late Iron Age or Roman date. It is likely that the small blade is of earlier Neolithic date and the flint is residual in this context.

Three possible flake fragments, a small shatter piece and an irregular chalky fragment are all probably non-struck but have been retained. A quite large thermal flake has slight retouch or accidental damage on one edge. If retouched, the piece may have been used as a scraper.

The flint from this site is insignificant and no further work is required.

Illustration: none

Site 27/128 (NHER 37626 THM)
Eighteen pieces of flint have been retained from those recovered during the excavation of the site. A few others have been discarded as non-struck and the origin of some of those retained is uncertain, some may also be non-struck.

Table 15: Summary of flint

Type	Number
Blade-like flake	1
Flake	11
Shatter	2
Spall	1
Scraper	2
Utilised flake	1
Total	**18**

Most of the flints are small undiagnostic flakes, probably hard hammer struck (or possibly non-struck see above) pieces of likely later prehistoric date. There is one flake 27559, which may date to an earlier period, it has a facetted platform and was probably struck by soft hammer. It is also more heavily patinated than most of the flint from the site. Two pieces are classified as scrapers, both from ditch fill 27117, one is a thermally fractured cortical fragment with slight retouch at one steep edge the other is an irregular flake with one, convex, edge retouched.

Most of the features excavated at this site date to the medieval period and any flint recovered from these is residual. However there remain a few, as yet, undated features and the flint should be considered in the light of any further dating evidence.

Illustration: none.

Site 28/119 (NHER 37628 WDG)

A single flake and a piece of shattered flint were recovered during the excavation of the site. The latter was found in the subsoil and is probably of thermal origin. Most of the features excavated at this site were of medieval or probable medieval date. The flake was found in the fill of a medieval ditch and was therefore residual. No further work on the flint is required.

Illustration: none.

Site 36/97 (NHER 37629 ZVL)

Evaluation
Two flakes, one of them clearly hard hammer struck, and a possible shatter piece were found during the evaluation of the site. Some non-struck fragments have been discarded

Excavation
Eight pieces of flint have been retained from those recovered during the excavation of the site. A single burnt fragment and some other non-struck fragments have been discarded.

Table 16: Summary of flint

Type	Number
Flake	1
Blade-like flake	2
Blade	1
Shatter	2
Spall	1
Spurred piece	1
Total	**8**
Burnt fragment	1

The flints are mostly non-diagnostic small pieces. Only one retouched piece is present. This is a thick flake, probably from the side of a rounded pebble, which has slight retouch forming a scraper like edge on one side.

Apart from one burnt blade fragment, which might be of an earlier prehistoric date, the material could date to the Late Bronze Age or Iron Age and be contemporary with some features of those dates which were excavated at the site. The flint should be considered in relation to those features.

Illustration: none.

Site 38/90 (NHER 37939 JTT)
Ten pieces of flint have been retained from those recovered during the excavation of the site. A few others have been discarded as non-struck.

Table 17: Summary of flint

Type	Number
Flake	4
Blade-like flake	2
Blade	1
Shatter	1
Spall	1
Retouched flake	1
Total	**10**

The flint consists on undiagnostic pieces. One retouched piece is included. This is a thick flake from the side of a rounded pebble which has slight retouch on one edge forming a scraper-like implement.

The features excavated at the site were of medieval date and the flint is therefore residual. No further work on it is required.

Illustration: none.

Site 39/89 (NHER 37940 JTT)

Seven pieces of flint have been retained from those recovered during the excavation of the site.

Table 18: Summary of flint

Type	Number
Single platform blade core	1
Flake	2
Spall	1
Utilised blade	2
Utilised fragment	1
Total	7

A blade core and two blades, one with a utilised edge and one with possible use of its distal point, were found in the topsoil. They are probably of earlier Neolithic date and represent activity during that period. The features excavated at the site are all of probable medieval date and the lithic material does not contribute to the dating or interpretation of the site. No further work is required.

Illustration: none

Site 39/88 (NHER 37942 JTT)

Evaluation
A single retouched flake was found during the evaluation of the site.

Excavation
Forty pieces of flint have been retained from those recovered from the site. A few others have been discarded as non-struck.

Table 19: Summary of flint

Type	Number
Flake	14
Blade	10
Polished flake	1
Shatter	4
Spall	7
Piercer	2
Retouched flake	1
Retouched fragment	1
Total	40

The assemblage includes unmodified flakes and blades as well as a flake from a polished implement, two possible piercers a retouched flake and thermal fragment. The flakes are all quite small and include some hard hammer struck pieces of probable later prehistoric date (Bronze Age or Iron Age). One of the possible piercers is on a thermal fragment 39085; the other is a blade-like flake with possible utilisation of its distal point 39344. Some pieces of unabraded shattered flint have been retained as they might possibly be knapping debris but are more likely to be of thermal origin or to have been accidentally hit, for example, by ploughing.

The nature of the flint (three small blades and a flake from a polished implement) found in context 39313 suggests that it is probably of Neolithic date but the material was recovered from the fill of a ditch of ?probable medieval date and is therefore residual.

No struck flint was found in either of the pits which contained prehistoric pottery.
The flint from the site probably represents activity in the vicinity during more than one period. The flint should be considered in relation to the excavated features and in the light of any further dating

evidence. It seems unlikely, however, that the undiagnostic nature of most of it will add to the dating and interpretation of the site.

Registered finds
Three flints were assigned registered find numbers (see Appendix 13). Two were from Plot 39/88, the other from Plot 39/88B:

Illustration: none.

Site 39/84A (NHER 39520 JTT)

A thin soft hammer struck blade, four flakes and a retouched flake were recovered during the excavation of the site. Several others have been discarded as non-struck. The blade is probably of Neolithic date, the others pieces are probably of later prehistoric date. The features excavated at this site were of medieval date or later and the flint is therefore residual. No further work on the flint is required.

Illustration: none.

Site 44/48 (NHER 37729 SFF)

Evaluation
A single small flake was found during the evaluation. A few non-struck fragments were discarded.

Excavation
A blade and a blade-like flake were recovered during the excavation of the site. A single non-struck fragment was discarded.

Both of the flints were small and burnt. One piece was from the burnt fill of a pit of possible Bronze Age date. The other was from the fill of a medieval ditch. The flint may originate from a burnt mound but is not datable. No further work on the flint is necessary.

Illustration: none.

Site 46/38 (NHER 37987 ANT)

Evaluation
Fourteen spalls were recovered from samples taken during the evaluation of the site. Some small fragments were non-struck and have been discarded.

Excavation
Eighteen pieces of flint have been retained from those recovered during the excavation of the site. A few others have been discarded as non-struck.

Table 20: Summary of flint

Type	Number
Core/tool	1
Flake	8
Blade-like flake	2
Shatter	3
Spall	3
Retouched flake	1
Total	**18**

Most of the flakes are quite small, slightly irregular and probably struck by hard hammer. Although a couple of pieces have been classified as blades, neither of them are regular neatly prepared pieces. A couple of pieces of irregular shattered flint may have resulted from knapping or may be accidental,

thermally fractured fragments. Only one retouched piece, a very small flake with apparent slight retouch on one edge is present 46001.

Considering the presence of features of prehistoric date excavated at this site there is very little struck flint. Half of the flint (including the core/tool 46000) came from the topsoil and subsoil. Very small numbers of undiagnostic flints came from two Iron Age pits and two medieval or post-medieval ditches. The flint should be considered in relation to the excavated features.

Table 21: Flint recommended for Illustration, Site 46/38:

Context	Type	Number	illus.
46000	Core/tool	1	?

Site 47/34 (NHER 37631 WLN)
A total of 24 pieces of struck flint were recovered during the excavation of the site. The flint is mostly unpatinated and relatively little edge damage is evident.

The assemblage consists mainly of small, unmodified flakes and spalls, many of them struck by hard hammer and probably indicative of a later Neolithic to Iron date. There are also present, however, a few small blades and blade-like pieces which may be of an earlier Neolithic or Mesolithic date. Particularly of note in this respect are the three flints from 'cleaning layer' 47108 which consist of a bladelet and a blade, both with struck from cores with prepared platforms, and a crested blade, also evidence for core preparation.

Three utilised pieces and a possible notched flake are also present.

Table 22: Summary of flint

Type	Number
Crested blade	1
Flake	8
Blade-like flake	1
Blade	2
Spall	6
Bladelet	2
Notched flake	1
Utilised blade	1
Utilised flake	2
Total	**24**

Five pits and a truncated ditch excavated at the site may be of prehistoric date. The distribution of the flints should be examined in relation to these features and to any other dating evidence from the site.

Registered finds
A single piece recorded as context 47153, registered find 74012 was non-struck and has been discarded

Site 50/26 (NHER 37996 SLD)

Evaluation
Nineteen pieces of flint were found during the evaluation of the site. They include two small neat 'thumbnail' type scrapers of probable Late Neolithic/Early Bronze Age date.

Table 23: Summary of flint

Type	Number
Blade-like flake	1
Flake	11

Spall	4
Axe	1
Thumbnail scraper	2
Struck fragment	1
Total	**19**

Registered find
Part of a small polished axe of Neolithic date is present. It has shallow bifacial flaking from its edges and traces of polished surface surviving. Its cutting end is finely polished on both faces to a sharp edge with a couple of tiny chips – which might be post-depositional rather than use-related.

Excavation
A total of 90 flints and a single burnt fragment were recovered during the excavation of this site (a few additional pieces were discarded after examination as non-struck).

A variety of flint seems to have been utilised. Cortex, where present includes a mottled grey/orange smooth cortex, an abraded grey pebble type cortex and a creamy orange cortex from gravel lumps which is sometimes abraded. It seems that different types of surface-collected flint were used as a raw material.

Table 24: Summary of flint

Type	Number
Multi platform flake core	1
Core on flake	1
Struck fragment	2
Flake	53
Blade-like flake	2
Shatter	1
Spall	15
Scraper	2
Thumbnail scraper	2
Denticulate	1
Retouched flake	4
Retouched fragment	3
Utilised blade	1
Utilised flake	1
Building fragment	1
Total	**90**
Burnt fragment	1

Two cores are present; a multi platform flake core on a square 'blocky' piece 50018 and a flake which has been used as a core 50205. Neither is diagnostic. The assemblage consists largely of unmodified flakes and many of these are small thick hard hammer struck pieces which were probably struck from small pebbles and lumps of gravel.

Four scrapers are present. One is a small chunky flake with retouch forming a steep rounded dorsal surface 50020. Another is a small curved blade-like flake with both edges retouched 50000 and two are classified as thumbnail types 50147 and 50205 – although the latter is on an irregular cortical fragment. There is also a small flake with a slightly retouched denticular edge and small numbers of miscellaneous retouched and utilised pieces.

One quite large fragment, found in the fill of a medieval ditch, has been flaked slightly to a squarish shape and had traces of mortar adhering to its surface 50205. It is probably a piece of building flint.

A few small features excavated at this site may be of Middle Bronze Age site and the flint, including those found during the evaluation, should be considered in relation to these. It seems likely, given the nature of most of the assemblage that it could date to this period.

Table 25: Flint recommended for Illustration, Site 50/26:

Context	Category	Type	Number	illus.
831		Thumbnail scraper	1	?
233		Thumbnail scraper	1	?
216		Axe	1	*
50147	Scpf	Thumbnail scraper	1	?
50153	Retf	Retouched fragment	1	?

Flint from Evaluation only sites

Site 40/70 (NHER 37959 JNW)
A single small fragment, probably retouched, was found during the evaluation of this site.

Site 45/46 (NHER 37730 SFF)
A horseshoe shaped primary flake of thermal origin with retouch around most of its edges was found during the evaluation. It can best be described as a scraper.

Site 45/45 (NHER 37731 SFF)
A small sharp flake with slight retouch on one edge and a small burnt fragment of flint were found during the evaluation of the site.

Site 49/28A (NHER 37633 FLD)
One spall and a non struck fragment were collected during the evaluation of the site.

Site 52/21 (NHER 37634 FLD)
Four heavily abraded probable flakes were found during the evaluation of the site, the same number of non-struck pieces have been discarded.

Site 52/20 (NHER 37635 FLD)
A single small flake was found during the evaluation of the site.

Flint from the Watching Brief

A total of 97 struck flints were recovered from the route of the pipeline during the watching brief. Four other non-struck fragments have been discarded.

Table 26: Total numbers of flints by Section/Plot and NHER

Plot	HER	Number
0/254A	37795	1
2/242	37805	1
2/244	37803	5
2/245	37802	2
2/247	37800	1
2/249	37798	1
2/249A	37798	4
4/234	37813	1
4/235	37812	8
41/65	37965	1
45/44	37732	1

5/231	37816	2
51/23	38000	1
52/22	38001	2
7/223	37824	2
8/217/219	37828	21
9/214A	37619	1
9/215A	37830	1
10/210	37832	2
10/213	37831	1
12/203	37621	1
14/187	37852	1
17/172	37867	1
18/162	37876	3
20/157	37882	1
21/149	37890	1
21/149	37890	7
22/148	37623	2
24/140	37896	1
24/144	37892	1
25/136/138	37624	2
35/102	37926	5
37/92	37937	1
37/95A	37931	1
39/78	37952	2
39/84A	37946	1
44/52	37630	1
49/28A	37633	3
50/26	37996	1
52/21	37634	1

Flints were recovered in small numbers from along the pipeline route. They consisted mostly of unmodified flakes and blades with some retouched or utilised pieces also being found. Quite a lot of the flint was edge damaged to some degree. The flint included a mixture of different types with both hard hammer and soft hammer struck material being present (the former being predominant).

The context of the flint recovered during the watching brief has not been considered in detail during the course of assessment. Presumably, some/much of it may have been collected from unstratified deposits, and some of it may have come from isolated excavated features outside the areas of excavation. The distribution of this flint can be considered in relation to the excavated sites and to other material recorded during the watching brief. Twenty-six piece of flint included with the material from the watching brief were from excavated sites. These included a bifacially flaked piece, possibly a chopping type tool, or perhaps a core, from site w25/136/138. Otherwise the flints were fairly insignificant but they can be included in the totals of flints from the relevant sites.

Further work
Context information, currently provided on separate EXCEL sheets for each site, should be converted into an ACCESS table in order to easily sort the flint data by site, context, context type and phase.

Work should be carried out on the flint from a number of the excavated sites as follows:

Table 27: Recommendations for fuller analysis

Plot	NHER	Tasks	Est. no. (max.) illus
47/34	37631	Consider flint in relation to prehistoric features	0
1/251	37617	Consider flint in relation to prehistoric features and different phases of activity Registered finds: describe, date if possible and consider alongside other flints from the site Final selection of pieces for illustration	6
6/226	37821	Consider flint in the light of any further dating evidence for the excavated features	0
24/144	37892	Consider flint in relation to excavated features Registered finds: describe, date if possible and consider alongside other flints from the site Final selection of pieces for illustration	3
50/26	37996	Combine evaluation and excavation flint Consider flint in relation to excavated features Registered finds: describe, date if possible and consider alongside other flints from the site Final selection of pieces for illustration	4
27/128	37626	Consider flint in relation to excavated features and any further dating evidence	0
36/97	37629	Consider flint in relation to excavated features	0
39/88 and 39/88B	37942 & 39518	Consider flint in relation to excavated features and any further dating evidence Registered finds: describe, date if possible and consider alongside other flints from the site	0
8/217-219	37828	Consider context and distribution of flint in relation to individual sites, excavated features and phase Registered finds: describe, date if possible and consider alongside other flints from the site Final selection of pieces for illustration	8
46/38	37987	Summarise assessment information and consider context of flint Final selection of pieces for illustration	1
13/202	37622	Consider context and distribution of flint in relation to individual sites, excavated features and phase Registered finds: describe, date if possible and consider alongside other flints from the site Final selection of pieces for illustration	3
Total			**12**

Flint from the other excavated sites, which do not require further work, will be included as short summaries in the final reports on those sites.

The distribution of flint found during the watching brief should be examined and flints collected during the watching brief from the areas of the excavated sites can be included in the reports on those sites. Other material from the watching brief can be included appropriately in the intended watching brief Appendix.

Appendix A: Flint categories

Category	Name
Arhd	Arrowhead (flint)
Axef	Axe trimming flake
Blad	Blade
Buil	Building material
Burn	Burnt
Core	Core
Corf	Core rejuvenation flake
Dent	Denticulate
Flak	Flake
Knff	Knife (flint)
Mcrl	Microlith
Notb	Notched blade
Notf	Notched flake
Pecr	Piercer
retb	Retouched blade
retf	Retouched flake
scpf	Scraper (flint)
stfr	Struck fragment
unsk	Unstruck
utbl	Utilised blade
utfl	Utilised flake

Appendix B: Flint types

Type	description
Axe	axe
Backed knife	generally parallel sided with one edge blunted by abrupt retouch, the other 9cutting) edge worn or retouched
Bipolar	blade core with opposed platforms
Blade	parallel-sided flake with length:breadth ration >2:1
Blade-like flake	flake which is long and narrow but not a true blade
Bladelet	small blade
Chip	fragment;<20mm
Core/tool	piece utilised as core and tool
Crested blade	triangular section, removed from a ridge prepared by alternate or one directional flaking
Denticulate	with retouch forming coarse teeth
Discoidal knife	generally sub-circular with bifacial retouch around periphery and sometimes over faces (also triangular, quadrangular and lozenge-shaped forms)
End scraper	retouch usually at distal end of flake (occasionally at proximal end)
Flake	struck debitage >20mm
Fragment	miscellaneous fragment
Hammerstone	piece used as hammer during knapping; pitted /battered surface
Knife	knife
Leaf-shaped	bifacially flaked point
Microlith	retouched small blade or flake, bulb usually removed by retouch
Multi platform flake core	multi-platform flake core
Notched blade	blade with one or more indentations formed by retouch
Notched flake	flake with one or more indentations formed by retouch
Oblique arrowhead	asymmetrical arrowhead of sub triangular outline with bifacial retouch of one long edge and often around hollowed base with remaining primary flake edge usually unworked but possibly retouched esp. to tip
Piercer	piece with point formed by retouch from one direction (or with utilised point)
Polished flake	flake struck from polished implement
Retouched blade	miscellaneous retouched blade

Type	description
Retouched flake	miscellaneous retouched flake
Retouched fragment	miscellaneous retouched fragment (non-flake)
Scale flaked knife	parallel sided with regular scale flaked retouch along one or two edges
Scraper	part of edge steeply retouched
Shatter	miscellaneous fragment >20mm, possibly resulting from knapping process
Side scraper	retouch along side/s of flake
Single platform blade core	single platform blade core
Single platform flake core	single platform flake core
Spall	struck debitage;< 20mm
Spurred piece	piercer with point formed on scraper-like edge
Sub-circular scraper	sub-circular scraper
Thumbnail scraper	small , sub circular or ovate with retouch, sometimes scale-flaked
Truncated blade	piece deliberately truncated by abrupt retouch at distal end
Utilised blade	utilised blade - with signs of wear due to use
Utilised flake	utilised flake - with signs of wear due to use
Utilised fragment	miscellaneous utilised fragment (non-flake)

Appendix C: Catalogue of Flint by Site and by Context

Appendix C1: Site 1/251 (NHER 37617 WNE)

NHER	Context	Reg no	Type	Number
37617	1002		Blade	1
37617	1002	70.374	Blade	1
37617	1002	70.370	Flake	1
37617	1002		Spall	2
37617	1003		Denticulate	1
37617	1003		Piercer	1
37617	1003		Sub-circular scraper	1
37617	1003		Utilised blade	1
37617	1024		Blade-like flake	2
37617	1024		Flake	2
37617	1028		Blade	1
37617	1028		Spall	1
37617	1034		Blade	4
37617	1034		Burnt fragment	1
37617	1034		Blade-like flake	2
37617	1034		Spall	1
37617	1034	70.352	Piercer	1
37617	1034		Fragment	0
37617	1055		Blade	1
37617	1057	70.350	Non-struck fragment	0
37617	1078		Blade	2
37617	1078	70.353	Blade	1
37617	1078	70.357	Single platform flake core	1
37617	1078	70.355	Blade-like flake	1
37617	1078		Flake	13
37617	1078	70358	Flake	1
37617	1078		Shatter	1
37617	1078		Spall	3
37617	1078	70.359	Spall	2
37617	1078	70.354	Retouched blade	1
37617	1078	70.356	Utilised flake	1
37617	1094		Flake	1
37617	1094		Non-struck fragment	0
37617	1121	70.372	Retouched blade	1
37617	1122		Backed knife	1
37617	1131		Flake	2
37617	1131		Spall	1
37617	1131		Non-struck fragment	0

NHER	Context	Reg no	Type	Number
37617	1133		Flake	2
37617	1133	70.362	Retouched flake	1
37617	1133		Non-struck fragment	0
37617	1140		Blade	3
37617	1140		Flake	3
37617	1140		Utilised blade	2
37617	1140	70.361	Utilised blade	1
37617	1140		Utilised flake	1
37617	1151		Chip	1
37617	1151		Flake	1
37617	1151		Non-struck fragment	0
37617	1152		Flake	2
37617	1162		Blade	1
37617	1162		Flake	4
37617	1162		Non-struck fragment	0
37617	1167		Blade	1
37617	1178		Blade	1
37617	1178		Blade-like flake	1
37617	1182	70.363	Bladelet	1
37617	1182		Shatter	7
37617	1182		Non-struck fragment	0
37617	1192		Flake	2
37617	1192		Shatter	1
37617	1192	70.376	Spall	1
37617	1192		Non-struck fragment	0
37617	1208		Flake	3
37617	1209		Flake	1
37617	1209		Shatter	1
37617	1215		Blade	1
37617	1215		Shatter	1
37617	1215		Non-struck fragment	0
37617	1233	70.364	Knife	1
37617	1235		Flake	3
37617	1235		Retouched flake	1
37617	1235		Retouched fragment	1
37617	1248	70.371	End scraper	1
37617	1264		Flake	1
37617	1266		Bladelet	1
37617	1266		Flake	3
37617	1266		Utilised flake	1
37617	1276		Flake	1
37617	1285		Flake	2
37617	1311		Blade-like flake	1
37617	1311		Flake	2
37617	1311		Shatter	1
37617	1311		Spall	2
37617	1311	70.365	Knife	1
37617	1311	70.366	Scale flaked knife	1
37617	1311		Sub-circular	2
37617	1311		Non-struck fragment	0
37617	1311		Utilised flake	2
37617	1329		Flake	1
37617	1331		Flake	2
37617	1331		Non-struck fragment	0
37617	1376		Shatter	1
37617	1376		Utilised flake	1
37617	1387		Bladelet	1
37617	1397		Spall	3
37617	1405	70.369	Blade	1
37617	1405	70.367	Flake	1
37617	1405	70.368	Retouched flake	1

NHER	Context	Reg no	Type	Number
37617	1425		Flake	2
37617	1436		Blade	2
37617	1436		Flake	1
37617	1436		Non-struck fragment	0
37617	1436		Utilised blade	2
37617	1436		Utilised flake	1
37617	1444		Blade	2
37617	1444		Flake	3
37617	1444		Non-struck fragment	0
37617	1445	70.373	Retouched flake	1
37617	1448		Blade	1
37617	1451		Blade	1
37617	1454		Blade	1
37617	1459	70.375	Utilised blade	1
37617	1471		Blade-like flake	1
37617	1511		Blade	1
37617	1511		Flake	9
37617	1511		Spall	1
37617	1511		End scraper	1
37617	1511		Sub-circular	2
37617	1511		Thumbnail	1
37617	1511		Utilised flake	1

Appendix C2: Site 6/226 (NHER 37821 RGH)

NHER	Context	Type	Number
37821	431	Shatter	1
37821	431	Retouched fragment	1
37821	431	Non-struck fragment	0
37821	6012	Blade	5
37821	6012	Blade-like flake	2
37821	6012	Flake	2
37821	6012	Shatter	1
37821	6074	Blade	1
37821	6078	End scraper	1
37821	6090	Burnt fragment	1

Appendix C3: Site 08/217-219 (NHER 37826 & 37827 LEX & 37828 WAS)

NHER	Context	Reg no	Type	Number
37828	8001	72201	Truncated blade	2
37828	8001	72200	Scraper	1
37828	8001	72203	Sub-circular scraper	1
37828	8058		Flake	1
37828	8111		Non-struck fragment	0
37828	8262	72206	Single platform blade core	1
37828	8264		Flake	1
37828	8266		Blade-like flake	1
37828	8266		Flake	1
37828	8272		Blade	2
37828	8272		Non-struck fragment	0
37828	8276		Blade	32
37828	8276		Core/tool	1
37828	8276		Bladelet	12
37828	8276		Flake	44
37828	8276		Spall	14
37828	8276		Utilised blade	1
37828	8276		Utilised flake	1
37828	8283		Blade	1

NHER	Context	Reg no	Type	Number
37828	8283		Spall	1
37828	8286		Blade-like flake	1
37828	8292		Flake	1
37828	8292		Microlith	1
37828	8293		Blade	1
37828	8293		Flake	3
37828	8311		Blade	4
37828	8311	72205	Bipolar	1
37828	8311		Flake	4
37828	8311		Spall	1
37828	8311		Non-struck fragment	0
37828	8318		Blade-like flake	1
37828	8325		Blade	2
37828	8328		Blade	3
37828	8345		Scale flaked knife	1
37828	8363	72211	Leaf-shaped arrowhead	1
37828	8363		Blade	10
37828	8363		Burnt fragment	1
37828	8363		Flake	11
37828	8363		Spall	8
37828	8363		Sub-circular scraper	1
37828	8363		Utilised blade	2
37828	8365		Blade-like flake	1
37828	8370		Blade	22
37828	8370		Blade-like flake	8
37828	8370		Flake	32
37828	8370		Spall	9
37828	8370		Knife	2
37828	8370		Retouched flake	3
37828	8370		Utilised blade	1
37828	8376	72208	Utilised blade	1
37828	8378		Blade-like flake	1
37828	8378		Flake	3
37828	8378		Spall	2
37828	8378	72209	Sub-circular scraper	1
37828	8378		Non-struck fragment	0
37828	8378		Utilised flake	1
37828	8380	72212	Scale flaked knife	1
37828	8382		Flake	1
37828	8384		Spall	2
37828	8386	72207	Scale flaked knife	1
37828	8389		Flake	4
37828	8389		Spall	3
37828	8392	72210	Bladelet	1
37828	8392		Flake	4
37828	8392		Non-struck fragment	0
37828	8394		Flake	1
37828	8394		Retouched flake	1

Appendix C4: Site 12/203 (NHER 37621 TTL)

NHER	Context	Type	Number
37621	24	Blade-like flake	1
37621	33	End scraper	1
37621	828	Flake	1
37621	12016	Blade	1
37621	12016	Flake	1

Appendix C5: Site 13/202 (NHER 37622 TTL)

NHER	Context	Reg no	Type	Number
37622	40		Flake	1
37622	13000		Blade	1
37622	13000		Retouched blade	2
37622	13001		Backed knife	1
37622	13001		Scale flaked knife	1
37622	13007		Spall	1
37622	13031		bladelet	2
37622	13031		Non-struck fragment	0
37622	13032		Bladelet	1
37622	13040		Flake	8
37622	13040		Shatter	1
37622	13040		Non struck fragment	0
37622	13040	70.470	Non-struck fragment	0
37622	13045		Flake	1
37622	13069		Bladelet	1
37622	13069		Flake	6
37622	13069		Spall	1
37622	13072		Blade-like flake	2
37622	13072		Flake	2
37622	13072		End scraper	1
37622	13076		Flake	8
37622	13076		Spall	3
37622	13076		Retouched flake	1
37622	13076		Non-struck fragment	0
37622	13078		Blade	8
37622	13078		Blade-like flake	7
37622	13078		Flake	17
37622	13078		Shatter	3
37622	13083		Flake	1
37622	13083		Shatter	1
37622	13083		Non-struck fragment	0
37622	13084		Spall	2
37622	13084		Non-struck fragment	0
37622	13086		Spall	1
37622	13092		Spall	0
37622	13094		Bladelet	1
37622	13102		Multi platform flake core	1
37622	13102		Flake	4
37622	13105		Flake	1
37622	13105		Shatter	1
37622	13115		Flake	3
37622	13115		Non-struck fragment	0
37622	13124		Blade	2
37622	13124		Flake	32
37622	13124		Shatter	3
37622	13124		Spall	16
37622	13124		Piercer	1
37622	13124		End scraper	1
37622	13124		Non-struck fragment	0
37622	13141		Flake	1
37622	13150		Blade-like flake	2
37622	13157		Blade	1
37622	13157		Blade-like flake	1
37622	13157		Flake	9
37622	13157		Flake	0
37622	13164		Blade	3
37622	13164		Blade-like flake	1
37622	13164		Flake	11
37622	13164		Spall	4

NHER	Context	Reg no	Type	Number
37622	13164		Non-struck fragment	0
37622	13171		Blade	1
37622	13171		Flake	3
37622	13171		Spall	5
37622	13171		Non-struck fragment	0
37622	13171		Utilised flake	1
37622	13184		Blade	1
37622	13184		Flake	2
37622	13187		Flake	2
37622	13188		Flake	1
37622	13190		Blade	2
37622	13190		Flake	3
37622	13190		?hammerstone flake	1
37622	13190		Non-struck fragment	0
37622	13215		Blade	2
37622	13215		Flake	4
37622	13227		Blade	1
37622	13235		Blade-like flake	2
37622	13235		Flake	11
37622	13237		Flake	3
37622	13238		Blade	1
37622	13238		Blade-like flake	3
37622	13238		Flake	2
37622	13238		Spall	1
37622	13239		Flake	0
37622	13248		Blade	2
37622	13248		Flake	2
37622	13252		Non-struck fragment	0
37622	13263		Blade-like flake	1
37622	13263		Flake	16
37622	13263		Spall	4
37622	13263		Flake	0
37622	13263		Non-struck fragment	0
37622	13267		Flake	1
37622	13267		Sub-circular scraper	1
37622	13278		Non-struck fragment	0
37622	13290		Flake	1
37622	13290		Non-struck fragment	0
37622	13421		Flake	6
37622	13421		Spall	4

Appendix C6: Site 22/148 (NHER 37623 BTE)

NHER	Context	Reg no	Type	Number
37623	22038		Utilised flake	1
37623	22052		Retouched flake	1
37623	22062	70.153	Scraper	1
37623	22088		Flake	1
37623	22092		Flake	1
37623	22101		Thumbnail scraper	1
37623	22103		Blade	1
37623	22103		Spall	1
37623	22103		Utilised blade	1
37623	22110		Non-struck fragment	0
37623	22117		Denticulate	1
37623	22140		Non-struck fragment	0
37623	22140		Utilised flake	1
37623	22142		Non-struck fragment	0
37623	22142		Utilised blade	1
37623	22142		Utilised flake	1
37623	22144		Flake	1

37623	22174		Flake	1
37623	22246		Non-struck fragment	0
37623	22275		Blade	1
37623	22323		Flake	1
37623	22323		Spall	1
37623	22332		Blade-like flake	1
37623	22332		Flake	2
37623	22332		Shatter	1
37623	22332		Spall	22
37623	22332		Retouched flake	1
37623	22332		Struck fragment	3
37623	22332		Non-struck fragment	0
37623	22376		Utilised fragment	1

Appendix C7: Site 24/144 (NHER 37821 FLS)

NHER	Context	Reg no	Type	Number
37892	24000		Flake	5
37892	24000		Piercer	2
37892	24001		Flake	2
37892	24059		Piercer	1
37892	24061		End scraper	1
37892	24077		Blade	1
37892	24077		Burnt fragment	1
37892	24077		Utilised blade	1
37892	24079		Blade	2
37892	24079	72.502	Flake	1
37892	24079	72.500	Retouched flake	1
37892	24112		Blade	1
37892	24114		Flake	1
37892	24114		Retouched flake	1
37892	24114	72.503	Utilised blade	1
37892	24115		Shatter	1
37892	24115	72.501	Piercer	1
37892	24126		Non-struck fragment	0
37892	24207		Blade	1
37892	24230		Flake	1
37892	24232		Flake	2
37892	24234	72.505	Oblique arrowhead	1
37892	24234		Blade	1
37892	24234		Spall	1
37892	24236		Flake	1
37892	24236		Spall	1
37892	24238		Blade-like flake	1
37892	24238		Utilised flake	1
37892	24240		Blade	1
37892	24243		Spall	1
37892	24245		Flake	2
37892	24247		Flake	1
37892	24247		Non-struck fragment	0
37892	24250		Polished flake	1
37892	24256		Notched blade	1

Appendix C8: Site 25/136 & 138 (NHER 37624 & 37625 FLS)

NHER	Context	Type	Number
37624 & 37625	436	Flake	1
37624 & 37625	436	Non-struck fragment	0
37624 & 37625	438	Shatter	2
37624 & 37625	438	Spurred piece	1

37624 & 37625	438	Non-struck fragment	0
37624 & 37625	443	Flake	7
37624 & 37625	443	Non-struck fragment	0
37624 & 37625	816	Flake	2
37624 & 37625	816	Shatter	1
37624 & 37625	816	Non-struck fragment	0
37624 & 37625	816	Utilised fragment	1
37624 & 37625	820	Retouched fragment	2
37624 & 37625	825	Flake	1
37624 & 37625	825	Shatter	5
37624 & 37625	825	Non-struck fragment	0
37624 & 37625	25015	Flake	2
37624 & 37625	25015	Non-struck fragment	0
37624 & 37625	25027	Non-struck fragment	0
37624 & 37625	25033	Non-struck fragment	0
37624 & 37625	25047	Shatter	1
37624 & 37625	25047	Struck fragment	1
37624 & 37625	25084	Non-struck fragment	0
37624 & 37625	25139	Blade	1
37624 & 37625	25156	Non-struck fragment	0
37624 & 37625	25173	Retouched fragment	1
37624 & 37625	25222	Flake	1
37624 & 37625	25281	Non-struck fragment	0
37624 & 37625	25282	Blade	1
37624 & 37625	25282	Blade-like flake	1

Appendix C9: Site 27/128 (NHER 37627 THM)

NHER	Context	Type	Number
37626	22022	Flake	1
37626	22022	Shatter	2
37626	27031	Flake	1
37626	27062	Non-struck fragment	0
37626	27085	Non-struck fragment	0
37626	27112	Flake	1
37626	27117	Scraper	2
37626	27136	Flake	1
37626	27203	Flake	1
37626	27207	Flake	1
37626	27303	Spall	1
37626	27315	Non-struck fragment	0
37626	27325	Flake	1
37626	27340	Flake	1
37626	27380	Flake	1
37626	27380	Non-struck fragment	0
37626	27444	Flake	1
37626	27444	Non-struck fragment	0
37626	27449	Blade-like flake	1
37626	27507	Utilised flake	1
37626	27559	Flake	1

Appendix C10: Site 28/119 (NHER 37628 WDG)

NHER	Context	Type	Number
37628	28000	Flake	1
37628	28030	Shatter	1

Appendix C11: Site 36/97 (NHER 37629 ZVL)

NHER	Context	Type	Number
37629	134	Flake	1
37629	134	Shatter	1
37629	134	Non-struck fragment	0
37629	139	Non-struck fragment	0
37629	141	Non-struck fragment	0
37629	814	Flake	1
37629	36022	Blade-like flake	1
37629	36028	Shatter	1
37629	36028	Spurred piece	1
37629	36028	Non-struck fragment	0
37629	36030	Blade	1
37629	36030	Blade-like flake	1
37629	36042	Non-struck fragment	1
37629	36049	Non-struck fragment	0
37629	36056	Spall	1
37629	36062	Flake	1
37629	36062	Shatter	1

Appendix C12: Site 38/90 (NHER 37939 JTT)

NHER	Context	Type	Number
37939	38001	Blade	1
37939	38001	Blade-like flake	1
37939	38009	Retouched flake	1
37939	38056	Non-struck fragment	0
37939	38066	Shatter	1
37939	38120	Blade-like flake	1
37939	38134	Flake	1
37939	38144	Non-struck fragment	0
37939	38148	Flake	1
37939	38151	Flake	1
37939	38220	Flake	1
37939	38220	Spall	1

Appendix C13: Site 39/89 (NHER 37940 JTT)

NHER	Context	Type	Number
37940	39824	Flake	1
37940	39829	Single platform blade core	1
37940	39829	Utilised blade	2
37940	39830	Flake	1
37940	39830	Spall	1
37940	39830	Utilised fragment	1

Appendix C14: Site 39/88 & 88B (NHER 37942 & 39518 JTT)

NHER	Context	Reg no	Type	Number
37942 & 39518	39013		Retouched flake	1
37942 & 39518	39002		Retouched flake	1
37942 & 39518	39015		Flake	3
37942 & 39518	39019	70251	Blade	1
37942 & 39518	39019	70252	Blade	1
37942 & 39518	39022		Blade	1
37942 & 39518	39034		Non-struck fragment	0
37942 & 39518	39067		Non-struck fragment	0
37942 & 39518	39069		Non-struck fragment	0

NHER	Context	Reg no	Type	Number
37942 & 39518	39083		Shatter	1
37942 & 39518	39083		Non-struck fragment	0
37942 & 39518	39085		Piercer	1
37942 & 39518	39085		Non-struck fragment	0
37942 & 39518	39104		Non-struck fragment	0
37942 & 39518	39172		Blade	1
37942 & 39518	39172		Flake	1
37942 & 39518	39172		Spall	0
37942 & 39518	39189		Flake	1
37942 & 39518	39229		Blade	1
37942 & 39518	39231		Flake	3
37942 & 39518	39231		Shatter	2
37942 & 39518	39231		Spall	3
37942 & 39518	39231		Retouched fragment	1
37942 & 39518	39231		Non-struck fragment	0
37942 & 39518	39234		Flake	1
37942 & 39518	39234		Spall	1
37942 & 39518	39288		Flake	1
37942 & 39518	39290		Spall	1
37942 & 39518	39290		Non-struck fragment	0
37942 & 39518	39307	70260	Retouched blade	1
37942 & 39518	39313		Blade	3
37942 & 39518	39313		Polished flake	1
37942 & 39518	39344		Piercer	1
37942 & 39518	39346		Flake	1
37942 & 39518	39346		Shatter	1
37942 & 39518	39358		Flake	1
37942 & 39518	39358		Non-struck fragment	0
37942 & 39518	39384		Blade	1
37942 & 39518	39401		Spall	2
37942 & 39518	39406		Blade	1
37942 & 39518	39424		Blade	1
37942 & 39518	39424		Non-struck fragment	0
37942 & 39518	39448		Blade	1
37942 & 39518	39448		Flake	1
37942 & 39518	39449		Flake	1

Appendix C15: Site 39/84a (NHER 39520 JTT)

NHER	Context	Type	Number
39520	57046	Non-struck fragment	0
39520	57048	Non-struck fragment	0
39520	57204	Flake	1
39520	57511	Blade	1
39520	57605	Flake	1
39520	57690	Flake	1
39520	57750	Non-struck fragment	0
39520	57755	Retouched flake	1
39520	57826	Flake	1
39520	57937	Non-struck fragment	0

Appendix C16: Site 44/48 (NHER 37729 SFF)

NHER	Context	Type	Number
37729	310	Non-struck fragment	0
37729	323	Non-struck fragment	0
37729	327	Flake	1
37729	44058	Non-struck fragment	0

37729	44143	Blade-like flake	1
37729	44203	Blade	1

Appendix C17: Site 46/38 (NHER 37987 ANT)

NHER	Context	Type	Number
37987	46003	Spall	5
37987	46008	Non-struck fragment	0
37987	46018	spall	5
37987	46018	Non-struck fragment	0
37987	46026	Spall	4
37987	46026	Non-struck fragment	0
37987	46033	Non-struck fragment	0
37987	46000	Core/tool	1
37987	46000	Blade-like flake	1
37987	46000	Flake	2
37987	46001	Flake	4
37987	46001	Retouched flake	1
37987	46020	Blade-like flake	1
37987	46020	Spall	1
37987	46029	Shatter	2
37987	46029	Spall	1
37987	46032	Non-struck fragment	0
37987	46038	Flake	1
37987	46053	Flake	1
37987	46053	Shatter	1
37987	46053	Non-struck fragment	0
37987	46059	Spall	1

Appendix C18: Site 47/34 (NHER 37631 WLN)

NHER	Context	Type	Number	Reg no
37631	47000	Blade-like flake	1	
37631	47001	Spall	1	
37631	47004	Utilised flake	1	
37631	47020	Flake	1	
37631	47020	Notched flake	1	
37631	47029	Flake	1	
37631	47037	Flake	2	
37631	47039	Flake	1	
37631	47039	Spall	1	
37631	47060	Flake	1	
37631	47060	Spall	2	
37631	47108	Blade	1	
37631	47108	Bladelet	1	
37631	47108	Crested blade	1	
37631	47120	Flake	1	
37631	47125	Blade	1	
37631	47153	Non-struck fragment	0	74012
37631	47177	Bladelet	1	
37631	47177	Flake	1	
37631	47177	Utilised blade	1	
37631	47177	Utilised flake	1	
37631	47189	Spall	1	
37631	47246	Spall	1	

Appendix C19: Site 50/26 (NHER 37996 FLD)

NHER	Context	Reg no	Type	Number
37996	129		Flake	3
37996	129		Struck fragment	1
37996	177		Flake	2
37996	177		Spall	1
37996	181		Blade-like flake	1
37996	196		Flake	2
37996	196		Spall	1
37996	202		Flake	1
37996	209		Flake	1
37996	216		Spall	2
37996	216	70000	Axe	1
37996	218		Flake	2
37996	233		Thumbnail scraper	1
37996	831		Thumbnail scraper	1
37996	50000		Flake	2
37996	50000		Retouched flake	1
37996	50000		Scraper	1
37996	50012		Flake	1
37996	50017		Flake	3
37996	50017		Shatter	1
37996	50017		Spall	2
37996	50017		Retouched fragment	1
37996	50017		Non-struck fragment	0
37996	50018		Burnt fragment	1
37996	50018		Multi platform flake core	1
37996	50018		Blade-like flake	1
37996	50020		Flake	2
37996	50020		Retouched flake	2
37996	50020		Scraper	1
37996	50020		Non-struck fragment	0
37996	50021		Flake	2
37996	50021		Spall	1
37996	50023		Flake	4
37996	50023		Retouched fragment	1
37996	50023		Non-struck fragment	0
37996	50025		Flake	2
37996	50045		Flake	6
37996	50045		Non-struck fragment	0
37996	50049		Flake	3
37996	50055		Flake	1
37996	50081		Flake	2
37996	50081		Spall	2
37996	50081		Non-struck fragment	0
37996	50100		Non-struck fragment	0
37996	50142		Flake	2
37996	50142		Spall	1
37996	50144		Flake	1
37996	50144		Spall	1
37996	50147		Flake	2
37996	50147		Thumbnail scraper	1
37996	50153		Flake	7
37996	50153		Spall	1
37996	50153		Retouched flake	1
37996	50153		Retouched fragment	1
37996	50155		Flake	1
37996	50172		Blade-like flake	1
37996	50183		Flake	3
37996	50183		Spall	1
37996	50183		Struck fragment	1

37996	50183		Non-struck fragment	0
37996	50193		Denticulate	1
37996	50193		Flake	1
37996	50205		Burnt fragment	1
37996	50205		Flake	1
37996	50205		Flake	4
37996	50205		Spall	3
37996	50205		Thumbnail scraper	1
37996	50205		Struck fragment	1
37996	50205		Non-struck fragment	0
37996	50207		Flake	4
37996	50207		Spall	3
37996	50207		Non-struck fragment	0
37996	50264		Non-struck fragment	0
37996	50264		Utilised blade	1
37996	50264		Utilised flake	1

Appendix C20: Evaluation only sites

Plot	NHER	Context	Type	Number
52/20	37635	271	Flake	1
40/70	37959	424	Retouched blade	1
40/70	37959	424	Non-struck fragment	0
49/28A	37633	170	spall	1
49/28A	37633	170	Non-struck fragment	0
45/45	37731	826	Non-struck fragment	1
45/45	377731	826	retouched flake	1
45/46	37730	360	Scraper	1
52/21	37634	833	Flake	4
52/21	37634	833	Fragment	0

Appendix C21: Flint from the Watching Brief (by Section/Plot, NHER and context)

Plot	NHER	Context	Type	Number
0/254A	37795	851	Retouched flake	1
2/242	37805	2850	Flake	1
2/244	37803	2853	Blade	1
2/244	37803	2853	Flake	4
2/245	37802	2861	Flake	2
2/247	37800	2862	Blade	1
2/249	37798	2863	Flake	1
2/249A	37798	2859	Blade	3
2/249A	37798	2859	Flake	1
4/234	37813	4866	Flake	1
4/235	37812	4853	Flake	2
4/235	37812	4853	Retouched flake	1
4/235	37812	4853	Struck fragment	1
4/235	37812	4855	Blade-like flake	1
4/235	37812	4855	Flake	2
4/235	37812	4855	Utilised flake	1
5/231	37816	5852	Flake	1
5/231	37816	5852	Retouched flake	1
7/223	37824	7852	Flake	1
7/223	37824	7861	Flake	1
8/217/219	37828	8853	Blade	2
8/217/219	37828	8853	Single platform flake core	1
8/217/219	37828	8853	Blade-like flake	1
8/217/219	37828	8853	Flake	4
8/217/219	37828	8853	Non-struck fragment	0
8/217/219	37828	8858	Blade	2

Plot	NHER	Context	Type	Number
8/217/219	37828	8858	Flake	2
8/217/219	37828	8864	Blade-like flake	1
8/217/219	37828	8866	Blade-like flake	1
8/217/219	37828	8874	Blade	2
8/217/219	37828	8874	Spall	1
8/217/219	37828	8874	Struck fragment	1
8/217/219	37828	8874	Non-struck fragment	0
8/217/219	37828	8878	Blade	1
8/217/219	37828	8892	Flake	1
8/217/219	37828	8892	Non-struck fragment	0
8/217/219	37828	8906	Flake	1
9/214A	37619	9859	End scraper	1
9/215A	37830	9860	Blade	1
10/210	37832	10867	Flake	2
10/213	37831	10855	Flake	1
12/203	37621	12850	Flake	1
14/187	37852	14876	Retouched flake	1
17/172	37867	17865	Notched blade	1
18/162	37876	18853	Blade	1
18/162	37876	18853	Notched blade	1
18/162	37876	18853	Scraper	1
20/157	37882	20860	Retouched flake	1
21/149	37890	21861	Retouched blade	1
21/149	37890	21853	Blade	1
21/149	37890	21853	Spall	0
21/149	37890	21855	Flake	2
21/149	37890	21858	Flake	2
21/149	37890	21858	Spall	1
21/149	37890	21861	Blade-like flake	1
22/148	37623	22863	Retouched flake	1
22/148	37623	22863	Scraper	1
24/140	37896	24858	Retouched flake	1
24/144	37892	24858	Retouched flake	1
25/136/138	37624	25885	Core/tool	1
25/136/138	37624	25885	Retouched fragment	1
35/102	37926	35857	Flake	3
35/102	37926	35857	Retouched flake	2
37/92	37937	37852	Flake	1
37/95A	37931	37851	Flake	1
37/95A	37931	37851	Spall	0
39/78	37952	39854	Flake	2
39/84A	37946	39858	Flake	1
41/65	37965	41852	Knife	1
42/64	37966	42856	Flake	0
43/58	37972	43950	Retouched flake	1
45/44	37732	45853	Struck fragment	1
51/23	38000	51850	Notched blade	1
51/23	38000	51850	Non-struck fragment	0
52/22	38001	52852	Flake	1
52/22	38001	52852	Scraper	1

WORKED STONE ASSESSMENT

Worked Stone Assessment

By Hilary Major

Method
The stone was catalogued as fully as possible at the assessment stage. Pieces where the stone type would need to be identified by a geologist were noted, and objects for illustration identified.

The nature of the assemblage
Stone from 17 sites was examined, a total of 44 contexts. The majority of the assemblage consisted of fragments of medieval lava querns, but there were also several medieval whetstones, and a prehistoric saddle quern fragment.

Saddle quern
A saddle quern fragment was recovered from a probable Bronze Age context on site 217-219. It was made from a very hard, dark stone, probably a plutonic erratic boulder. Saddle querns were frequently made from suitably shaped erratics. In Norfolk, flint saddle querns are particularly common, due to the ready availability of large flint nodules.

Medieval lava querns and millstone
None of the individual sites had very many quern fragments, but they occurred on many of the excavated medieval sites. The condition of the stone was variable, and many of the pieces were badly fragmented. Some, however, survived in relatively good condition, such as the millstone from site 148. Medieval querns are not as common as Roman querns, but they are being increasingly recognised on rural sites. The relative lack of querns on medieval sites is, no doubt, partly due to the proliferation of water- and windmills, controlled by the lord of the manor. In some cases, the use of querns for grinding corn was forbidden. Querns were, however, also used for grinding malt for brewing, and this seems to have been their main use by the end of the Middle Ages.

Virtually all medieval querns and millstones from Norfolk and the other parts of East Anglia are made from lava, imported from the Cologne area. Of the numerous querns and millstones from excavations in Norwich in the past ten years, only one has not been made from lava (pers. comm. D. Buckley). This contrasts with the situation during the Roman period, when, although lava querns were predominant (at least in the earlier part of the period), querns made from a number of other stone types were in use alongside them.

The trading pattern for querns was clearly very different in the middle ages; the development of large ports along the eastern seaboard, such as Norwich and Ipswich, with extensive trading links to the continent, enabled large scale import of querns at the expense of British stones such as millstone grit. The dominant role of these cities in the provision of non-local goods to their rural hinterlands is reflected in the distribution of quern stones, and probably other stone goods such as the whetstones and mortars.

The group includes flat rotary querns, several possible pot quern fragments, and a millstone. Few pieces had features of note, partly because of their condition. With medieval flat querns, it is often difficult to distinguish between upper and lower stones, and in only a few cases is it possible here. The possible pot quern fragments are identified mainly on the basis of their thickness, except for a fragment from site 28, which appears to be part of the spout of a pot quern. A definite millstone fragment came from site 148. Though not securely stratified, it is likely to be medieval, and had probably been re-used, possibly as a flagstone.

Stone mortar
A fragment of a medieval stone mortar came from site 148. This is a relatively rare find; even in Norwich, only five were found during the Norwich Survey excavations of 1971-78 (Margeson 1993, 196). Such a mortar would probably have started its life as a relatively expensive and probably high status object. The source of the stone is probably the Purbeck area of Dorset, but this will need to be confirmed by geological identification.

Whetstones
Three purpose-made whetstones were found, at sites 34, 84A and 90. All were made from pale-coloured schist, commonly known as Norwegian ragstone, which was quarried at Eidsborg, near Telemark. This stone was used extensively for whetstones in the Middle Ages, both in Eastern England and other parts of the country and many of the whetstones from Norwich were made from this material (Margeson 1993, 196). Most of the other whetstones from Norwich were made from blue phyllite, also likely to be an import from Norway. An unworked fragment of schist from site 90 is more likely to be an erratic than part of a whetstone.

Other stone
A few pieces of natural stone exhibit signs of use, in the form of patches of wear caused by rubbing, or use as an ad hoc whetstone. Site 136-138 produced a natural sandstone slab fragment, probably used as a whetstone and a sarsen pebble from site 251 was probably used as a rubber.

Summary of the assemblage by site

Site 01/251 (NHER 37617 WNE)
The single piece of stone from the site was a natural sarsen pebble, with areas of differential wear suggesting use as a rubber.

Site 06/226 (NHER 37821 RGH)
The stone from the site was unworked.

Site 08/217-219 (NHER 37826 & 37827 LEX & 37828 WAS)
The only piece of worked stone from the site was a saddle quern fragment, made from a very hard, dark stone, probably a plutonic erratic boulder. The provisional dating for the context is Bronze Age.

Site 13/202 (NHER 37622 TTL)
The stone from the site was unworked.

Site 22/148 (NHER 37623 BTE)
Lava quern fragments came from two contexts, only one of them stratified. Both pieces may be from the same quern, which may be a pot quern. A lava millstone fragment came from the topsoil in evaluation trench 32. It could possibly be post-medieval, but is more likely to be medieval. It appears to have been cut down for re-use, possibly as a flagstone.

The other piece of worked stone from the site was the rim of a mortar in shelly limestone, from an unstratified context. The shape and stone type are comparable to medieval examples from Norwich (Margeson 1993, 196) and the source could be the Purbeck area of Dorset. The Norwich mortars were not identified as to source, and it is recommended that a geologist identify the stone.

Site 25/138 & 136 (NHER 37624 & 37625 FLS)
The stone from this site consists of a natural sandstone slab fragment from a medieval context, probably used as a whetstone.

Site 27/128 (NHER 37626 THM)
Lava quern fragments came from seven medieval contexts. Where present, the grinding surfaces were pecked. An upper stone fragment came from context 27325, and a small part of a lower stone from 27466. Context 27511 contained parts of at least one quern, badly fragmented. There were no definite edge pieces present, and, although the pieces probably fit together, reconstruction is not considered worthwhile.

The lava from context 27325 is probably part of the spout of a pot quern lower stone, although the shape is not entirely clear.

Site 28/119 (NHER 37628 WDG)
Lava quern fragments came from the topsoil, and three medieval contexts. The largest pieces were from the topsoil (28000), and included fragments from a lower stone and a probable upper stone. The two stones have similar surface dressing of grooves with individual peck marks visible within the

grooves, and may be from the same pair of quern stones. Another fragment, from context 28014, has very worn grooves on the grinding surface, and may have been cut down for re-use.

Site 38/90(NHER 37939 JTT)
Fragments of lava quern came from four contexts. Two pieces (from 38062 and 38185) had surfaces surviving. Both were probably from lower stones, with pecked grinding surfaces. Two pieces of schist were recovered. One was a pale-coloured whetstone; the other was a slabby fragment with no signs of working, possibly an erratic.

Site 39/89(NHER 37940 JTT)
Fragments of lava with no surviving surfaces came from one context.

Site 39/88B (NHER 39518 JTT)
Fragments of lava with no surviving surfaces came from three contexts.

Site 39/84a (NHER 39520 JTT)
The only stone find was a light grey schist whetstone.

Site 42/64 (NHER 37966 ERP)
The single stone find was a natural quartzite pebble, possibly utilised as a rubber.

Site 44/48 (NHER 37729 SFF)
Crumbs of lava came from one context.

Site 46/38 (NHER 37987 ANT)
The only stone from the site was an unworked pebble fragment.

Site 47/34(NHER 37631 WLN)
Lava crumbs came from one context. A second context contained a whetstone, made from light grey schist.

Site 50/26 (NHER 37996 SLD)
Fragments of eroded lava quern came from three contexts.

Input to Research Agenda

The presence of a stone mortar fragment at Site 148 suggests that settlement in the area may have been relatively high status. This may or may not be borne out by other artefactual evidence from the site.

One of the main uses of medieval querns was the grinding of malt for brewing. This may tie in with the environmental evidence.

Most of the utilised stone from medieval contexts is foreign, not only to the area, but to the country. Although there seems to have been occasional use of local erratics as, for example, sharpening stones, objects such as querns, mortars and purpose-made whetstones would have reached the sites via the major ports of the region. The degree to which Rhenish lava querns dominate the market contrasts with the situation in Roman times when native British stones, such as millstone grit and greensand, were used alongside imported lava. Less is known about the distribution and abundance of imported whetstones in the area, as there has been little synthetic research on this type of artefact.

Recommendations for further work

The dating of the assemblage will need to be re-considered following the final phasing of the sites, and the phasing added to the catalogues. Apart from this, very little additional work is needed to complete the stone catalogue for the archive.

Documentary research into the occurrence and abundance of medieval Norwegian ragstone and phyllite whetstones from the area should be undertaken. This is not intended as a full-scale survey of medieval whetstones in Norfolk, but merely as a tool for assessing the degree to which the whetstone trade (as

with the quern trade) might be dominated by imports. This will feed into the discussion for Specific Objective 18.

Local parallels for the millstone should be sought; this may help to confirm the supposition that it is medieval.

A geologist should identify the source of the mortar fragment.

Publication text to be prepared, comprising discussion of the types of medieval stone artefacts present, and their relevance to the sites, with particular reference to Specific Objective 18, together with description and illustration of selected objects.

Illustration requirements
The following objects should be illustrated for publication:

Site	Context	Description
47/34	47109	SF74004. Schist whetstone
39/84A	57873	SF72713. Schist whetstone
38/90	38201	SF72402. Schist whetstone
27/128	27263	Lava. Fragment of pot quern spout?
22/148	824	Shelly limestone. Mortar rim.
22/148	22002	Lava. Millstone upper fragment.

Reference

Margeson, S 1993 Norwich Households: Medieval and Post-Medieval finds from Norwich Survey excavations 1971-78 E. Anglian Archaeol. 58

Appendix A: Worked Stone Catalogue for Assessment

One of the pieces of stone from 22/148 (842) was brick.
13/202 – There was no stone from context 13161 (on the original list), and it is assumed this is a mistake for 13164, which is not on the original list.

Site 26

Site	Context	Description
50/26	50071	SF74100. Lava. Four large lumps and *c* 6 small fragments, surfaces eroded. Max. th. 60mm.
50/26	50078	Lava lump.
50/26	50090	Lava quern fragment, no full thickness. One rather irregular surface.
50/26	50119	Pebble. Unworked

Site 34

Site	Context	Description
47/34	47109	SF74004. Schist whetstone, light grey. Bar whetstone with a variable rectangular section. One end is rounded, the other broken. Worn. L. 120mm, section 13x23mm – 15x28mm. Wt. 92g. **Draw**
47/34	47120	Lava crumbs.

Site 38

Site	Context	Description
46/38	46029	SF72906. Pebble fragment, unworked.

Site 48

Site	Context	Description
44/48	44058	Lava crumbs.

Site 64

Site	Context	Description
42/64	42857	Quartzite pebble. Roughly rectangular, with possible wear on one face. Possibly used as a rubber. *c.* 100x95x47mm.

Site 84A

Site	Context	Description
39/84A	57873	SF72713. Schist whetstone, light grey. One end is broken, the other irregular but original. Bar whetstone with a variable section, round to D-shaped. Worn. L. 69mm, section 12x14mm – 16x17mm. Wt. 27mm. **Draw**

Site 88B

Site	Context	Description
39/88B	39058	Flint ball. Natural
39/88B	39375	Lava quern fragments. No surface surviving.
39/88B	39424	Lava crumbs
39/88B	39448	Lava crumbs

Site 89

Site	Context	Description
39/89	39814	Lava quern fragments. No surface surviving.

Site 90

Site	Context	Description
38/90	38062	Lava quern fragments. No surface surviving.
38/90	38092	SF72400. Lava. Five joining fragments from a ?lower stone. Part of the central hole is present. The grinding surface is pecked, possibly in worn grooves, the other surface irregular. Max. th. 50mm, hole diam. *c* 40mm.
38/90	38094	Lava quern fragment. No surface surviving.
38/90	38094	Schist with garnets. Pale-coloured, slabby fragment with no sign of working.
38/90	38185	SF72401. Lava. Seven joining fragments from a ?lower stone. The grinding surface is pecked, the other surface irregular. Max. th. 35mm.
38/90	38201	SF72402. Schist whetstone, pale grey. One end is broken. Bar whetstone with variable rectangular section, worn. L. 95mm, section 27x8 – 34x16mm. Wt. 61g. **Draw**

Site 119

Site	Context	Description
28/119	28000	Lava. Lower stone fragment, possibly with the edge of the central hole present. The grinding surface has crudely pecked grooves, possibly with an unworked band *c.* 40mm wide round the central hole (the surface has partly flaked). The other surface is irregular. Th. at edge 21mm, max. th. 53mm
28/119	28000	Lava. Two joining fragments from a different stone, possibly the upper stone to go with the lower stone from the context. The surface is in fairly poor condition, but the dressing is very similar, with pecked grooves, with individual peck marks visible. Max. th. 53mm
28/119	28000	Lava quern fragment. No surface surviving.
28/119	28014	Lava quern fragment, with very worn grooves on the grinding surface. The other face is irregular. It has possibly been deliberately trimmed into a rough rectangle. Th. 30mm.

28/119	28016	Lava. Fragment from a thin quernstone. The grinding surface is worn, probably pecked, and the other surface is irregular. The 'edge' is virtually straight, and may have been cut down for re-use. Th. 24mm
28/119	28021	Lava quern fragments. No surface surviving.

Site 128

Site	Context	Description
27/128	27057	Lava scraps.
27/128	27099	Lava scraps.
27/128	27124	Lava scraps.
27/128	27158	Flint pebble. Natural.
27/128	27263	Lava. Five small scraps and a larger lump. The surface is shaped, This does not appear to be from a flat quern, but is probably part of the spout of a pot quern lowerstone. The inner, curved face is pecked. Thickness *c* 63mm. **Draw**
27/128	27325	Lava. Upper stone edge fragment with a pecked, slightly angled, grinding surface. The edge and top are rather irregular, and eroded. Max. th. at edge 35mm. Diameter not determinable.
27/128	27380	Chalk. Unworked
27/128	27466	Lava scraps. One piece has part of the central hole present. The diameter is less than 20mm, so this must be a lower stone.
27/128	27511	41 pieces of lava quern, badly fragmented. The grinding surface, where present is pecked, and the other surface irregular. There may be parts of more than one stone present, but reconstruction is not considered to be worthwhile. Th. 20-42mm.

Site 136-138

Site	Context	Description
25/136-138	25064	Well cemented sandstone. A slab fragment with one very smooth face, and possible polish on the edges, probably due to use as a whetstone. The stone itself is natural. *c.* 100x80x18mm

Site 148

Site	Context	Description
22/148	824	Brick fragment.
22/148	824	Shelly limestone. Mortar rim, flat topped, with a slight neck. Rim W. 34mm. **Draw** Mortars found in 12th-16th century contexts in Norwich were made from shelly Jurassic limestone, of unspecified source, though Dorset and Lincolnshire are cited as possible origins (Margeson 1993, 196). This example is likely to have come from the same source, as the profile is very similar to the illustrated example, which is 15th century. At Winchester, the rim form is particularly associated with mortars made from Purbeck stones other than Purbeck marble, such as Purbeck burrstone, and broken shell limestone (Biddle and Smith 1990).
22/148	22002	Lava. Millstone upper fragment, with part of the edge of the hopper present. The top has very coarse pecking, and the slightly angled grinding surface has finer pecking, worn fairly smooth in places. The original edge appears to have been cut down to straighten it, and the adjacent broken edge is also straight, and at right angles. The broken stone was probably trimmed for re-use as, for example, a flagstone. There is a shallow hole in the top which may have formed the seating for a clamp, though apparent vitrification of the surface is probably natural. Diam. >600mm , diam. of hopper *c* 120mm. **Draw**
22/148	22244	Lava quern fragment with a grooved grinding surface. The other surface is irregular, and possibly eroded. The thickness suggests that this might be part of a pot quern. It is probably part of the same quern as 22375. Th. 41mm.
22/148	22375	Lava. Upper stone edge fragment with angled grinding surface. The grinding surface has bold grooves, possibly harp dressing, and the top is fairly rough, and stepped. Th. at edge 50mm, min. th. 36mm. Diam. *c* 350mm.
22/148	22375	Lava. Fragment, probably part of the same stone as the upper fragment from the

		context. Th. 25-38mm.
22/148	22375	Lava. Three joining fragments and two lumps with no original surfaces. There are signs of heat damage on some pieces.
22/148	24122	Sandstone boulder fragment. Unworked.

Site 202

Site	Context	Description
13/202	13164	Ferruginous sandstone pebble fragment. Unworked. (This is probably the piece numbered 13161 on the original list).

Site 217-219

Site	Context	Description
08/217-219	8067	Quartzitic sandstone boulder fragment. Unworked.
08/217-219	8117	Plutonic? Saddle quern edge fragment with a pecked grinding surface with slight wear. The stone is likely to have been an erratic boulder. Max. th. 44mm. BA? context

Site 226

Site	Context	Description
6/226	6043	SF70550. Small boulder fragment, unworked.

Site 251

Site	Context	Description
1/251	1078	SF70360. Sarsen pebble fragment, probably originally a flattened ovoid. Areas of differential wear suggest use as a rubber. *c* 90x45x30mm.

References

Biddle, M. and Smith, D. 1990 'Mortars' 890-908 in Biddle, M. *Object and economy in Medieval Winchester* Oxford

Margeson, S 1993 *Norwich Households: Medieval and Post-Medieval finds from Norwich Survey excavations 1971-78* E. Anglian Archaeol. 58

HUMAN BONE ASSESSMENT

Human Bone Assessment

By Sharon Clough and Kate Brayne

Introduction

Scope and Purpose of the Report

This report comprises an assessment of potential for analysis of the human bone assemblage from the site BKL 02, in line with the requirements of MAP 2 (English Heritage, 1991), and following the recommendations of English Heritage's publication "Human Bones From Archaeological Sites"2. The purpose of the assessment is to evaluate the potential of the human bone assemblage to contribute to archaeological knowledge, and to identify further actions and study necessary.

The Nature of the Assemblage

The human bone derives from 2 sites along the Bacton to King's Lynn pipeline. From one site, 13/202 there are 24 identified individual skeletons, of varying degrees of completeness, all of which are believed to be Anglo Saxon in date, and 3 cremation burials, two of which are Anglo Saxon, and one of which is Bronze Age. From the other site, 46/38, there are six Bronze Age cremation burials.

Methodology

For each identified skeleton or cremation burial, the bagged bones were laid out and subject to a brief inspection. The potential for further analysis was then assessed following the criteria set out below.

Assessment Criteria

Completeness

For inhumations, this was expressed as a percentage, with 100% being a fully complete skeleton. Cremation burials were expressed as the total weight of bone recovered.

Preservation

This assessed the level of chemical and physical degradation of bone quality. The degree of preservation was expressed as excellent, good, moderate or poor.

Sex

This assessed whether determination of sex of the individual was immediately apparent, or would be possible with further analysis.

Age

This assessed whether it would be possible to assess the age of the individual with further analysis

Stature

This was expressed as a positive or negative, depending on whether sufficient bones were present from which stature could be estimated, following further analysis.

Evidence for pathology

This was expressed as a likelihood that pathological lesions could be identified if present, in the course of further analysis.

Potential

This was expressed as a star rating, as follows:

0 No further potential for providing further information except an inventory of bones present.

* Limited potential for providing further information. Possibility of providing age category, and limited pathological information based on very poor levels of completeness and/or preservation.

** Moderate potential for providing further information. Possibility of providing sex, age category and limited pathological information, based on poor levels of completeness and/or preservation.

*** Good potential for providing further information. Possibility of providing sex, age band, stature, and pathological information, based on moderate levels of completeness and preservation.

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[2] Mays, Brickley and Dodwell, English Heritage, 2002

**** Very good potential for providing further information. Possibility of providing sex, age band, stature, and pathological information, based on good levels of completeness and preservation.
***** Excellent potential for providing further information. Possibility of providing sex, age band, stature, and pathological information, based on excellent levels of completeness and preservation.

Inventory
Site 13/202 (NHER 37622 TTL)

Cremation 13109
Completeness: 1g
Preservation: Poor
Sex: No
Age: No
Stature: No
Pathology: No
Potential: 0

Cremation 13304
Completeness: 54g
Preservation: Poor
Sex: No
Age: No
Stature: No
Pathology: Possible
Potential: *

Cremation 13307
Completeness: 289g
Preservation: Moderate
Sex: Possible
Age: Possible
Stature: No
Pathology: Possible
Potential: **

Burial 13041
Completeness: 50%
Preservation: Poor
Sex: Possible
Age: Possible
Stature: No
Pathology: Possible
Potential: ***

Burial 13044
Completeness: 20%
Preservation: Poor
Sex: Possible
Age: Possible
Stature: No
Pathology: Possible
Potential: **

Burial 13073
Completeness: 5%
Preservation: Poor
Sex: No
Age: No
Stature: No
Pathology: No
Potential: 0

Skeleton 13081
Completeness: 10%
Preservation: Poor
Sex: Possible
Age: Possible
Stature: No
Pathology: Possible
Potential: *

Skeleton 13084
Completeness: 1%
Preservation: Poor
Sex: No
Age: Possible
Stature: No
Pathology: No
Potential: *

Skeleton 13096
Completeness: 15%
Preservation: Poor
Sex: No
Age: Possible
Stature: No
Pathology: Possible
Potential: *

Skeleton 13099
Completeness: 10%
Preservation: Poor
Sex: Possible
Age: Possible
Stature: No
Pathology: Possible
Potential: **

Skeleton 13117
Completeness: 5%
Preservation: Poor
Sex: No
Age: Possible
Stature: No
Pathology: No
Potential: *

Skeleton 13120
Completeness: 30%
Preservation: Poor
Sex: Possible
Age: Possible
Stature: No
Pathology: Possible
Potential: **

Skeleton 13126
Completeness: 10%
Preservation: Poor
Sex: Possible
Age: Possible
Stature: No
Pathology: Possible
Potential: **

Skeleton 13132
Completeness: 15%
Preservation: Poor
Sex: No
Age: ?
Stature: No
Pathology: ?
Potential: *

Skeleton 13133
Completeness: 5%
Preservation: Poor
Sex: Possible
Age: Possible
Stature: No
Pathology: Possible
Potential: **

Skeleton 13134
Completeness: 2%
Preservation: Poor
Sex: No
Age: Possible
Stature: No
Pathology: Possible
Potential: *

Skeleton 13167
Completeness: 5%
Preservation: Poor
Sex: Possible
Age: Possible
Stature: No
Pathology: Possible
Potential: **

Skeleton 13174
Completeness: 5%
Preservation: Poor
Sex: No
Age: No
Stature: No
Pathology: No
Potential: 0

Skeleton 13252
Completeness: 20%
Preservation: Poor
Sex: Yes
Age: No
Stature: No
Pathology: No
Potential: *

Skeleton 13264
Completeness: 40%
Preservation: Poor
Sex: Possible
Age: Possible
Stature: No
Pathology: Possible
Potential: ***

Skeleton 13279
Completeness: 5%
Preservation: Poor
Sex: Possible
Age: Possible
Stature: No
Pathology: Possible
Potential: **

Skeleton 13280
Completeness: 10%
Preservation: Poor
Sex: Possible
Age: Possible
Stature: No
Pathology: Possible
Potential: **

Skeleton 13286
Completeness: 8%
Preservation: Poor
Sex: Possible
Age: Possible
Stature: No
Pathology: No
Potential: *

Skeleton 13287
Completeness: 1 tooth
Preservation: Poor
Sex: No
Age: Possible
Stature: No
Pathology: ?
Potential: 0

Skeleton 13291
Completeness: 10%
Preservation: Poor
Sex: No
Age: No
Stature: No
Pathology: No
Potential: 0

Skeleton 13294
Completeness: 5%
Preservation: Poor
Sex: No
Age: Yes
Stature: No
Pathology: No
Potential: *

Skeleton 13301
Completeness: 5%
Preservation: Poor
Sex: No
Age: Yes
Stature: No
Pathology: No
Potential: *

Note: Though there is a low percentage of completeness, there are a large number of teeth available for study. These are diagnostic for many things, particularly age and pathology.

Site 46/38 (NHER 37987 ANT)

Cremation 46004
Completeness: 1g
Preservation: Poor
Sex: No
Age: No
Stature: No
Pathology: No
Potential: 0

Cremation 46006
Completeness: 297g
Preservation: Moderate
Sex: No
Age: Possible
Stature: No
Pathology: Possible
Potential: **

Cremation 46008
Completeness: 13g
Preservation: Poor
Sex: No
Age: No
Stature: No
Pathology: No
Potential: 0

Cremation 46014
Completeness: 40g
Preservation: Poor
Sex: No
Age: Possible
Stature: No
Pathology: No
Potential: *

Cremation 46018
Completeness: 5g
Preservation: Poor
Sex: No
Age: No
Stature: No
Pathology: No
Potential: 0

Cremation 46026
Completeness: 22g
Preservation: Poor
Sex: No
Age: No
Stature: No
Pathology: No
Potential: 0

Statement of Potential

13/202
This skeletal assemblage demonstrates potential for further analysis. In some regions soil conditions mean, in general, that bone survival is poor. Therefore poorly preserved material will need to be studied if we are to learn anything about regional populations from their physical remains.
As both inhumation (burial) and cremation are practiced by this population, it may be that different social groups receive different treatment after death, and therefore it is important to analyze both types of evidence.

46/38
This assemblage demonstrates limited potential for further analysis, owing to the low recovered weight of most of the cremation burials. Many archaeological cremation cemeteries suffer serious post-depositional damage by modern agricultural techniques. Therefore, if the sum of knowledge about these populations is to be enhanced, efforts must be made to extract as much information as possible from all recovered assemblages, regardless of their condition.

In some societies, cremation is the main means of disposal of dead bodies, rather than burial. For example, in the late Bronze Age in Europe it is the only archaeologically visible burial practice. Therefore, if we don't study cremations, even when the recovery rates are low, we would be missing out on a lot of information about the societies in question.

Study of the skeletons will provide:

- a demographic profile of the individuals recovered
- a palaeopathological profile of the individuals recovered (limited to those conditions which affect human bone)
- Study of the cremation burials will provide:
- a demographic profile of the individuals recovered (within the limits of interpretation possible for cremated bone).
- information about the cremation pyre technology utilized by the society who created this cemetery.
- information about cremation ritual and custom practiced by the society who created this cemetery

This data will aid interpretation of the sites, by providing hypotheses about the nature of the populations buried in these cemeteries.

Additionally, the osteological and palaeopathological data generated by these sites will add to the bank of general knowledge about the population of Britain during the Anglo Saxon and Bronze Age periods.

HAND-COLLECTED ANIMAL BONE AND SHELL ASSESSMENT

Hand-collected animal bone and shell Assessment

By James Rackham

A number of the excavation sites along the pipeline produced assemblages of hand recovered animal bones but no soil samples were taken for environmental study. These included sites 20, 28a, 46, 84a, 90, 119 and 236.

A few of these sites produced only one or two fragments of animal bone, generally in fairly poor condition and probably a reflection of the failure of the majority of the bones at the sites to have survived in the soils. A few fragments of cattle bone were recovered from site 236; unidentified fragments from sites 46 and 28a; cattle and horse fragments from site 20; while bones of cattle, pig, sheep and horse are recorded from contexts on site 119. A single context, 28049, on site 119 produced a single valve of mussel during excavation.

Site 38/90 (NHER 37939 JTT)
A sample of 125 bone fragments was recovered by hand from site 90, all deriving from contexts assigned to the medieval phases of the site. These were collected from sixteen contexts but were all very poorly preserved and dominated by tooth fragments, among which cattle and sheep have been identified. The material is so poorly preserved from this site that the assemblage can only yield presence data and can make no contribution to understanding the pastoral economy of the site.

Site 39/84a (NHER 39520 JTT)
The hand collected bones from site 84a comprise a collection of 215 bone fragments, weighing 1.045 kilograms and deriving mainly from medieval deposits, but the bulk of the contexts that produced bone are unphased (Table 1).

Table 1: Number of fragments by phase

	No. fragments
Phase 2	65
Phase 3	26
Unphased	124

The condition of this collection is also fairly poor (Table 2), with well over half the assemblage showing some or substantial signs of surface erosion and degradation. This is also evident in the frequency with which loose teeth and robust bones are noted in the assessment record (see Appendix).

Table 2: Frequency of fragments in each preservation category.
(codes as described in the appendix of the report on site 251)

Preservation class	No. fragments
1	2
2	68
3	95
4	50

Cattle, sheep, horse and dog have been specifically identified during the assessment, with cattle occurring in more contexts than the other species. The absence of pig is unusual but with many contexts producing no more than one or two bones this cannot be treated as significant.

Shells were hand picked from fourteen contexts. Five of these contexts contained only terrestrial snail shells, including Helix aspersa, Helix nemoralis and Helix hortensis, all elements of the local fauna. The remainder produced marine shells. Cockles were recovered from three unphased contexts (57945, 57605 and 57893), and a phase 3 context, 57810, produced a single fragment of oyster shell. Most of the hand excavated shells were recovered from phase 2 deposits (57415, 57683, 57678 and 57343). Most of these produced cockle shells, while 57915 contained an unidentifiable fragment and 57343 also produced some common mussel shells. All these finds derive from medieval deposits and reflect the trading of shellfish across the few miles between the site and the north coast of Norfolk.

Conclusions

These seven sites have produced little material, and none of the assemblages can be expected to produce anything other than presence data for each taxa at particular periods. The poor preservation and the sample size limits the potential of the assemblages, and even age at death data can only be expected to give presence data for animals culled at a specific age, and not information that can be used to interpret the animal husbandry at the sites. The utility of the largest assemblage from site 84a is also prejudiced by the lack of phasing data for many of the contexts.

If further contexts from site 84a cannot be dated then there is little to be gained by detailed study of any of the animal bone from these seven sites. Neither is any further work required on the hand collected shells.

Acknowledgements

I should like to thank Alison Foster for scanning and recording the animal bone for this assessment.

Archive assessment catalogue supplied.

SLAG ASSESSMENT

Slag Assessment

By Jane Cowgill

Introduction.
A very oversimplified form of recording has been employed for this assessment. The slag was simply counted, weighed and the craft/industry from which it was a by-product was noted. The dominant type of slag from the context was noted but the + sign indicates that other types are present (additional tuyeres for example). The iron objects have, however, been extracted and bagged separately to be returned to Network Archaeology Ltd. Evidence for abrasion, for example, has only been recorded when it was very apparent and no measurements have been taken. Any soil in the bags containing the slag was checked with a magnet for hammerscale.

The slag from Site 22/148 (NHER 37623 BTE)

Table 1: Simplified record of the slag from Site 22/148.

Context	Sample	Type	Count	Weight	Craft	Comments
22029		HB+	6	78g	Fesmith	Fresh; coal.
22046		SLAG	1	2g	Fesmith	Leached.
22082		HB+	2	122g	Fesmith	Needs washing.
22082		IRON	4	27g		Objects?
22110		SLAG	2	13g	Fesmith	CF22029
22110		IRON	1	6g		Object?
22118		SLAG	1	6g	Fesmith	Fresh; CF22029
22119		SLAG	2	61g	Fesmith	Fresh; CF22029
22174		SLAG	1	20g	Fesmith	Fresh; CF22029
22331	71152	SOIL SAMPLE		1121g		Not processed.
22332		HB+	83	1799	Fesmith	Most but not all one group; + tuyere/s.
22332		IRON	5	53		Objects?
22332	71152	SLAG	500+	771	Fesmith	Most small; leached; most incomplete fragments.
22332	71152	IRON	8	27		Objects?
22332	71152	MAG		4		30+ P some large; 40+ S; few blobs.
22375		HB+	5	94g	Fesmith	Fresh; CF22029

There appears to be two main assemblages of slag from this site, both by-products of iron smithing - the forging, repair or recycling of an iron object. The slag from Context 22029 and CF 22029 contexts are all in a fresh condition, tend to be small and quite dense even though coal was the only fuel noted. These all constitute a single assemblage.

Those smithing slags from Context 22332, however, are more bemusing and do not seem on an initial quick scan to be a single group although most have features in common. The strangest aspect is the ratio of plate hammerscale to spheroidal in that the latter dominates, whereas the ratio between the two from a smithing site should be c. 50:1 or more, with plate scale being by far the most common. It is possible that some bias occurred in the sample processing and therefore in this instance it is important that the unprocessed sample from this context is washed. Also the quantity and size of the individual pieces of hammerscale from Context 22332 would suggest that the smithing occurred on or very close to the site and that it was buried immediately after being swept up from a smithy floor. Again the evidence from the slag appears to contrast with this because most of it is fragmented and leached suggesting some trampling and possibly weathering on a ground surface before becoming deposited in this context. From this rapid assessment the two forms of evidence are contradictory and this needs to be resolved during the next stage of work.

Recommendations.
The slag should be fully catalogued and quantified with all necessary measurements taken, with particular attention paid to trying to establish whether the slag from Context 22332 is a coherent assemblage. The unprocessed sample from this context should be washed to examine the ratios of the different types of hammerscale.
The location and distribution of the two different assemblages needs to be considered in case they can aid the interpretation and understanding of the site.

The slag from Site 27/128 (NHER 37626 THM)

Table 2: Simplified record of the slag from Site 27/128

Context	Type	Count	Weight	Craft	Comments
27068	HB	1	159	Fesmith	Abraded.
27090	HB+	8	204	Fesmith	CF 27315.
27092	HB	1	30	Fesmith	CF 27315.
27112	HB+	3	232	Fesmith	Different? Dense.
27114	HB	1	45	Fesmith	CF 27315.
27117	HB	3	78	Fesmith	1 x different; 2 x CF 27315.
27124	SLAG	2	9	Fesmith	CF 27315.
27155	HB+	8	1057	Fesmith	CF27315; hammerscale.
27155	IRONST	1	182		
27156	IRON	1	14		Object.
27156	HB+	12	1186	Fesmith	CF27315; hammerscale.
27158	HB+	2	107	Fesmith	1 x different? 1 x CF 27315.
27160	HB+	8	82	Fesmith	CF 27315.
27160	HB	1	33	Fesmith	Different?
27224	HB+	19	347	Fesmith	CF 27315.
27261	SLAG	3	16	Fesmith	CF 27315.
27261	IRONST	1	41		
27292	HB+	34	585	Fesmith	CF 27315; hammerscale.
27315	SLAG	2	41	Fesmith	Iron rich but not magnetic.
27315	SSL	5	47	Fesmith	Some ProtoHBs?
27315	TUYERE	19	553	Fesmith	Some + cinder slag; some rims; 2 semi-circular air holes.
27315	IRON	10	180	Fesmith	Objects + plate hammerscale.
27315	CINDER	36	300	Fesmith	Mid brown/grey.
27315	SLAG	1	9	Fesmith	Magnetic.
27315	SLAG	1	7	Fesmith	+ pot sherd.
27315	PROTOHB	17	438	Fesmith	
27315	HB	17	1088	Fesmith	Small.
27315	HB	68	1040	Fesmith	Fragments.
27315	HB	16	2266	Fesmith	See slag characteristics in text.
27315	HB	2	355	Fesmith	Rounded sandy bases.
27315	HAMMS			Fesmith	Lots of Plate some Spheroidal.
27317	HB	1	226	Fesmith	CF 27315.
27347	SLAG	2	26	Fesmith	Different; coal fuel.
27362	SLAG	3	15	Fesmith	CF 27315.
27380	HB+	81	1630	Fesmith	CF 27315; few hammerscale.
27381	HB+	49	1547	Fesmith	CF 27315; few hammerscale.
27382	SLAG	3	385	Fesmith	Magnetic; 1 x ProtoHB; 2 x HB?
27382	HAMMS			Fesmith	Few Plate hammerscale.
27382	PROTOHB	6	219	Fesmith	
27382	TUYERE	31	565	Fesmith	Few edges; 1 x semi-circular air hole.
27382	CINDER	1	19	Fesmith	Light grey.
27382	SSL	7	76	Fesmith	Some ProtoHBs?
27382	HB	51	1598	Fesmith	Fragments.
27382	HB	5	924	Fesmith	Knobbly pieces.
27382	HB	16	1441	Fesmith	Small; not all complete.
27382	HB	15	3727	Fesmith	See slag characteristics in text.
27382	HB	14	2758	Fesmith	Rounded sandy bases.
27427	HB	1	290	Fesmith	CF 27315.
27444	HB+	12	252	Fesmith	CF 27315.
27444	IRONST	1	41		
27449	SLAG	1	8	Fesmith	CF 27315.
27466	HB	1	49	Fesmith	CF 27315.
27513	HB	4	82	Fesmith	CF 27315; wash.

Most, if not all, of the slag from this site forms a single coherent assemblage of iron smithing slag. Most of the plano-convex slag accumulations (commonly called hearth bottoms) are rounded flattish

plates and form a distinctive type and group. The slags are quite cindery even though charcoal was the only fuel used. They are generally a brown to mid - light grey in colour and have frequent sand, hearth lining and flint (some large) inclusions. The presence and quantity of the latter, often embedded well within the slag, leads to a hypothesis that some of the smithing may have been undertaken at lowish temperatures. Flint in the hearth would have been a major hazard for the smith, particularly their eyesight, because it can explode when heated.

Some of the hearth bottoms have smooth rounded sandy bases indicating that they probably did form on the base of the hearth, but others are the more standard knobbly type having been moulded by the charcoal in the hearth. Most of the slag appears to be in a fresh condition and evidently has not been trampled on a ground surface before being buried because being so cindery it is quite fragile.

Some hammerscale has been identified, but there was little soil in the bags containing the slag from which to extract it. Both plate and spheroidal scale has been identified from context 27315.

Recommendations.
The slag should be fully catalogued and quantified with all necessary measurements taken.
The assemblage should then be spatially analysed to try and identify the location of the smithy that must have been on, or very close to, the site.
As the slag unusually forms a single assemblage it will be possible to look for patterns of redeposition in later contexts and study the movement of it around the site.
Some of the iron objects extracted from the slag had hammerscale amongst their corrosion products, suggesting that these may be smithing offcuts. This form of evidence will be apparent on the X-radiographs and therefore co-ordination will be required by the two different researchers examining these two different categories of finds from the site.

The slag from Site 43/58 (NHER 37972 CLB)

Table 3: Simplified record of the slag from Site 43/58.

Context	Sample	Type	Count	Weight	Craft	Comments
43850		TAP SLAG	11	86g	Fesmelt	Medium sized.
43852		TAP SLAG	27	501g	Fesmelt	1 X TUY/ +HL; medium sized.
43857	71850	TAP SLAG	568*	5068g	Fesmelt	Lots small flows; balls/blobs; rare FURNST; 1 x S
43857	71850	SOIL SAMPLE		284g		Not processed.
43858	71853	TAP SLAG	76*	416g	Fesmelt	Lots small flows; balls/blobs; rare FURNST.
43858	71853	SOIL SAMPLE		360g		Not processed.
43859	71852	TAP SLAG	234	1256g	Fesmelt	Lots small flows; lots balls/blobs; rare FURNST.
43859	71852	MAG		20g	Fewking	Blobs; 50+ P; 50+ S; small slag fragments.
43859	71852	SOIL SAMPLE		318g		Not processed.
43865		TAP SLAG	1	172g	Fesmelt	Large charcoal imprints.
43867		TAP SLAG	2	196g	Fesmelt	Brown; abraded?
43868	71854	TAP SLAG	228*	807g	Fesmelt	1 x large flow; rare blobs/balls; 1 x HB; 4 x ore.
43868	71854	SOIL SAMPLE		268g		Not processed.
43869	71855	TAP SLAG	95	602g	Fesmelt	Lots small flows; balls/blobs; iron rich fragments.
43869	71855	MAG		11g	Fewking	30+ P; 30+ S; most small slag fragments.
43874		TAP SLAG	5	138g	Fesmelt	Knobbly small flows.
43875	71857	TAP SLAG	1000+	6257g	Fesmelt	Some larger flows; lots blobs/balls.
43875	71857	MAG		36g	Fewking	100+ P some large; 100+ S; rare ore; many small slag fragments.
43875	71857	SOIL SAMPLE		380g		Not processed.
43877	71858	TAP SLAG	13	1047g	Fesmelt	Large flows; none moulded.
43877	71858	TAP SLAG	150	1160g	Fesmelt	Lots small flows; rare balls/blobs; rare FURNST.
43877	71858	MAG		20g	Fewking	100+ P some large; 2+ S.
43879		TAP SLAG	3	20g	Fesmelt	Brown; abraded?
43879		IRON	3	8g		Objects/ offcuts?
43881	71859	TAP SLAG	1000+	4613g	Fesmelt	Volcano fragments + 'claws'; some larger flows moulded.
43881	71859	MAG		23g	Fewking	30+ P; 30+ S; 15+ blobs; occasional ore and slag fragments.
43881	71859	SOIL SAMPLE		538g		Not processed.
43951		TAP SLAG	4	259g	Fesmelt	Large and small flows; 1 x TUY/ + HL.

This is an assemblage of iron-smelting slags from a site where metallic iron was produced from local ores. There is, however, very little ore (roasted or unroasted) amongst the slag so it is uncertain what was the ore source used, although a bog ore is probable. It is likely that the ore processing - washing, roasting, sorting and crushing was undertaken elsewhere, and the prepared ore was then brought to where the furnaces were located. Most of the tap slags are not large plate fragments, the most common type encountered, but are very small dribbles and flows and amalgams of these. The larger conglomerates of these have been moulded by extremely large pieces of charcoal (over 40 x 25 x 70mm), the fuel used for the smelting. Some of the rarer large flows have similar imprints on their sides and bases. Some of the tap may be volcano-shaped in form, but these also seem to be smaller than other examples. Magnetic and non-magnetic balls and blobs are common, but the quantity recovered is very variable between contexts.

There is only one possible hearth bottom (Context 43868) although the quantity of plate hammerscale would suggest that smithing also occurred at the site. This may have been primary smithing, the forging of the bloom into stock iron, as opposed to secondary smithing when an object is made or repaired. The ratio of plate to spheroidal scale is often 50:50 at this site, which is not uncommon on smelting sites.

The presence of a smelting site at this location indicates that there must have been a plentiful wood supply for conversion to charcoal probably very close to the site, if not all around it, as iron production sites are thought to have been often located within woods.

Recommendations.
The slag should be fully catalogued and quantified with all necessary measurements taken.
There is considerable variation between the assemblages recovered from the different contexts. When the slag has been fully catalogued it will be possible to quantify this and the results can be used to try and establish the different activity areas that exist on a smelting site. Spatial analysis may identify the location of the furnace/s, smithing areas, storage areas for the ore and charcoal and slag disposal locations. As the slag forms a single assemblage it will be possible to look for patterns of redeposition in later contexts and study the movement of it around the site.

The Slag from Miscellaneous Small Sites

Table 4: Simplified record of the slag from the Sites

Site	NHER	Context	Type	Count	Weight	Craft	Comments
1/253	37615 WNE	834	SLAG	1	414g		No idea! Pmed/Modern?
8/217-219	37826 & 37827 LEX & 37828 WAS	8192	IRONSTONE	1	11g		Natural - discard.
13/202	37622 TTL	13000	COAL	2	6g		
13/202	37622 TTL	13000	FIRED CLAY	1	<1g		Reduced fired.
13/202	37622 TTL	13000	CLINKER	2	2g		
13/202	37622 TTL	13000	SLAG	1	259g	Fesmelt?	HB/FURN; charcoal; abraded.
13/202	37622 TTL	13000	SLAG	1	184g	Fesmelt?	HB/FURN; charcoal; abraded + HL.
13/202	37622 TTL	13000	SLAG	1	22g	Fesmelt?	Tap? Large charcoal imprints; abraded.
13/202	37622 TTL	13000	SLAG	2	99g	Fesmelt?	Block fragments? Very large charcoal imprints; 1 x magnetic; abraded.
13/202	37622 TTL	13021	SLAG	1	155g	Fewking	Charcoal; totally encrusted with corrosion products.
13/202	37622 TTL	13029	IRONSTONE	2	59g		Natural - discard.
13/202	37622 TTL	13059	SLAG	1	677g	Fesmelt?	Large HB/FURN; frequent charcoal imprints; abraded.
13/202	37622 TTL	13072	CHARCOAL	1	5g		
13/202	37622 TTL	13072	IRONSTONE	1	14g		Natural - discard.
13/202	37622 TTL	13278	IRONSTONE	1	1g		Sample 71485. Natural - discard.
13/202	37622 TTL	13280	SLAG	1	<1g		
21/149	37890 BTE	21855	CLINKER	2	2g		
25/135	37898 FLS	25886	HB	2	126g	Fesmith	Coal; cindery; fresh; Pmed?
25/138 & 136	37624 & 37625 FLS	25281	POT	1	3g		Crucible?? Part vitrified + copper-alloy droplet.
25/138 & 136	37624 & 37625 FLS	25282	SLAG	1	24g		Glassy; leached; not necessarily Fewking.
27/128	37626 THM	817	TAP SLAG	1	48g	Fesmelt	Fresh plate fragment.
28/119	37628 WDG	28000	TARMAC	2	79g		
28/119	37628 WDG	28048	NATURAL	1	4g		Discard.
36/97	37629 ZVL	36011	TAP SLAG	1	134g	Fesmelt	Frequent charcoal imprints; part of a block slag?
36/97	37629 ZVL	36011	FURN	1	48g	Fesmelt	Very frequent charcoal imprints.
36/97	37629 ZVL	36011	SLAG	1	2g		Magnetic - could be natural.
36/97	37629 ZVL	36011	NATURAL	1	2g		Discard.
39/88B	39518 JTT	39248	IRONSTONE	1	20g		Natural - discard.

Site	NHER	Context	Type	Count	Weight	Craft	Comments
39/88B	39518 JTT	39330	STONE	1	13g		Natural - discard.
39/88B	39518 JTT	39344	HB	1	86g	Fesmith	Abraded fragment.
39/84A	39520 JTT	57845	IRONSTONE	1	207g		Natural - discard.
40/67	37963 JNW	40860	TAP SLAG	6	228g	Fesmelt	Very abraded plate fragments.
43/58	37972 CLB	43851	SLAG	1	31g	Fesmith	Dense Proto HB.
44/48	37729 SFF	44117	CLINKER	1	2g		
44/48	37729 SFF	44314	IRONSTONE	1	2g		Natural - discard.
44/48	37729 SFF	44316	IRONSTONE	3	9g		Natural - discard.
47/34	37631 WLN	47160	IRONSTONE	1	2g		Burnt - magnetic.

Summary of the sites in Table 4

Sites with Evidence for Iron Smelting
There are seven pieces (1396g) of possible block slags from Site 13/202. These are characterised by the large charcoal imprints on and within them but they are all abraded and it is feasible that they could be slightly unusual iron-smithing slags. If they are block slags it would suggest a late Iron Age or possibly Saxon date for the assemblage. A single fresh piece of tap slag was recovered from Site 27/128, one piece of tap and a fragment of furnace slag come from Site 36/97 and a further six extremely abraded examples are from the Watching Brief Site 40/67.

Sites with Evidence for Iron Smithing.
There is evidence for smithing from only three sites: there are two hearth bottoms from Site 25/135 where coal had been used as the fuel (Post Medieval in date?), and single examples from Sites 39/88B (abraded) and 43/58 (fresh proto-hearth bottom).

The sherd from Site 25/136-138 maybe from a crucible but it is very flat. One side is partially vitrified (including one break) and there is a spot of copper-alloy visible on it. The large piece of flowed light-grey slag from 1/253 is probably 19th-20th century in date but it is not known which industry it is a by-product.

Recommendations.
No further work is required on the slags from these sites. The slag assemblage from Site 13/202 should, however, be mentioned in the Site report.

Appendix A: CODES USED IN THE ABOVE TABLES

Fesmelt	Iron-smelting slag.
Fesmith	Iron-smithing slag.
Fewking	Evidence of iron smelting and/or smithing.
FRAG	Fragment.
FURN	Furnace slag, slag that has cooled inside the furnace structure.
FURNST	Fragments of the furnace structure/ fired clay.
HAMMS	Hammerscale.
HB	Plano-convex slag accumulations (commonly known as hearth bottoms).
HB+	Hearth bottoms plus other types of slag.
HL	Hearth lining.
IAGREY	Iron-Age Grey slag.
INCL	Inclusions.
IRONST	Ironstone.
MAG	Magnetic material extracted from the samples.
MAX	Maximum.
P	Plate hammerscale.
S	Spheroidal hammerscale.
SSL	Smithing-slag lumps.
TUY	Tuyere.
+	And
*	Slag count provided by Network Archaeology Ltd.

ENVIRONMENTAL ARCHAEOLOGY ASSESSMENT

Environmental Archaeology Assessment – Site 1/251 (NHER 37617 WNE)

By James Rackham

Introduction

Excavations conducted by Network Archaeology Ltd on the Bacton to Kings Lynn Pipeline at site 1/251 revealed a Bronze Age settlement site. During excavation of this site a total of 58 bulk samples were taken for environmental analysis and two column samples through a truncated buried soil horizon (Table 1). In addition a small sample of 891 bone fragments weighing 6.632 kilograms were collected by hand during the excavations. The samples and animal bone were submitted to the Environmental Archaeology Consultancy for processing and assessment.

Methods

The soil samples were processed in the following manner. Sample volume and weight was measured prior to processing. The samples were washed in a 'Siraf' tank (Williams 1973) using a flotation sieve with a 0.5mm mesh and an internal wet sieve of 1mm mesh for the residue. Both residue and flot were dried and the residues subsequently re-floated to ensure the efficient recovery of charred material. The dry volume of the flots was measured and the volume and weight of the residues recorded. The sample size ranged from 10 to 41 litres and a total of 1557.5 litres was processed in this way. The resultant material was assessed for biological remains.

The residues were sorted by eye, and environmental and archaeological finds picked out, noted on the assessment sheets and bagged independently. A magnet was run through each residue in order to recover magnetised material. The residue was then discarded. The flot of each sample was studied using up to x30 magnifications and the presence of environmental finds (i.e. snails, charcoal, carbonised seeds, bones etc) was noted and their abundance and species diversity recorded on the assessment sheet. The flots were then bagged and along with the finds from the sorted residues, constitute the material archive of the samples.

The individual components of the samples were then preliminarily identified and the results are summarised below in Tables 2-6.

Results

There was evidence of small-scale contamination in most of the samples. This took the form of small quantities of fibrous recent rootlets and generally several uncharred seeds of Chenopodium sp. (goosefoot/oraches), occasional Sambucus sp. (elder) and other taxa. The most abundant contaminant were the shells of the blind burrowing snail Cecilioides acicula, which occurs in large numbers in some samples (see Tables 4 and 5) and is thought to be a recent (post-Roman) introduction into this country. Apart from the burrowing snails this contamination was generally low and does not prejudice the finds from the samples.

The samples were collected from a variety of features. The largest part of the material was taken from a dark spread or surviving soil beneath the ploughsoil, which had been protected by later slope wash within small valleys in the contemporary ground surface. The remainder was collected from pit fills, charcoal rich horizons and a posthole (Table 1).

Table 1: Bacton to Kings Lynn – Site 1/251. Samples taken for environmental analysis

plot	sample no.	context no.	sample vol. (l). *	sample weight (kg)	feature/comment
1/251	71350	1137	35	40	Pit fill
1/251	71351	1140	40	49.5	Charcoal rich layer, box 2
1/251	71352	1178	19	25	Lower fill of pit
1/251	71353	1202	20	20	Black spread within box 16
1/251	71354	1052	17	20.5	Primary fill of ditch 1047
1/251	71355	1285	20	23	Charcoal rich layer, box 7
1/251	71356	1275	21	25	Black spread within box 13
1/251	71357	1353	20.5	25	Black fill within cut 1351
1/251	71358	1388	32	36	Black spread within box 18
1/251	71359	1361	39	45.5	Charcoal rich layer, box 10
1/251	71360	1386	40	49.5	Black organic pit fill
1/251	71361	1449	41	56	Black spread within box 24
1/251	71362	1427	38	39.5	Fill of pit 1424
1/251	71363	1432	34	37.5	Lower fill of pit 1424
1/251	71364	1266/1285	Column		South facing section, box 7
1/251	71365	1395/1002	Column		Column from 1231
1/251	71366	1193	14	24	?1147 – fill of posthole
1/251	71367	1100	37	39.5	Fill of pit
1/251	71368	1120u	19	21	Upper spread, baulk between 3,4,6 & 7
1/251	71368	1120l	19	21.5	Lower spread, baulk between 3,4,6 & 7
1/251	71369	1120l	19	19	Lower spread, baulk between 6,7,10 & 11
1/251	71369	1120u	19	22	Upper spread, baulk between 6,7,10 & 11
1/251	71370	1120l	19.5	22	Lower spread, east baulk box 11
1/251	71370	1120u	20	21.5	Upper spread, east baulk box 11
1/251	71371	1208	39	43	South baulk, box 11
1/251	71372	1403	30	31	Fill of pit
1/251	71373	1470	37	40	Fill of pit
1/251	71374	1195	40	42	Fill of pit
1/251	71375	1120u	18	19.5	Upper spread, west side box 13
1/251	71375	1120l	19	21	Lower spread, west side box 13
1/251	71376	1507	40	41	Fill of pit
1/251	71377	1120l	18.5	19.5	Lower spread, baulk between 15 & 13
1/251	71377	1120u	19	20	Upper spread, baulk between 15 & 13
1/251	71378	1269	14	15.5	Fill of pit
1/251	71379	1436	38	43.5	Fill of pit
1/251	71380	1336	38	43	West baulk, box 18
1/251	71381	1475	19	20.5	West baulk, box 19
1/251	71382	1454	18	20	South east corner box 17
1/251	71383	1480	11	12	Charcoal rich deposit by big pit
1/251	71384	1311	39	42.5	West side box 12
1/251	71385	1312	10	11.5	Lower pit fill
1/251	71386	1438	38.5	43.5	Possible pit fill
1/251	71387	1321	36	40.5	Fill of pit
1/251	71388	1186	31	36	Fill of pit
1/251	71389	1122l	18	24	Lower spread, baulk between 24 & 25
1/251	71389	1122u	17	20	Upper spread, baulk between 24 & 25
1/251	71390	1328	40	46.5	Pit feature
1/251	71391	1122l	20	21	Lower spread, SE baulk box 26
1/251	71391	1122u	19	22	Upper spread, SE baulk box 26
1/251	71392	1262	34	41	Fill of pit
1/251	71393	1092	40	45	Possible linear fill
1/251	71394	1175	36	43	Fill of pit
1/251	71395	1214	23.5	25.5	Fill of pit
1/251	71396	1203	19	21.5	Fill of pit
1/251	71397	1073	40	55	East of lower spread
1/251	71398	1121l	20	26	Lower spread, baulk between 39 & 41
1/251	71398	1121u	20	25	Upper spread, baulk between 39 & 41

plot	sample no.	context no.	sample vol. (l). *	sample weight (kg)	feature/comment
1/251	71399	11211	20	21.5	Lower spread, intersection between 36, 39 & 37
1/251	71399	1121u	19	22	Upper spread, intersection between 36, 39 & 37
1/251	71400	1131	36	38	Fill of pit

In general the sample residues were comprised of flint and chalk gravel, with sand and some ironstone nodules and small ironstone. Archaeological finds from the samples were limited largely to pottery fragments, animal bone and flint (Table 2). The latter recorded in Table 2 reflects the flint material retained during sorting but it is not necessarily worked or waste flint and a proportion is likely to be discarded after specialist examination. Small fragments of pottery are recorded from most of the samples, and animal bone from all the samples, although some of the latter comprise only tiny unidentified fragments, sometimes burnt. A small magnetic component was recovered in all but one sample, but except for five samples where a single flake of hammerscale was recovered and two with small fragments of unidentifiable slag, this was composed of ironstone, small grits and some heated stone. The heaviest magnetic fractions (relative to sample size) may indicate a higher input of fire debris or hearth material, but with only three samples producing any fired earth whatsoever the evidence for fires is almost exclusively supplied by the charcoal fraction in the samples. Three other finds were made. A small quantity of burnt flint in context 1052, half an eroded blue glass bead in 1449, and a tiny chip of clear glass (probably modern) in 1436.

The environmental finds relating to the palaeoeconomy of the site are surprisingly limited, even for a Bronze Age site (Table 3). Out of well over 1.5 tonnes of deposit 49 fragments of charred cereal grain were recovered and no chaff. This reflects a density of less than one charred cereal grain in every 38 litres of sample. While charred weed seeds were a little more abundant the potential of this component of the data is very limited. Most of the charred cereal remains are too fragmented or poorly preserved to identify but individual grains have been preliminarily assigned to wheat and barley. A few more samples produced charred fragments of hazelnut shell. It may be that the distribution of these limited finds across the site will be informative but this data was not available for this assessment.

Charcoal was recovered in all but one of the sample flots but its density was relatively low, and very few samples contained charcoal that warrants further work. The charcoal has been recorded in Table 3 in terms of the fragments greater than and less than 2mm. Only the former contains material that might be identifiable and among the samples only context 1311 produced sufficient charcoal of sufficient fragment size to justify identification. Despite the very dark colour of many of the deposits and the charcoal rich description assigned to some on site, these sediments are largely coloured by comminuted charcoal that was washed out of the samples during processing, since the bulk of it was less than 0.5mm.

The animal bone extracted from the samples falls into four classes, the fragments of larger mammals (dog size and above), the small vertebrates (amphibians, voles, mice), the birds and the fishes. The small vertebrates usefully reflect one of the major factors on this site. The bulk of the small vertebrate remains are composed of the teeth of small mammals. Very few bones are present and many of these and the teeth show evidence for erosion. It is evident from this assemblage that post-burial conditions have seriously impacted upon the assemblage originally deposited. This will have seriously biased the assemblages and taxa such as birds and amphibians that lack robust teeth are likely to be under-represented in the collections. The fish affords a further complication. The majority of the fish are represented by teeth, however a number of these teeth may be fossilised and part of the fossil remains in the chalk and gravels. These will need to be checked carefully during post-excavation to separate fossil from archaeological material. The finds of vertebrate material in the samples are summarised in Table 6 and the individual finds in each sample listed in Table 3.

Table 2. Bacton to Kings Lynn – Site 1/251. Finds from the processed samples

samp no.	context no.	samp vol (l).	feature	residue volume (l)	pot no./g.	fired earth /daub g.	flint no./g.	magnetic component g.	hammer-scale no.	slag	bone g.	
71350	1137	35	Pit fill	5	3/3		5/2	1			32	
71351	1140	40	Charcoal rich layer, box 2	4	4/8		47/70	2			5	
71352	1178	19	Lower fill of pit	4.75				1			10	
71353	1202	20	Black spread within box 16	0.9	1/3		4/1	1			1	
71354	1052	17	Primary fill of ditch 1047	3.5			2/1	1			76	Burnt flint
71355	1285	20	Charcoal rich layer, box 7	1.5	1/1		7/23	<1			3	
71356	1275	21	Black spread within box 13	1.5			5/<1	1		+	2	
71357	1353	20.5	Black fill within cut 1351	3.75			47/28	11	1		1	
71358	1388	32	Black spread within box 18	1.6	3/4		6/30	1			1	
71359	1361	39	Charcoal rich layer, box 10	3.5	19/16		19/2	1			9	
71360	1386	40	Black organic pit fill	6.5				1			1	
71361	1449	41	Black spread within box 24	4			16/1	2			11	Blue glass bead
71362	1427	38	Fill of pit 1424	5	5/6		10/10	2			40	
71363	1432	34	Lower fill of pit 1424	4.5	3/8			1			35	
71366	1193	14	?1147 – fill of posthole	1.5			8/1	<1			1	
71367	1100	37	Fill of pit	4	2/1		9/9	1			1	
71368	1120u	19	Upper spread, baulk between 3,4,6 & 7	1	1/<1			1			2	
71368	1120l	19	Lower spread, baulk between 3,4,6 & 7	1.5	2/1			1			6	
71369	1120l	19	Lower spread, baulk between 6,7,10 & 11	1	8/4		8/1	1			4	
71369	1120u	19	Upper spread, baulk between 6,7,10 & 11	0.85	3/3			1			3	
71370	1120l	19.5	Lower spread, east baulk box 11	2	1/1	2		1			5	
71370	1120u	20	Upper spread, east baulk box 11	1.25			5/1	1		+	2	
71371	1208	39	South baulk, box 11	2.5	1/<1	1	6/-	2			8	
71372	1403	30	Fill of pit	2.5	14/9	+		1			5	
71373	1470	37	Fill of pit	1.5	11/20			1			2	
71374	1195	40	Fill of pit	1.25	5/6			1			6	
71375	1120u	18	Upper spread, west side box 13	1	4/7			1	1		2	
71375	1120l	19	Lower spread, west side box 13	1.5	1/5			1			5	
71376	1507	40	Fill of pit	1.5				1			7	
71377	1120l	18.5	Lower spread, baulk between 15 & 13	1	6/2			1			6	

samp no.	context no.	samp vol (l).	feature	residue volume (l)	pot no./g.	fired earth /daub g.	flint no./g.	magnetic component g.	hammer-scale no.	slag	bone g.	
71377	1120u	19	Upper spread, baulk between 15 & 13	0.5				1			18	
71378	1269	14	Fill of pit	1.75	1/7			1			3	
71379	1436	38	Fill of pit	3	10/?			1			16	Tiny chip clear glass
71380	1336	38	West baulk, box 18	2	1/1			1	1		2	
71381	1475	19	West baulk, box 19	2.75	2/5			1			43	
71382	1454	18	South east corner box 17	1.5							<1	
71383	1480	11	Charcoal rich deposit by big pit	1				<1			<1	
71384	1311	39	West side box 12	3.5	31/59			2			96	
71385	1312	10	Lower pit fill	5				1			2	
71386	1438	38.5	Possible pit fill	1	1/1			1			1	
71387	1321	36	Fill of pit	5	1/<1	3		5			1	
71388	1186	31	Fill of pit	3.5				2			1	
71389	1122l	18	Lower spread, baulk between 24 & 25	2.5	1/1		7/2	2			1	
71389	1122u	17	Upper spread, baulk between 24 & 25	1.5	17/24		5/1	1	1		<1	
71390	1328	40	Pit feature	5.25			5/1	4			2	
71391	1122	20	Lower spread, SE baulk box 26	1.5	6/8			1			3	
71391	1122u	19	Upper spread, SE baulk box 26	1.75	8/14		3/1	2			3	
71392	1262	34	Fill of pit	3.5				3			27	
71393	1092	40	Possible linear fill	3.25	3/3			1			3	
71394	1175	36	Fill of pit	3.75	7/7			2	1		4	
71395	1214	23.5	Fill of pit	1.25	8/8			1			3	
71396	1203	19	Fill of pit	1				1			19	
71397	1073	40	East of lower spread	6		1		2			2	
71398	1121l	20	Lower spread, baulk between 39 & 41	1.5	1/1			1			2	
71398	1121u	20	Upper spread, baulk between 39 & 41	1.75				1			2	
71399	1121l	20	Lower spread, intersection between 36, 39 & 37	0.75	6/2			1			25	
71399	1121u	19	Upper spread, intersection between 36, 39 & 37	1	1/8			1			35	
71400	1131	36	Fill of pit	2				1			1	

+ - present in small quantities in the flot

Table 3: Bacton to Kings Lynn – Site 1/251. Summary of the environmental finds from the processed samples

samp no.	context no.	samp vol. (l).	feature	flot vol. (ml)	char coal $	char'd grain no frags	char'd seed *	bird bone no.	fish bone *	snail*	Preliminary identifications
71350	1137	35	Pit fill	32	2/3			1	1	5/3	Pig, bank vole, water vole, field vole, small bird, eel, fossil fish tooth?
71351	1140	40	Charcoal rich layer, box 2	12	3/4	4	1			5/2	Rodent
71352	1178	19	Lower fill of pit	5	1/1					5/3	Dog, rodent
71353	1202	20	Black spread within box 16	1	1/2					3/2	Bank vole, water vole
71354	1052	17	Primary fill of ditch 1047	1	1/1					3/3	Cattle, water vole
71355	1285	20	Charcoal rich layer, box 7	2	2/3	1	1		1	3/2	Wheat?, hazelnut shell, bank vole, water vole, field vole, frog/toad, fish teeth (fossil?)
71356	1275	21	Black spread within box 13	12	3/4	1	1			4/2	Water vole, field/bank vole
71357	1353	20.5	Black fill within cut 1351	2	1/3	4			1	4/2	Wheat?, eel
71358	1388	32	Black spread within box 18	3	2/2		1		1	4/3	Water vole, bank vole, wood mouse, tiny fish vertebra
71359	1361	39	Charcoal rich layer, box 10	4	2/4		1		1	4/2	Hazelnut shell, pig, bank vole, fish tooth (fossil?), poss. antler fragment
71360	1386	40	Black organic pit fill	7	2/3				1	5/3	Bank vole, fish teeth (fossil?)
71361	1449	41	Black spread within box 24	10	2/3		1		1	5/3	Cattle, bank vole, frog/toad, fish teeth (fossil?), bird eggshell
71362	1427	38	Fill of pit 1424	30	2/3	1	1			5/3	Cf red deer, bank vole
71363	1432	34	Lower fill of pit 1424	40	1/2					5/3	Cattle, bank vole, field vole
71366	1193	14	?1147 – fill of posthole	1	-/-					4/2	Rodent
71367	1100	37	Fill of pit	1	2/2					4/2	Bank vole
71368	1120u	19	Upper spread, baulk between 3,4,6 & 7	2	2/3					3/2	Vole
71368	1120l	19	Lower spread, baulk between 3,4,6 & 7	2	2/3					4/2	Rodent
71369	1120l	19	Lower spread, baulk between 6,7,10 & 11	1	2/1					3/2	Cattle, bank vole, snake
71369	1120u	19	Upper spread, baulk between 6,7,10 & 11	2	2/2		1		1	3/1	Water vole, wood mouse, small fish vertebra
71370	1120l	19.5	Lower spread, east baulk box 11	5	3/3		1			3/2	Sheep/goat, water vole, bank vole, wood mouse
71370	1120u	20	Upper spread, east baulk box 11	2	2/2					3/2	Vole, wood mouse

samp no.	context no.	samp vol. (l).	feature	flot vol. (ml)	char coal $	char'd grain no frags	char'd seed *	bird bone no.	fish bone *	snail*	Preliminary identifications
71371	1208	39	South baulk, box 11	2	2/2					4/2	Water vole, bank vole, mouse
71372	1403	30	Fill of pit	20	3/5					4/2	Sheep/goat, bank vole, small carnivore?
71373	1470	37	Fill of pit	2	3/4					4/2	Bank vole, shrew
71374	1195	40	Fill of pit	1	3/2					4/2	Sheep/goat, bank vole, water vole
71375	1120u	18	Upper spread, west side box 13	3	3/4	1	1			4/3	Bank vole
71375	1120l	19	Lower spread, west side box 13	3	3/2		1			4/2	Hazelnut, mouse
71376	1507	40	Fill of pit	3	3/3			1		4/2	Pig, bank vole, small bird
71377	1120l	18.5	Lower spread, baulk between 15 & 13	2	3/3					3/2	Bank vole, water vole
71377	1120u	19	Upper spread, baulk between 15 & 13	1	2/2					4/2	Cattle, bank vole
71378	1269	14	Fill of pit	1	2/2					3/2	Wood mouse
71379	1436	38	Fill of pit	3	2/2		1		1	4/3	Hazelnut, human, sheep/goat, bank vole, field vole, wood mouse, shrew, tiny fish vertebra and tooth (latter fossil?)
71380	1336	38	West baulk, box 18	6	2/2	1	1		1	5/3	Bank vole, field vole, fish tooth (fossil?)
71381	1475	19	West baulk, box 19	5	2/1		1			5/3	Hazelnut, cattle, vole, wood mouse
71382	1454	18	South east corner box 17	30	1/1					3/2	Vole
71383	1480	11	Charcoal rich deposit by big pit	1	1/1		1			3/3	Hazelnut, bank vole
71384	1311	39	West side box 12	55	5/5		2			5/2	Hazelnut, cattle, pig, bank vole
71385	1312	10	Lower pit fill	1	2/1		1			3/3	Hazelnut, fish tooth (fossil?)
71386	1438	38.5	Possible pit fill	2	1/1					4/2	
71387	1321	36	Fill of pit	4	2/2				1	5/3	Rodent, fish tooth (fossil?)
71388	1186	31	Fill of pit	2	2/2				1	4/2	Bank vole, fish tooth (fossil?), bird eggshell
71389	1122l	18	Lower spread, baulk between 24 & 25	2	2/2	1				4/2	Bank vole, frog/toad
71389	1122u	17	Upper spread, baulk between 24 & 25	2	2/3	3	1			4/2	Wheat?, hazelnut, rodent
71390	1328	40	Pit feature	4	2/3					5/2	
71391	1122	20	Lower spread, SE baulk box 26	5	2/3				1	4/2	Sheep/goat, eel
71391	1122u	19	Upper spread, SE baulk box 26	7	2/4	2	1			5/2	Cattle, bank vole, water vole
71392	1262	34	Fill of pit	5	1/2	5	1		1	5/3	Wheat?, hazelnut, cattle, shrew, fish tooth (fossil?)

samp no.	context no.	samp vol. (l).	feature	flot vol. (ml)	char coal $	char'd grain no frags	char'd seed *	bird bone no.	fish bone *	snail*	Preliminary identifications
71393	1092	40	Possible linear fill	10	2/2	8				5/3	Barley?, bank vole, wood mouse
71394	1175	36	Fill of pit	10	2/3	4	1		1	5/3	Vole, frog/toad, eel, fish tooth (fossil?)
71395	1214	23.5	Fill of pit	15	2/3	?	1			5/3	Cattle, bank vole, frog/toad
71396	1203	19	Fill of pit	2	2/2		1		1	4/2	Dog, cattle, bank vole, water vole, fish tooth (fossil?)
71397	1073	40	East of lower spread	7	2/3	2	1			5/3	Hazelnut, bank vole. water vole, frog/toad, bird eggshell
71398	1121l	20	Lower spread, baulk between 39 & 41	1	2/2	2	1			3/2	Barley?, pig, cattle, bank vole, water vole, wood mouse, frog/toad
71398	1121u	20	Upper spread, baulk between 39 & 41	2	1/1	2			1	5/2	Barley, bank vole, water vole, frog/toad, fish tooth (fossil?)
71399	1121l	20	Lower spread, intersection between 36, 39 & 37	4	2/3	2				4/2	Bank vole
71399	1121u	19	Upper spread, intersection between 36, 39 & 37	3	2/2	2				4/2	Wheat, cattle, bank vole
71400	1131	36	Fill of pit	5	1/2	3				5/3	Wheat, water vole, bank vole, wood mouse, frog/toad

* = abundance: 1=1-10, 2=11-50, 3=51-150, 4=151-250, 5=250+
# = number of grains or pieces of chaff counted
$ = abundance estimate of charcoal fragments >2mm and those <2mm in size

Table 4: Bacton to Kings Lynn – Site 1/251. Molluscan taxa recorded from the spreads

Context	1120 u	1120 l	1120 u	1120 l	1120u	1120 l	1120 u	1120 l	1120 u	1120 l	1122 u	1122 l	1122 u	1122 l	1121 u	1121 l	1121 u	1121 l
Sample	**71368**	**71368**	**71369**	**71369**	**71370**	**71370**	**71375**	**71375**	**71377**	**71377**	**71389**	**71389**	**71391**	**71391**	**71398**	**71398**	**71399**	**71399**
	3	4	3	3	3	3	4	4	4	3	4	4	5	4	5	3	4	4
Open country																		
Cecilioides acicula	+++	++	++	++	+++	+++	++	+++	++	++	+++	++	+++	++	+++	+	+++	+++
Helicella sp.		+	+	+	+			+			+		+	+		+	+	+
Vertigo pygmaea							+	+									+	
Vertigo sp.							+											
Pupilla muscorum						+	+	+	+		+	+	+	+	+	+	+	+
Vallonia costata		+				+	+	+	+	+		+	+	+	+	+	+	+
Vallonia excentrica	+	+	+	+	+	+	+	+	+	+	+	+	+		+	+	+	+
Vallonia pulchella	+	+			+			+	+	+				+				+
Catholic																		
Hygromia hispida	+	+			+	+	+		+	+	+	+	+	+	+	+	+	+
Helix hortensis/nemoralis													+					
Helix sp.		+						+	+	+					+			
Cochlicopa sp.						+	+											
Shade loving																		
Hygromia striolata																+		
Pomatia elegans					+		+											
Discus rotundatus		+				+					+	+	+					
Oxychilus cellarius							+						+					
Oxychilus alliarius							+											
Oxychilus sp.						+								+	+	+		
Aegopinella pura							+									+		
Nesovitrea hammonis							+											
Vitrea sp.							+											
Acanthinula sp						+												
Punctum pygmaeum							+											
Clausilidae						+	+											
Marsh																		
Carychium sp.							+		+					+			+	+
Vertigo angustior							+	+										
Aquatic																		
Planorbis leucostoma						+	+											

Table 5: Bacton to Kings Lynn – Site 1/251. Molluscan taxa recorded from the other samples

Context	1137	1140	1178	1388	1386	1449	1427	1432	1403	1269	1336	1475	1321	1186	1262	1175	1214	1131
Sample	71350	71351	71352	71358	71360	71361	71362	71363	71372	71378	71380	71381	71387	71388	71392	71394	71395	71400
	5	5	5	4	5	5	5	5	4	3	5	5	5	4	5	5	5	5
Habitat interpretation	w	g	g	g	w	g	w	w-dom	g	w	both	w	w	g	w	g	g	g-dom
Open country																		
Cecilioides acicula	++	+++	++	+++	+++	+++	+++	+	++	++	++	+	+++	++	+++	+++	+++	+++
Helicella itala																	+	
Helicella sp.	+	+		+	+	+	+					+	+	+			+	+
Vertigo pygmaea	+		+				+				+	+			+	+	+	
Vertigo sp.		+		+					+					+	+			
Pupilla muscorum	+	+	+	+		+	+	+		+	+		+		+	+	+	+
Vallonia costata	+		++	+	+	+	+	++			+	+	+	+	+++	+++	+	+
Vallonia excentrica	+	++	++	+	+	+	+	+	+	+	+++		+	+	+	+++	+	+
Vallonia pulchella		+		+		+	+		+								+	
Catholic																		
Hygromia hispida	++	+	++	+		+	+++	++	+	+	++	++	+	+	+	+	+	+
Helix hortensis/nemoralis	+		+				+	+									+	
Helix sp.				+	+						+	+	+		+	+		+
Cochlicopa lubrica												+			+			
Cochlicopa sp.	+		+	+	+	+	+	+		+	+				+	++		
Shade loving																		
Hygromia striolata	+						+	+				+				+		
Pomatia elegans	+				+		+	+	+				+		+	+		+
Discus rotundatus	+++		+	+	++	+	+++	+++		+	+	++	+		+		+	+
Zonitiodes excavatus	+																	
Oxychilus cellarius	+	+										+			+	+		+
Oxychilus alliarius		+											+					
Oxychilus sp.			+	+	+		+	+		+		+	+	+				+
Aegopinella nitidula	+						+	+			+		+					
Aegopinella pura	+		+	+	+	+	+	+			+	+	+		+	+	+	
Nesovitrea hammonis	+				+		+			+	+					+	+	
Vertigo pusilla					+			+					+					
Vertigo substriata	+				+						+							
Vitrea sp.	+		+		+		+						+	+	+			+
Acanthinula sp	+				+						+		+		+			+
Punctum pygmaeum	+			+				+	+		+	+			+	+		+
Euconulus fulvus													+					

Context	1137	1140	1178	1388	1386	1449	1427	1432	1403	1269	1336	1475	1321	1186	1262	1175	1214	1131
Sample	71350	71351	71352	71358	71360	71361	71362	71363	71372	71378	71380	71381	71387	71388	71392	71394	71395	71400
Vitrina sp.																		
Clausilidae	+				+		+	+		+	+	+			+			
Carychium sp.	+++		+		++	+	+++	++	+	+	++	+	+	+	++	+		+
Marsh																		
Vertigo antivertigo	+																	
Vertigo angustior	+		+	+			+				+					+		
Succinea sp.																		
Succinea cf sarsi																		
Lymnaea truncatula	+++		+			+	+	+			+	+		+			+	
Aquatic																		
Aplexa hypnorum	+																	
Planorbis leucostoma	+++						++											

habitat groupings broadly taken from Evans, 1972; Ellis 1969; Kerney and Cameron, 1979; Cameron and Redfern 1976
habitat interpretation – w = woodland; g = grassland; both = mixed assemblage; dom = dominant habitat group

Other contexts with primarily a grassland/open country fauna:

1202 – 71353
1052 – 71354
1285 – 71355
1275 – 71356
1353 – 71357
1361 - 71359
1193 - 71366
1100 - 71367
1208 – 71371
1470 – 71373
1507 – 71376
1454 - 71382
1311 - 71384
1438 – 71386
1328 – 71390
1092 - 71393
1203 - 71396
1480 - 71383
1312 - 71385
1073 - 71397

Contexts with a mixed grassland and woodland fauna:

1195 - 71374
1436 - 71379

Cattle occur with twice the frequency of any other species, with pig and sheep/goat the next most abundant domestic taxa (Table 6). A single human tooth was present in context 1436 and a fragment of probable red deer tibia shaft is recorded in the sample from pit 1424. Two small bird bones, as yet unidentified, were found in the samples and three samples produced fragments of bird eggshell. Among the small vertebrates teeth of bank vole occur with the greatest frequency followed by water vole. While it is possible that the water vole may have been filling a scavenging role around the settlement (before the introduction of the black and brown rat the water vole may have filled a somewhat different niche to that it currently occupies in this country), the bank vole, a shy animal, likes cover and is abundant in deciduous woodland and scrub although it does occur in open habitats with a high herb layer or banks (Corbet and Southern 1977). Its unexpected abundance in these samples (Table 6) and in contrast to the relatively rare incidence of field vole, a species of open grassland habitats, would suggest that the site afforded lots of cover. Woodmouse, also a species of woodland and scrub occurs more frequently than the field vole, although the latter is usually found at much greater densities in its favoured habitat. Bones of frog and toad generally occur with greater frequency in archaeological samples than the small mammals but there relative absence at this site might be due to poor preservation since many of the bones show evidence of erosion and neither have robust teeth which survive in poor burial environments. As noted above the evidence for fish is primarily teeth, several of which may be fossil, but a few small fish vertebra have been recovered, the majority of which are eel. These are small, but in the contexts in which they occur, along with other material of archaeological origin, they probably do reflect food debris.

The richest category of the environmental evidence is the terrestrial snail shells. These are abundant in all the samples and although as has been noted above many of them are intrusive shells of Cecilioides acicula the remainder of the assemblages are still large. Preliminary identifications have been made of the snails in each sample and the data are summarised in Tables 4 and 5. Not all taxa have necessarily been scored in each sample and quantification of each species would be needed for detailed interpretation but a broad indication of the habitat was made for each sample where possible.

The data are presented in two tables. Table 4 includes all the samples taken from the upper and lower fills of the dark spread or buried soil, while Table 5 summarises the taxa in the majority of the other rich samples. The remainder of the samples are noted as a list with the habitat interpretation at the bottom of Table 5.

The snail assemblages in the buried soil deposits (Table 4) are principally composed of taxa typical of open country or grassland habitats and catholic. Apart from the upper sample of sample 71375, context 1120, which includes several taxa of shaded or woodland habit, the samples, both upper and lower at each sample location, are dominated by open country taxa. This indicates that the contemporary ground surface prior to the burial of the soil lay in an open grassland environment.

The bulk of the remainder of the samples also indicate an open/grassland environment around the site but several samples (Table 5) contrast with these in that they include a substantial woodland element in the fauna or clearly indicate a shaded or woodland environment. The latter is found in pit fills 1137, 1386, 1427, 1432, 1269, 1321 and 1262. Whether these reflect spatial or chronological differences will have to await post-excavation analysis, but the distribution of the pits that have yielded woodland snail assemblages should be studied for an explanation of this pattern. Two samples include aquatic species typically found in environments that dry up seasonally. Both are pits and the origin of the aquatic elements of the fauna need to be considered during post-excavation.

Table 6: Frequency of samples with each category of find.

	No. samples
Wheat?	6
Barley	2
Hazelnut	10
Human	1
Cattle	13
Sheep/goat	5
Pig	5
Dog	1
Red deer, cf	1
Possible antler	1
Small carnivore	1
Water vole	17

	No. samples
Bank vole	35
Field vole	4
Wood- mouse	10
Shrew	2
Small bird	2
Bird eggshell	3
Snake	1
Frog/toad	9
Eel	4
Small fish	3
Fish tooth	14

Discussion

The samples have proved disappointingly poor for the palaeoeconomic evidence of the site and apart from a few samples that show that cereals were cultivated or consumed at the site (Table 6) and that hazelnuts were gathered and eaten the botanical evidence can take us little further. The bone remains indicate that cattle, sheep/goat, pig, red deer, eel and perhaps small birds and other fish were eaten, but the problems of preservation make any assessment of the relative importance of each taxa extremely problematic. It may be that the distribution of some of this material across the site may help with the interpretation of any focus of domestic activity at the site since the bulk of this material, pottery, bone, charcoal, cereals etc, seems to derive from domestic waste, and therefore presumably reflects its area of discard despite the preservational problems.

The palaeoenvironmental evidence from the samples is in contrast quite rich. Small vertebrates and terrestrial snails are ubiquitous but interestingly do not entirely agree in interpretive terms. The small vertebrate remains are dominated by the teeth of the bank vole, which would suggest a site with lots of vegetation cover and possible scrub or local woodland. In contrast the bulk of the snail evidence is for an open country or grassland environment, although the presence of a number of pit samples with snail assemblages of woodland character indicates that this element must have been local to the site for part of its history. The distribution and relative dating of these features may prove of some importance in establishing the character of the settlement at the site. The marked absence of cereal remains, although a problematic indicator because of the many taphonomic variables, may be of significance in this assessment of the site, since pottery, bone, charcoal and hazelnut fragments clearly indicate that domestic rubbish in entering the deposits.

Excavated animal bone

A small collection of hand excavated animal bone, 891 fragments, was collected from the site. This has been assessed on a context by context basis and a summary record of the material in each context produced for this assessment (see Appendix). The bone from each context was scanned and a record of the following information made. The weight of bone and number of fragments, the general condition of the bone on a scale of 1-5 (see Key with the catalogue); the number of bones for which two or more measurements could be recorded; whether cattle, sheep or pig were present; the number of mandibles or maxillae of cattle, sheep or pig with sufficient teeth for an age estimate at death; a record of the bone elements identified to each species during the scanning (but no quantification); a record of other taxa and bone elements present; and occasional comments – for instance presence of neonates, calves or lambs in the context.

The preservation of the bone in the sample is summarised in Table 7.

Table 7: Frequency of fragments assigned to different preservation classes.

Preservation	No. frags
Class 1	0
Class 2	188
Class 3	619
Class 4	84
Class 5	0

The bulk of the assemblage has been assigned to class 3, bones with visible surface erosion and pitting and the loss of most or all of the organic component of the bone. Class 2 is bone in even poorer condition, with severe pitting and decalcification, very brittle and an tendency to break up very easily after excavation. It can be assumed that since both these two classes form most of the assemblage that some material will have been

completely lost in the soil. The lost part of the originally deposited assemblage is likely to be from young animals, bones scavenged and severally chewed, bones with a large surface area and/or a relatively small proportion of compact bone. This will have a major impact on the interpretive value of the assemblage since small bones, bones of birds, young pig bones and other juveniles may all have been lost while robust cattle bones and teeth have survived.

With these concerns in mind the identified material in the collection is summarised in Table 8. Cattle bones were recovered from over twice as many contexts as any other species, with sheep bones the next most frequent. Pig were recorded in five contexts, horse and deer in two, and human, dog and red deer in one each. In all this assemblage only eight bones were recorded as being complete enough to take two or more measurements and much of the material is fragmented and difficult to identify. It is probable however during post-excavation with more time a greater proportion of the assemblage will be identified than was possible during this assessment.

Table 8: The frequency of contexts with each taxa in the hand collected bone assemblage.

	No. contexts
Total no. contexts	**66**
Cattle	34
Sheep	13
Pig	5
Horse	2
Human	1
Dog	1
Red deer	1
Deer sp	2

A single bone object was recovered in the bone collection. This was the distal shaft of a sheep tibia from context 1151 whose midshaft was sharpened to a point and showed considerable use wear across one side of the point.

Conclusions

In many respects the environmental assemblages from the site are disappointing and have a limited potential for understanding the palaeoeconomy of the site. The soils have resulted in considerable degradation of elements of the data set which impact on their potential to inform us on what was happening on the site. We have very little information on the arable economy of the settlement. The pastoral economy is better served and shows the husbanding of cattle, sheep and pigs, but their importance and individual husbandry may not be recoverable from these remains. Utilisation of wild resources is indicated by the hazelnuts, red deer bone, eels, and possible other small fish and bird bones but their importance will not be assessable from these assemblages, merely their presence. However in the context of a site of this period specific identification of even their presence is of value and the spatial distribution of the material may yield archaeologically useful information.

The palaeoenvironmental evidence has greater potential and questions concerning the local environment, open grassland or wooded scrub, are posed by the data recorded during this assessment. Again the spatial and also temporal analysis of this evidence may be of importance in understanding the relationship of these two habitat types represented in the snail and vertebrate assemblages.

It is recommended that the following elements are dealt with in the post-excavation programme:

- Specific identification of the cereal and charred seed remains
- Identification of the charcoal in context 1311
- Identification of the small bird and fish remains, with specific attention to the presence of fossil fish.
- Analysis of the distribution of charred seed, hazelnut shell, charcoal, animal bone and fish remains from the samples.
- Identification, quantification and analysis of a number of the snail assemblages, and specific spatial and chronological analysis of those reflecting different habitats.
- The cataloguing and analysis of the excavated animal bone, with specific attention to the taphonomic problems of the assemblage.
-

The two column samples require description and analysis by an archaeological soil scientist.

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Appendix A: Key to codes used in the cataloguing of animal bones and marine shells

A1: Species

CODE	SPECIES		CODE	SPECIES
MAN	human		DOVE	Dove species
EQU	Horse		FER	Feral dove
EQSZ	Horse size		PART	Partridge
BOS	Cattle		SWAN?	Swan?
BOSL	Cattle-large		WOOD	Woodcock
CSZ	cattle size		CURL	Curlew
SUS	Pig		WADE	wader
OVCA	sheep or goat		CROK	Crow or rook
OVI	Sheep		CORV	Crow or rook
CRA	Goat		JACK	Jackdaw
SSZ	sheep size		OWL	Owl indet.
FEL	Cat		BUZZ	Buzzard
CAN	Dog		GULL	Gull sp.
AUR	Aurochs			
AUR?	Aurochs?		TURD	Turdidae
CER	red deer		BIRD	Identifiable but not id'd
DAM	Fallow deer		PASS	Passerine
CLS	roe deer		LBIRD	Large bird
LEP	Hare		UNIB	Bird indet
ORC	Rabbit			
LAG	Lagomorph		FROG	Frog
CARN	Carnivore		FRTO	Frog or toad
FOX	Fox			
POLE	Polecat/ferret			
WEA	weasel		GAD	Gadid, cod family
BADG	Badger		LING	Ling
SEAL	seal		HADD	Haddock
SQU?	Squirrel?		RAY	ray
BEAV	Beaver		FISH	Fish
ROD	Rodent		UNIF	Fish indet
RAT	Rat			
AGR	Field vole		OYS	oyster
ARV	Water vole		COK	Cockle
MUS	House mouse		MUSS	Common Mussel
SORA	Common shrew		WHELK	Common whelk
MOLE	Mole		HEL	Helix aspersa
SMA	Small mammal		HELIX	Helix sp.
UNI	Unknown		HELN	Helix nemoralis
			SNAIL	snail
CHIK	Chicken			
CHKZ	Chicken size		FOSS	Fossil bone
GOOS	Goose, dom			
GOOS?	Goose, dom.?			
GSSZ	Goose size			
GSSP	Goose species			
GOSZ	Goose, poss. Wild			
DUCK	Duck, domestic sp.			
DUCK?	Duck?			
DKSP	Duck species			
DSP	Duck species indet			
MALL	Duck, dom.			
TURK	Turkey			

A2: Bone Elements

BONE CODE		BONE CODE	
SKEL	skeleton	SCP	scapula
SKL	skull	HUM	humerus
ANT	antler	RAD	radius
ANT?	antler?	ULN	ulna
ATT	antler tine	RUL	radius and ulna
HC	horn core	C/T	carpus/tarsus
TEMP	temporal	C23	carpus 2+3
FRNT	frontal	CAR	carpus
PET	petrous	CPA	accessory carpal
PAR	parietal	CPI	intermediate carpal
OCIP	occipital	CPR	radial carpal
ZYG	zygomatic	CPU	ulnal carpal
NAS	nasal	MTC	metacarpus
PMX	premaxilla	MC1-5	metacarpus 1-5
MAN	mandible	MTP	metapodial
MNT	mandibular tooth	MPL	lateral metapodial
DLI	deciduous lower incisor	INN	innominate
DLPM1-4	deciduous lower premolar 1-4	ILM	ilium
LI	lower incisor (and 1-3)	PUB	pubis
LC	lower canine	ISH	ischium
LPM1-LPM4	lower premolar 1-4	FEM	femur
LM1-LM3	lower molar 1 - molar 3	PAT	patella
MAX	maxilla	TIB	tibia
DUI	deciduous upper incisor	FIB	fibula
UI	upper incisor (1-3)	LML	lateral malleolus
UC	upper canine	AST	astragalus
DUPM	deciduous upper premolar	CAL	calcaneum
DUPM1-4	deciduous upper premolar 1-4	CQ	centroquartal
UPM1-UPM4	upper premolar 1-4	TAR3	tarsus 3
UM1-UM3	upper molar 1 - molar 3	T4	tarsus 4
MXT	maxillary tooth	TAR	tarsus
TTH	indeterminate tooth	MTT	metatarsus
INC	incisor	MT1-5	metatarsus 1-5
HYD	hyoid	MTL	lateral metatarsus
ATL	atlas	SES	sesamoid
AXI	axis	PH1	1st phalanx
CEV	cervical vertebra (and 3-7)	PH2	2nd phalanx
TRV	thoracic vertebra (and 1-13)	PH3	3rd phalanx
LMV	lumbar vertebra	PHL	lateral phalanx
SAC	sacrum	LBF	long bone
CDV	caudal vertebra	UNI	unidentified
VER	vertebra		
STN	sternum	CLV	clavicle
CC	costal cartilage	COR	coracoid
RIB1	first rib (2 etc)	CMP	carpo-metacarpus
RIB	rib	CMC	carpo-metacarpus
		WPH1-3	wing phalanges 1-3
URO	urostyle	WPH	wing phalanx
		LSA	lumbosacrale
DENT	dentary		
CLEI	cleithrum		
RAY	fin ray		
SHELL	shell		
UV	upper valve		
VAL	valve		

NUMBER: number of fragments in the entry

MEASUREMENTS: Any measurements are those listed in A.Von den Driesch (1976) A Guide to the Measurement of Animal Bones from Archaeological Sites, Peabody Museum Bulletin 1, Peabody Museum, Harvard, USA

Some measurements have been taken on juveniles. Measurements marked L1 are the greatest length of long bones lacking one unfused epiphysis – the measurement being taken from the epiphyseal junction. Measurements marked L2 are the greatest length of the long bones between epiphyseal junctions when both epiphyses are unfused.

PRESERVATION: records the condition of the bone in the following manner
enamel only surviving
bone very severely pitted and thinned, tending to break up; teeth with surface erosion and loss of cementum and dentine
surface pitting and erosion of bone, some loss of cementum and dentine on teeth
surface of bone intact, loss of organic component, material chalky, calcined or burnt
bone in good condition, probably with some organic component

Appendix B: Archive assessment catalogue of the hand collected bones from BKL02_ Site 1/251

Site-code	context	weight	frag nos	condition	measurability	cattle	bos tooth row	bos bones	sheep	ov tooth row	ov bones	pig	sus tooth row	sus bones	others	bird	comments
1/251	1002	74	10	3	0		0			0			0				
1/251	1024	43	13	4	0		0			0			0				
1/251	1028	1	1	3	0		0			0			0				
1/251	1033	136	9	4	0	Y	0	RAD		0			0				
1/251	1034	44	8	3	0		0		Y	0	TIB	Y	0	LC,LP3			
1/251	1048	136	4	3	1	Y	0	TIB		0			0				ALL ONE BONE-MOD BREAKS
1/251	1049	98	1	2	0		0			0			0		EQU-HUM		
1/251	1050	250	28	3	0	Y	0	TIB,SKL,HUM,INN,CAL,MTC	Y	0	TIB		0				
1/251	1059	21	14	3	0		0			0			0				
1/251	1075	117	9	3	0		0			0			0				
1/251	1078	71	13	3	1	Y	0	PH1		0			0				
1/251	1079	1	1	4	0		0			0			0				
1/251	1094	6	3	4	0		0			0			0				
1/251	1098	10	1	3	0		0			0			0				
1/251	1104	57	11	2	0		0			0			0		CER-MTT		
1/251	1116	148	3	4	0	Y	0	TIB		0			0				ALL ONE BONE-MOD BREAKS
1/251	1120	16	7	3	0		0			0			0				
1/251	1124	24	2	3	0		0			0			0				
1/251	1133	3	7	2	0		0			0			0				
1/251	1137	217	12	4	1	Y	0	HUM	Y	0	TIB,SAC	Y	0	HUM			SMALL SHEEP TIB
1/251	1140	1	3	3	0		0			0			0				
1/251	1151	33	2	4	0	Y	0	UM	Y	0	TIB		0				SHEEP TIB-WORKED
1/251	1152	64	10	3	0		0			0			0				
1/251	1161	64	5	3	0	Y	0	SCP		0			0				
1/251	1162	17	2	3	0		0			0			0				
1/251	1166	454	31	3	1	Y	0	MAN,SCP,INN,									
PH1	Y	0	MAN		0				CHOP MARKS ON BOS MAN								
1/251	1176	151	9	3	0	Y	0	MAN,UM,UPM,LM,RAD		0			0				
1/251	1178	37	6	4	1		0		Y	0	UM		0		CAN-MAN, LC,MTC		

Site-code	context	weight	frag nos	condition	measurability	cattle	bos tooth row	bos bones	sheep	ov tooth row	ov bones	pig	sus tooth row	sus bones	others	bird	comments
1/251	1182	187	39	3	0	Y	0	PH1		0			0		SSZ-LBF		
1/251	1185	85	6	2	0	Y	0	HUM		0			0				
1/251	1192	320	140	2	0	Y	0	MTC		0		Y	0	ATL	DEER-ANT		ALMOST ALL SMALL FRAGS
1/251	1208	76	9	3	0	Y	0	MTP		0			0				
1/251	1209	153	16	3	0	Y	0	RAD		0			0				
1/251	1215	222	24	3	0	Y	0	RAD,LM		0			0				
1/251	1219	19	2	3	0	Y	0	UM	Y	0	LM		0				
1/251	1235	32	5	3	0		0			0			0				
1/251	1248	6	1	3	0		0			0			0				
1/251	1264	93	10	3	0	Y	0	RAD,LM	Y	0	TIB		0				RAD CHEWED-SHEEP TIB SMALL
1/251	1266	29	8	2	0		0			0			0				
1/251	1268	42	19	3	0	Y	0	LM		0			0				
1/251	1276	78	10	3	0	Y	0	UM		0			0				
1/251	1285	479	65	3	0	Y	0	HUM,TIB,MTP	Y	0	TIB		0				
1/251	1289	16	2	4	0		0			0			0				
1/251	1311	518	82	3	0	Y	0	SCP,MTT,RUL,									
PH1,PH2	Y	0	TIB,TTH	Y	0	FEM,TTH			OCC CHEWED, SHEEP TIB V.SMALL								
1/251	1312	5	4	3	0		0			0			0				
1/251	1313	19	3	3	0		0			0			0				
1/251	1329	5	2	3	0		0			0			0				
1/251	1333	29	5	3	0	Y	0	LM		0			0				
1/251	1349	339	20	3	2	Y	0	MTC,MTT,RAD		0			0		EQU-FEM		
1/251	1359	104	11	2	0	Y	0	UM		0			0				FRAGMENTED-ENAMEL FRAGS
1/251	1382	165	20	3	0	Y	0	PH2,UM,MAN,									
LPM,LM		0			0												
1/251	1388	20	2	2	0		0			0			0				
1/251	1422	12	1	4	0	Y	0	FEM		0			0				
1/251	1425	578	70	3	0	Y	0	MAN,MTT,SCP,LM	Y	0	TIB		0				
1/251	1427	76	6	4	0	Y	0	RAD		0			0				
1/251	1432	194	8	3	0		0			0			0		MAN-FEM		
1/251	1436	50	7	3	0	Y	0	MTP	Y	0	TIB		0				
1/251	1444	3	1	3	0		0			0		Y	0	LC			

Site-code	context	weight	frag nos	condition	measurability	cattle	bos tooth row	bos bones	sheep	ov tooth row	ov bones	pig	sus tooth row	sus bones	others	bird	comments
1/251	1445	34	3	4	0	Y	0	LM		0			0				
1/251	1448	15	2	2	0		0			0			0				
1/251	1449	121	4	3	0	Y	0	TIB		0			0				
1/251	1454	73	23	4	1	Y	0	PHI	Y	0	TIB,RAD		0				
1/251	1470	53	5	3	0	Y	0	RAD		0			0		DEER-ANT		SMALL TINE FRAG
1/251	1471	32	11	3	0		0			0			0				
1/251	1475	51	15	3	0		0			0			0				
1/251	1490	5	5	3	0		0			0			0				

Environmental Archaeology Assessment – Site 218 (NHER 37827 LEX)

Introduction

Excavations conducted by Network Archaeology Ltd on the Bacton to Kings Lynn Pipeline at site 218 uncovered features dating from the Neolithic through to the Iron Age. A total of ten samples were taken for environmental analysis (Table 1). The samples were submitted to the Environmental Archaeology Consultancy for processing and assessment. The soil samples were processed in the same manner as the samples from site 1/251 (Rackham, 2004) and the individual components of the samples were then preliminarily identified and the results are summarised below in Tables 2 and 3.

Table 1. Bacton to Kings Lynn – Site 218. Samples taken for environmental analysis

plot	sample no.	context no.	sample vol. (l).	sample weight (kg)	feature/comment	Phase
8/218	73102	8174	9	11	Fill of post-hole 8173	?
8/218	73103	8176	10	13	Fill of post hole 8175	4
8/218	73104	8178	4	6.25	Fill of post-hole 8177	4
8/218	73105	8215	5	7	Dark fill of post hole 8214	4
8/218	73106	8168	19	24	Dark fill of post hole 8167	4
8/218	73107	8286	20	24	Fill of pit 8285	3
8/218	73108	8293	20	28	Grey deposit within storage pit 8275	1
8/218	73109	8313	10	13	Burnt deposit in pit 8312	?
8/218	73110	8348	40	52	Dark fill of storage pit 8316	1
8/218	73111	8363	20	27	Dark fill of ring ditch 8362	2

Results

There are indications of low levels of contamination in the presence of rootlets, uncharred seeds of Chenopodium and the shells of the burrowing blind snail Cecilioides acicula. It seems likely that the few shells of other taxa are probably also contaminants since the lack of animal bone from the site clearly indicates that the deposits are entirely decalcified.

The samples are dated to phases 1 (Neolithic), 2 (later Neolithic/early Bronze Age), 3 (Bronze Age) and 4 (Iron Age) with two samples at present unphased (Table 1). The samples from phases 3 and 4 produced the most archaeological debris, with pottery consistently present, flint in three of the samples, fired earth and burnt flint in some, and flakes of hammerscale in one phase 4 and an unphased sample. The preservation conditions are such that animal bone does not survive on the site and none was recovered by hand during excavation.

The environmental evidence is concentrated in the features from the later phases, but occurs at low densities in all but one of the samples. Two unidentifiable fragments of charred cereal grain were recovered from a phase 1 sample (73108) and a fragment of hazelnut from a phase 2 context, 8363. All the identifiable charred grain is concentrated in the samples from contexts 8174, 8176 and 8178, a small group of associated post-holes in the centre east of the plot. Elsewhere the charred cereals occur at very low densities and are fragmented or too poorly preserved to identify. Hazelnut shells occur in one unphased sample and a phase 3 sample, while only two samples contain more than 10 charred weed seeds.

Table 2. Bacton to Kings Lynn – Site 218. Finds from the processed samples

plot	samp no.	context no.	samp vol (l).	feature	residue volume (l)	pot no./g.	fired earth /daub g.	flint no./g.	burnt flint wt. g.	magnetic component g.	hammer-scale no.	slag wt g.	bone g.	
8/218	73102	8174	9	Fill of post-hole 8173	1.5	3/15			85	2	1			
8/218	73103	8176	10	Fill of post hole 8175	0.9	2/<1	<1			1				
8/218	73104	8178	4	Fill of post-hole 8177	5	4/7			99	1		+		
8/218	73105	8215	5	Dark fill of post hole 8214	0.4	2/2		2/<1						
8/218	73106	8168	19	Dark fill of post hole 8167	1.5	9/4	2	4/?		<1				
8/218	73107	8286	20	Fill of pit 8285	1	13/5			59	1	2			1g fuel ash slag
8/218	73108	8293	20	Grey deposit within storage pit 8275	1	23/32		31/24		1				
8/218	73109	8313	10	Burnt deposit in pit	4.5				5750	1				
8/218	73110	8348	40	Dark fill of storage	1.5			1/<1	+	<1				
8/218	73111	8363	20	Dark fill of ring	1.5	4/<1		23/2		<1				

+ present, but not quantified – fragments only.

Table 3: Bacton to Kings Lynn – Site 218. Summary of the environmental finds from the processed samples

plot	samp no.	context no.	samp vol. (l).	feature	flot vol. (ml)	char coal $	char'd grain *	char'd chaff *	char'd seed *	snail*	Preliminary identifications
8/218	73102	8174	9	Fill of post-hole 8173	20	3/5	2		1	2	Wheat, hazelnut, Cecilioides acicula, Hygromia hispida
8/218	73103	8176	10	Fill of post hole 8175	18	4/5	3	1	2	2	Wheat, barley, C. acicula, Helicella sp.
8/218	73104	8178	4	Fill of post-hole 8177	10	3/4	1		1	1	Wheat, C. acicula, Helicella sp.
8/218	73105	8215	5	Dark fill of post hole 8214	1	1/3	1		1	1	C. acicula, Helicella sp.
8/218	73106	8168	19	Dark fill of post hole 8167	2	2/3	1		1	2	Hazelnut, C. acicula, Helicella sp.
8/218	73107	8286	20	Fill of pit 8285	4	2/4	1		2	2	Legume, grass, C. acicula, Helicella sp., Aegopinella pura

plot	samp no.	context no.	samp vol. (l).	feature	flot vol. (ml)	char coal $	char'd grain *	char'd chaff *	char'd seed *	snail*	Preliminary identifications
8/218	73108	8293	20	Grey deposit within storage pit 8275	4	2/4	1			1	C. acicula
8/218	73109	8313	10	Burnt deposit in pit 8312	1100	5/5				2	C. acicula
8/218	73110	8348	40	Dark fill of storage pit 8316	6	3/4			1	1	C. acicula
8/218	73111	8363	20	Dark fill of ring ditch 8362	11	4/5			1	2	Hazelnut, C. acicula, Helicella sp.

* = abundance: 1=1-10, 2=11-50, 3=51-150, 4=151-250, 5=250+

$ = abundance estimate of charcoal fragments >2mm and those <2mm in size

The burnt deposit from pit 8312 at the north-west end of the plot is unphased but its residue is entirely composed of burnt flint and it has produced the largest flot from the site, over a litre of charcoal. Presumably that charcoal derives from the fuel used to burn the flints and is similar to a sampled context from site 202. Analysis of the charcoal assemblage in this context would be a useful comparanda for other similar deposits excavated at other sites along the pipeline and may reflect either fuel selection or the character of the local woodland. The charcoal also offers the opportunity to date the deposit by radiocarbon dating.

Discussion and Conclusions

Little information can be gained from these samples for the early phases of activity at the site but the concentrations of pottery and charred cereal grain in the Iron Age deposits, particularly the group of three post-holes (8173, 8175 and 8177), suggests that these later features are receiving domestic rubbish. The material preliminarily identified indicates that wheat, barley and hazelnuts were present, but other taxa might be added after specialist identification.

The concentration of hammerscale in the samples is too low to attach any significance to these finds.

One sample produced a large charcoal assemblage in association with an abundance of burnt flint. If the archaeological context and age of this deposit can be established, the analysis of the charcoal may yield useful comparanda for other sites along the pipeline.

Two areas of further work are suggested.

The identification and study of the charred cereal and seed assemblages from the Bronze Age and Iron Age contexts (phases 3 and 4).

Study of the charcoal from context 8313, but only after further archaeological information or dating is available.

Bibliography

Williams, D. 1973 Flotation at Siraf, Antiquity, 47, 198-202

Environmental Archaeology Assessment – Site 202 (NHER 37622 TTL)

Introduction

Excavations conducted by Network Archaeology Ltd on the Bacton to Kings Lynn Pipeline at Site 202 uncovered features of prehistoric, Romano-British, Anglo-Saxon and post-medieval date. A total of four samples were taken from this site (Table 1) for environmental analysis. Although a large number of samples were collected from graves at site 202 these were not submitted for environmental assessment. The site produced very small collections of hand recovered animal bone. The samples and animal bone were submitted to the Environmental Archaeology Consultancy for processing and assessment. The soil samples were processed in the same manner as the samples from site 1/251 (Rackham, 2004) and the individual components of the samples were then preliminarily identified and the results are summarised below in Tables 2 and 3.

Table 1: Bacton to Kings Lynn – Site 202. Samples taken for environmental analysis

plot	sample no.	context no.	sample vol. (l).	sample weight (kg)	feature/comment	Phase
13/202	71476	13203	10	14	Grey lens in fill of ring ditch	4/5?
13/202	71477	13205	8.5	12	Burnt feature in fill of ring ditch	4/5?
13/202	71480	13078	10	-	Lower fill of pit 13071	2
13/202	71481	13072	11	14.5	Upper fill of pit 13071	2

Table 2: Bacton to Kings Lynn – Site 202. Finds from the processed samples

plot	samp no.	context no.	samp vol (l).	feature	residue volume (l)	pot no./g.	fired earth /daub g.	flint no./g.	burnt flint wt. g.	magnetic component g.	hammer-scale no.	bone g.	
13/202	71476	13203	10	Grey lens in fill of ring ditch	6.5	1/3		3/1		<1			Coal- <1g
13/202	71477	13205	8.5	Burnt feature in fill of ring ditch	6.25			3/1	1000	<1			
13/202	71480	13078	10	Lower fill of pit 13071	1.1	33/197		4/2	40	1			
13/202	71481	13072	11	Upper fill of pit 13071	1	10/21		2/<1		1			A ball of fuel ash slag in flot

+ present, but not quantified – fragments only.

Table 3: Bacton to Kings Lynn – Site 202. Summary of the environmental finds from the processed samples

plot	samp no.	context no.	samp vol. (l).	feature	flot vol. (ml)	char coal $	char'd grain *	char'd chaff *	char'd seed *	snail*	Preliminary identifications
13/202	71476	13203	10	Grey lens in fill of ring ditch	14	3/4	1			1	C. acicula
13/202	71477	13205	8.5	Burnt feature in fill of ring ditch	35	5/5	1		1	1	C. acicula
13/202	71480	13078	10	Lower fill of pit 13071	7	3/4	1		1	1	C. acicula, Clausilidae
13/202	71481	13072	11	Upper fill of pit 13071	1	2/4	1				

* = abundance: 1=1-10, 2=11-50, 3=51-150, 4=151-250, 5=250+

$ = abundance estimate of charcoal fragments >2mm and those <2mm in size

Results
Two samples, 71480 and 71481, were taken from the upper and lower fills of a Neolithic pit. The other two samples derive from fills in a Bronze Age ring ditch. Three of the four samples produced pottery, all produced a few flint flakes and one of the ring ditch samples, context 13205, and the lower fill of the Neolithic pit produced quantities of burnt flint.

The environmental assemblages are poor. All the samples produced one or two unidentifiable fragments of charred cereal grain; two samples included a single charred seed, and three intrusive snail shells. All the flots comprised largely comminuted charcoal although the charcoal in context 13205 includes a number of identifiable fragments.

A sample of 132 animal bones were recovered by hand from three contexts, almost all of these deriving from a dog skeleton in context 13075, a post-medieval dog burial. The skeleton is not very well preserved and clearly the soils on the site are not conducive to the survival of bone.

Discussion and Conclusions
This site has little further potential; however one area of further work is suggested.

The analysis of the charcoal assemblage in context 13205. The quantity of burnt flint in this sample is substantial and the charcoal presumably represents the fuel used in the fires that burnt this flint. The charcoal could therefore indicate the selection of wood for the fires and should be compared with the assemblages studied from the other prehistoric sites on this pipeline where charcoal and burnt flint assemblages have been found associated. It would also offer an opportunity to radiocarbon date this deposit.

Bibliography
Williams, D. 1973 Flotation at Siraf, Antiquity, 47, 198-202

Key to codes used can be found in the report on site 1/251, Appendix A.

Appendix A: Archive assessment catalogue of the hand collected bones from BKL02 – site 202

site code	context	weight	frag nos	condition	measurability	cattle	bos tooth row	bos bones	sheep	ov tooth row	ov bones	pig	sus tooth row	sus bones	others	comments
13/202	13021	5	1	4	0		0		Y	0	LM		0			
13/202	13059	1	1	3	0		0			0			0			
13/202	13075	513	130	3	0		0			0			0		CAN-SKEL	ALMOST COMPLETE-POORLY PRESERVED

Environmental Archaeology Assessment – Site 24/144 (NHER 37892 FLS)

Introduction

Excavations conducted by Network Archaeology Ltd on the Bacton to Kings Lynn Pipeline at site 24/144 uncovered features dated to the Iron Age and Roman period and some possible Saxon features. During the excavations a total of 12 bulk samples (Table 1) were taken for environmental analysis and a very small collection of 55 fragments of bone fragments were collected by hand. The samples and animal bone were submitted to the Environmental Archaeology Consultancy for processing and assessment. The soil samples were processed in the same manner as the samples from site 1/251 (Rackham, 2004) and the individual components of the samples were then preliminarily identified and the results are summarised below in Tables 2 and 3.

Results

There was very little evidence for contamination. Modern and recent rootlets were largely absent from the flots although a few seeds of Chenopodium (goosefoot/orache), Sambucus sp. (elder), Rubus sp. (bramble) and one or two other taxa were present in all the samples.

The samples derive primarily from the fills of a kiln structure of Roman date, with additional samples from four contemporary pits at the northern end of the kiln, a sub-rectangular feature and a ring ditch (Table 1), the latter two assigned to the Iron Age.

Table 1: Bacton to Kings Lynn – Site 24/144. Samples taken for environmental analysis

plot	sample no.	context no.	sample vol. (l). *	sample weight (kg)	feature/comment	Phase	Phase
24/144	73400	24079	48	48	Fill of kiln 24078, southern chamber	2	Rom
24/144	73401	24050	20	28.5	Fill of sub-rectangular chamber 24049	1	IA
24/144	73402	24081	28	33	Lower fill of kiln 24078, southern chamber	2	Rom
24/144	73403	24133	19	28.5	Fill of ring ditch 24132	1	IA
24/144	73404	24117	40	51.5	Fill of pit 24116	2	Rom
24/144	73405	24115	18	22	Fill of kiln 24078, northern chamber	2	Rom
24/144	73406	24126	37	45.5	Fill of kiln 24078, northern chamber	2	Rom
24/144	73407	24125	20	21.5	Fill of kiln 24078, northern chamber	2	Rom
24/144	73408	24114	39	49	Fill of pit 24113	2	Rom
24/144	73409	24080	12	19.5	Lower fill of kiln 24078, southern chamber	2	Rom
24/144	73410	24227	16	19.5	Fill of pit 24226	2	Rom
24/144	73411	24247	40	51	Fill of pit 24246	2	Rom

In general the sample residues were comprised of flint gravel and occasional small pebbles, with sand and some small ironstone and some concreted sediment. Small fragments of fired earth, charcoal and bone were not sorted from the fine residue fraction of those samples in which they occur.

Archaeological finds from the samples include pottery, fired clay, flint, hammerscale and animal bone (Table 2). The flint recorded in Table 2 reflects the flint material retained during sorting but it is not necessarily worked or waste flint and a proportion is likely to be discarded after specialist examination. Pottery is relatively abundant in the samples as is fired earth. Some of the latter may be abraded and rolled pottery and possible brick like material, while the remainder appears to be daub, presumably associated with the structure of the kiln. A small magnetic component was recovered from all samples and the consistent occurrence of hammerscale, both spheroidal and flake, indicates contemporary iron smithing on the site, although the one piece of slag recorded from context 24050 was not generated by smithing.

The environmental component of the samples is dominated by charcoal with a few charred cereal remains and weed seeds. It is clear from the hand excavated bone and these samples that the burial environment was unsuitable for the survival of bone and snail shells.

Table 2: Bacton to Kings Lynn – Site 24/144. Finds from the processed samples

samp no.	context no.	samp vol (l).	feature	residue volume (l)	pot no./g.	fired earth /daub g.	flint no./g.	magnetic component g.	hammer-scale no.	slag	bone g.	
73400	24079	48	Fill of kiln 24078, southern chamber	4.5	23/45	192/272 *		2	10		<1	
73401	24050	20	Fill of sub-rectangular chamber 24049	2.5	19/73			1	3	3	1	Slag not Fe.
73402	24081	28	Lower fill of kiln 24078, southern chamber	3	3/4	977	3/8	5	4		1	
73403	24133	19	Fill of ring ditch 24132	5.5	4/2		15/2	1	3		<1	
73404	24117	40	Fill of pit 24116	6	47/67	1149	12/5	3	16		<1	
73405	24115	18	Fill of kiln 24078, northern chamber	2.5	11/28	553*	7/1	2	5			
73406	24126	37	Fill of kiln 24078, northern chamber	6.5	21/93	1642	7/2	2	3		1	
73407	24125	20	Fill of kiln 24078, northern chamber	2.75	10/13	392		2	1		5	
73408	24114	39	Fill of pit 24113	4	7/15	307	9/11	1	7		<1	
73409	24080	12	Lower fill of kiln 24078, southern chamber	2.5	26/41	512		4	4			A little fuel ash slag in flot
73410	24227	16	Fill of pit 24226	2.75	5/9	670		2	1		1	
73411	24247	40	Fill of pit 24246	4.5	12/13	172	20/6	2	16			A little fuel ash slag in flot

* a proportion is probably abraded pottery?

Table 3: Bacton to Kings Lynn – Site 24/144. Summary of the environmental finds from the processed samples

samp no.	context no.	samp vol. (l).	feature	flot vol. (ml)	char coal $	char'd grain no frags	char'd chaff no.	char'd seed *	snail*	Preliminary identifications
73400	24079	48	Fill of kiln 24078, southern chamber	5	2/4	6		1		Wheat?, oats?, hazelnut, vole
73401	24050	20	Fill of sub-rectangular chamber 24049	75	5/5	3				All bone burnt, indet
73402	24081	28	Lower fill of kiln 24078, southern chamber	3	3/4	40+	2	2		Oat/rye?, wheat, frog/toad, rodent, all large bone burnt
73403	24133	19	Fill of ring ditch 24132	1	2/2	2		1		One burnt bone fragment
73404	24117	40	Fill of pit 24116	15	4/5	3		1		One tiny fragment burnt bone
73405	24115	18	Fill of kiln 24078, northern chamber	60	4/5	12+	4	1		Oats
73406	24126	37	Fill of kiln 24078, northern chamber	40	4/5	3		1	1	Wheat?, Cecilioides acicula

samp no.	context no.	samp vol. (l).	feature	flot vol. (ml)	char coal $	char'd grain no frags	char'd chaff no.	char'd seed *	snail*	Preliminary identifications
73407	24125	20	Fill of kiln 24078, northern chamber	6	3/4	2		1		Sheep
73408	24114	39	Fill of pit 24113	20	3/5	2		1		Wheat?
73409	24080	12	Lower fill of kiln 24078, southern chamber	4	2/4	32+	9	1	1	Oat?, wheat?, Vallonia sp.
73410	24227	16	Fill of pit 24226	75	5/5	1	1	1	1	Wheat?, probable dog mandible fragment, C. acicula
73411	24247	40	Fill of pit 24246	10	3/4	1		1		

* = abundance: 1=1-10, 2=11-50, 3=51-150, 4=151-250, 5=250+

$ = abundance estimate of charcoal fragments >2mm and those <2mm in size

The very few shells of snails are certainly contaminants. Most of the surviving bone in the samples is burnt but fragments of sheep, rodent and frog or toad are present and a possible fragment of a dog mandible.

All the samples produced charred plant remains and charred grain appears to be concentrated in the southern chamber of the kiln, occurring at four times the density of the grain in the northern chamber. It may be that the samples from the southern chamber are picking up material from a single burning event in the kiln in which cereal waste was used as fuel or perhaps even dried, although concentrations are much lower than is typical in corn driers. Most of the grain appears to be oats, with some wheat grains present but the assemblage needs detailed identification by an archaeo-botanist. The two Iron Age samples produced only 5 grain fragments, all of which may be unidentifiable. The density of charred weed seeds is low but a few samples produced small charred tubers as well. A single hazelnut fragment was recovered from context 24079.

The charcoal in the samples is largely derived from wood, with little evidence for twigs, straw or other plant stems. Interestingly it is distributed unevenly in the kiln. The charcoal element is fairly small in the fills of the southern chamber while its density is much greater in the northern chamber. The eighty eight litres of sample from the southern chamber produced only 12 mills of charcoal rich flot, while the seventy five litres from the northern chamber produced nearly tens times as much. Presumably the charcoal represents the fuel used in the kiln and its identification to species and type of wood (roundwood, billet, etc) should give an indication of the selection of timber used to fire the kiln. The rich charcoal sample from the sub-rectangular chamber, 24050, of Iron Age date and from the fill of Roman pit 24226 may be useful as controls to see if there is any specific selection of timber for the kiln.

Excavated animal bone

A small collection of hand excavated animal bone, 55 fragments, was collected from the site. This has been assessed in the same manner as site 1/251. The bone is extremely poorly preserved, shows extensive signs of corrosion in the soil, and the only identifiable fragment is a molar tooth of a horse which has survived because the enamel is much more robust than bone. The remainder of the material is too poorly preserved and fragmented to identify (see Appendix).

Discussion and Conclusions

It is difficult to assess the character of the assemblages from these samples. The poor bone preservation makes it impossible to establish whether animal bone was ever a significant component of the deposits. The pottery and fired earth may merely be the waste and debris from the kiln, so whether the charred plant remains reflect a secondary use of the kiln, use as fuel, or discarded material accidentally burnt on domestic fires is not known. The apparent concentration of what appear to be oats might indicate that much of the grain derives from a single event, or several using the same crop type. The chaff and weed seeds are not particularly abundant so it is not clear that the cereal remains derive from any crop processing activities. Specific identification of these charred plant remains may aid the further interpretation of this small group of data. The charred remains from the Roman pits and ring ditch occur at fairly low densities and afford only presence absence data for the identifiable material in them.

The assemblages in the two chambers of the kiln are different; the northern chamber is dominated by charcoal, while the southern chamber contains the bulk of the charred cereal remains. It seems probable that these differences reflect some functional differences between the two chambers or conceivably that they were used for two different functions or discard events during their final phase.

In addition to the pottery manufacture the hammerscale in the samples indicates that iron smithing is also being undertaken at the site.

It is recommended that only the following elements are dealt with in the post-excavation programme:
Specific identification of the cereal and charred seed remains and their interpretation.
Identification of the charcoal in Iron Age feature 24096 and Roman pit 24226 and the northern chamber of the kiln, specifically samples from contexts 24115 and 24126, to see if the kiln is fired with specially selected timber.

Bibliography

Williams, D. 1973 Flotation at Siraf, Antiquity, 47, 198-202

Key to codes used can be found in the report on site 1/251, Appendix A.

Appendix A: Archive assessment catalogue of the hand collected bones from BKL02 - site 24/144

site code	context	weight	frag nos	condition	measurability	cattle	bos tooth row	bos bones	sheep	ov tooth row	ov bones	pig	sus tooth row	sus bones	others	bird	comments
24/144	24079	5	2	3	0		0			0			0				
24/144	24112	5	12	3	0		0			0			0				
24/144	24121	27	9	3	0		0			0			0				
24/144	24238	28	6	1	0		0			0			0		EQU-TTH		
24/144	24247	19	6	3	0		0			0			0				
24/144	24248	4	20	1	0		0			0			0				

Environmental Archaeology Assessment – Site 25/138 & 136 (NHER 37624 & 37625 FLS)

Introduction

Excavations conducted by Network Archaeology Ltd on the Bacton to Kings Lynn Pipeline at site 25/136-138 uncovered features dated to the prehistoric, late Iron Age/Roman and medieval periods. During the excavations 5 bulk samples (Table 1) were taken for environmental analysis and a collection of 917 fragments of bone were collected by hand. The samples and animal bone were submitted to the Environmental Archaeology Consultancy for processing and assessment. The soil samples were processed in the same manner as the samples from site 1/251 (Rackham, 2004) and the individual components of the samples were then preliminarily identified and the results are summarised below in Tables 2 and 3.

Results

There was very little evidence for contamination. Modern and recent rootlets were largely absent from the flots although a few uncharred seeds of Chenopodium (goosefoot/orache) were present in two of the samples.

The samples derive from a Bronze Age/Iron Age pit, a late Iron Age/Roman pit and well, and the fills of two medieval ditches (Table 1).

Table 1. Bacton to Kings Lynn – Site 25/136-138. Samples taken for environmental analysis

plot	sample no.	context no.	sample vol. (l). *	sample weight (kg)	feature/comment	Phase	Phase
25/138	71650	25035	40	48	Fill of pit 25034	2	LIA/ER
25/136	71651	25027	38	42	Fill of pit 25026	1	BA/IA
25/138	71652	25143	40	45	Fill of ditch 25142	3	MED
25/138	71653	25120	40	42	Fill of ditch 25118	3	MED
25/138	71654	25281	37	37	Fill of well 25195	2	LIA/ER

The residues of the samples comprised flint gravel with varying amounts of concreted sands and finer sediment or chalk. Chalk was abundant in 25120 and 25143 while the absence of chalk in the Phase 1 sample, context 25027, and an appreciably smaller residue than the other samples and no animal bone or contemporary shells suggests that this deposit is decalcified. The residue of context 25120 includes a lot of fired 'organic sediment' crumb which is tentatively identified as carbonised peat. The fact that the 8 grams of magnetic component recovered from this sample is mainly fired earth, and the >7mm fraction of the residue includes abundant fired earth (while no larger fragments were recovered) suggests that a silty peat may well have been used as a fuel at the site.

Archaeological finds from the samples include pottery, fired earth/clay, flint, a little burnt flint and animal bone (Table 2). A single flake of hammerscale was recovered from the residue of LIA/ER sample 71654 but this could be a contaminant. This sample also produced the small pointed end curl of copper wire, probably a pin end. The flint material picked out may not be worked. It is probable that a component of the material sorted into the fired earth category is degraded and rolled pottery.

Table 2: Bacton to Kings Lynn – Site 25/136-138. Finds from the processed samples

samp no.	context no.	samp vol (l).	feature	residue volume (l)	pot no./g.	fired earth /daub g.	flint no./g.	burnt flint	magnetic component g.	hammer-scale no.	bone g.	
71650	25035	40	Fill of pit 25034	3	51/48	109*	6/2	+	2		143	
71651	25027	38	Fill of pit 25026	0.6	10/6	77*		+	3			
71652	25143	40	Fill of ditch 25142	5	61/11		1/1		1		1	
71653	25120	40	Fill of ditch 25118	2.25	15/6	+	6/<1		8		5	Carbonised peat?
71654	25281	37	Fill of well 25195	1.25	39/35	22*	1/-		2	1	172	Cu wire/pin

* - probably some pot in the fired earth component.

Table 3: Bacton to Kings Lynn – Site 25/136-138. Summary of the environmental finds from the processed samples

samp no.	context no.	samp vol. (l).	feature	flot vol. (ml)	char coal $	char'd grain *	char'd chaff *	char'd seed *	snail*	Preliminary identifications
71650	25035	40	Fill of pit 25034	50	4/5	2		2	1	Barley, wheat, hazelnut, cattle, sheep, pig, dog, bank vole, field vole, mouse, Small bird, cockle, Hygromia hispida, Vallonia excentrica, Vallonia costata
71651	25027	38	Fill of pit 25026	1100	5/5	1		1	1	Oak wood charcoal, Cecilioides acicula
71652	25143	40	Fill of ditch 25142	20	3/4	1		2	2	Wheat, barley, cockles, C. acicula, V. excentrica, V. pulchella, Pupilla muscorum, Cochlicopa sp., Carychium sp., Vertigo pygmaea, H. hispida, Lymnaea truncatula
71653	25120	40	Fill of ditch 25118	21	3/5	4		3	3	Wheat, barley, hazelnut, pea?, bean?, sheep, pig, small bird, frog/toad, cockle, chicken? & goose? eggshell, Helicella sp., Oxychilus sp., V. excentrica, V. pulchella, V. costata, Vitrea sp., H. hispida, Euconulus fulvus, Cochlicopa sp., Discus rotundatus, V. pygmaea, C. acicula, L. truncatula, Planorbis leucostoma, Bithynia tentaculata
71654	25281	37	Fill of well 25195	145	5/5	1		2	2	Barley, oats?, pulse, cattle, sheep, pig, field vole, house mouse, small fish, V. excentrica, V. pygmaea, L. truncatula – possible sheep cremation?

* = abundance: 1=1-10, 2=11-50, 3=51-150, 4=151-250, 5=250+

$ = abundance estimate of charcoal fragments >2mm and those <2mm in size

In contrast to many of the sites on the pipeline bone has survived in most of the deposits on this site, although only one was recovered from the Phase 1 features. Phase 2 and 3 samples have produced bone, charcoal, charred cereal remains and weed seeds and terrestrial and marine shells.

The Phase 1 pit, 25026, produced a flot composed almost entirely of charcoal, including oak. Only a proportion (about 5-10%) of this large flot was scanned for the assessment and produced a single unidentifiable charred cereal grain and one charred weed seed.

The two Phase 2 samples contained a relatively large amount of animal bone with cattle, sheep, pig, dog, house mouse, field mouse, bank vole, small bird and small fish present. The sample from the well, 25281, included a number of burnt sheep bones which might derive from a single animal, perhaps an animal cremation. A small fragment of cockle shell was also present in context 25035. The two flots produced charred wheat, barley, and oats? and pulse, although the density of these remains was less than one grain per two litres of sample. The domestic animal and crop plant assemblages suggest domestic household refuse, except perhaps for the calcined sheep bones in the well. The small suite of snail shells (Table 3) is indicative of an open country/grassland environment around the sampled features.

The samples from Phase 3 were taken from the two phases of the medieval enclosure ditch, and the concentrations of archaeological debris and domestic food rubbish suggests that this enclosure contained settlement. An assemblage including wheat, barley, pea?, bean?, hazelnuts, charcoal, sheep, pig, cockle and probable chicken and goose eggshell is clearly evidence for the incorporation of domestic rubbish into the deposits. The snail fauna in these two samples are appreciably richer than the other three samples with that from ditch 25142 suggesting a damp open/country grassland habitat while that from ditch 25118 mirrors this to some extent but includes two aquatic taxa and one or two shells of species more typically found in shaded or woodland habitats.

Excavated animal bone and shell

The collection of 917 bone fragments weighs 5.44 kilograms and derives mainly from deposits assigned to Phase 2 (Table 4). The archive catalogue of this assessment is attached below.

Table 4. Frequency and weight of bone fragments by phase.

Phase	Weight	Frag. Nos.
1	1	1
2	3862	692
3	1249	168
5	1	1
not phased	327	55

The bone shows appreciable signs of erosion and degradation in the soil. The condition of the fragments was recorded during the assessment (Table 5) and the bulk of the material was classified into 'condition 3' which equates with bones that show significant surface pitting and erosion. This state of preservation would not normally have lead to any great loss of bone in the soil but a small component of the collections shows greater levels of erosion (Table 5) which suggests that some of the more porous bones, such as those of juveniles, and the less dense bones may have been lost from the assemblage through corrosion in the soil.

Table 5: Frequency of bones in each phase in terms of their condition. (codes as described in the appendix of the report on site 251)

condition	2	3	4
Phase 1		1	
2	34	463	195
3	10	149	9
5		1	
not phased	25	26	4

The material identified during this assessment can be summarised by the frequency of contexts in which they were recorded (Table 6). Sheep and cattle occur with similar frequency in both the late Iron Age/Romano-British contexts and the medieval contexts. Horse, pig, goat, roe deer and a wild bird are also present. Sawn goat

and cattle horn cores and a metatarsus in the medieval phase indicate that some horn and bone working was being carried on in the settlement.

Table 6: Frequency of contexts in which each taxa was recorded.

phase	1	2	3	5	Not phased
Horse		3	3		2
Cattle		17	5		2
Sheep/goat		19	4		1
Pig		5	2		
Goat			2		
Roe deer		1			
Wild bird			1		
Total no. of contexts with bone	**1**	**26**	**18**	**1**	**7**

Shells were recovered by hand from thirteen contexts during excavation. Six of these contain only terrestrials snails, including the shells of Helix aspersa, Helix nemoralis, Helix hortensis and Monacha cantiana. All these are part of the local snail fauna and tend to occur in a range of habitats although H. aspersa is synanthropic and typical of gardens, hedges and waste ground (Evans 1972). One Phase 2 context (25157) produced a single shell of oyster, while four of the medieval layers (25064, 25143, 25115 and 25184) produced shells of mussel, cockle and oyster. Two unphased contexts (448 and 25165) also produced cockle, mussel and oyster shells.

Discussion and Conclusions

The assessment suggests that the most of the environmental remains derive from domestic activities, although there is some evidence of craft activities in the medieval period. None of the remains suggest any appreciable amount of crop processing debris was entering the deposits. It is probable that the absence of animal bone and shells from the earliest deposits is a factor of preservation.

In the late Iron Age/Romano-British and medieval periods the site appears to have been in a open environment although the data is limited for the earlier period.

The following elements of the assemblages deserve further work:

- The charred plant remains from Phases 2 and 3
- Quantification and analysis of the snail assemblages in the Phase 3 samples
- Study of the burnt bone in context 25281 to establish whether or not it derives from a single sheep carcass and could be a cremation.
- The detailed recording and analysis of the Phase 2 and 3 hand collected animal bone.
- The charcoal analysis of the Bronze Age/early Iron Age pit and the Iron Age/Romano-British well.

Acknowledgements

I should like to thank Jez Dubber for the sample processing and Alison Foster scanned and recorded the animal bone for this assessment.

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Key to codes used can be found in the report on site 1/251, Appendix A.

Appendix A: Archive assessment catalogue of the hand collected bones from BKL02 - site 25/136-138

site code	context	weight	frag nos	condition	measurability	cattle	bos tooth row	bos bones	sheep	ov tooth row	ov bones	pig	sus tooth row	sus bones	others	bird	comments
BKL02-25/136-138	435	90	25	2	0	Y	0	LM		0			0				LOTS LOOSE TEETH
BKL02-25/136-138	436	6	15	3	0		0			0			0				INDET FRAGS
BKL02-25/136-138	438	3	1	4	0		0		Y	0	TRV		0				
BKL02-25/136-138	440	97	4	3	0		0			0			0		EQU-HUM		
BKL02-25/136-138	448	109	2	4	0		0			0			0		EQU-FEM		
BKL02-25/136-138	25001	1	1	3	0		0			0			0				CALCINED FRAGMENT
BKL02-25/136-138	25013	2	1	3	0		0			0			0				
BKL02-25/136-138	25020	30	10	3	0	Y	0	MAN	Y	0	LM,TIB		0				SMALL SHEEP
BKL02-25/136-138	25022	32	6	3	0		0			0			0				
BKL02-25/136-138	25029	1	1	3	0		0			0			0				
BKL02-25/136-138	25033	25	12	3	0		0			0			0				
BKL02-25/136-138	25035	462	157	3	0	Y	0	HC,UM,LM,UPM, LPM,MAN,SCP	Y	0	ULN,LM,UM, CAL		0		DOF-FEM		VERY FRAGMENTED
BKL02-25/136-138	25036		31	3	0	Y	0	LM,MTC,TIB,MAN,SCP	Y	0	MTC,MAN, MTT		0				
BKL02-25/136-138	25037	428	18	3	1	Y	0	AST,MTT,FEM, ULN		0			0		EQU-HUM,CLS-MTT		

site code	context	weight	frag nos	condition	measurability	cattle	bos tooth row	bos bones	sheep	ov tooth row	ov bones	pig	sus tooth row	sus bones	others	bird	comments
BKL02-25/136-138	25047	84	34	3	0		0		Y	0	LM,UM	Y	0	LI,TIB			
BKL02-25/136-138	25048	15	2	2	0	Y	0	UM	Y	0	MTT		0				
BKL02-25/136-138	25052		11	3	0	Y	0	LM	Y	0	CAL		0				
BKL02-25/136-138	25060	819	130	3	6	Y	0	FEM,MTT,MTC, LM,PH2,LI,HUM , INN,SCP	Y	0	MTC,RAD,TIB,MTT,LM		0				TINY SHEEP, LAMB
BKL02-25/136-138	25061	761	46	4	0	Y	2	MAN,LPM	Y	0	LM	Y	0	TTH	EQU-INC		LOTS LOOSE CATTLE TEETH
BKL02-25/136-138	25062		6	4	0		0		Y	0	MAN,LM		0				
BKL02-25/136-138	25064	28	3	4	0		0		Y	0	UM	Y	0	PH2	EQU-TIB		EQU-JUV
BKL02-25/136-138	25076	4	1	3	0		0		Y	0	RAD		0				
BKL02-25/136-138	25078	1	1	3	0		0			0			0				
BKL02-25/136-138	25080	3	5	2	0		0			0			0				
BKL02-25/136-138	25084	806	94	3	4	Y	1	HC,MAN,MAX, UPM	Y	0	TIB,LM,CQ, HUM,	Y	1	MAX,UC	CRA-HC		GOAT & CATTLE HORN SAWN
BKL02-25/136-138	25109	1	1	4	0	Y	0	MTT		0			0				
BKL02-25/136-138	25111	70	33	3	0	Y	0	MTP		0		Y	0	TIB,TTH			
BKL02-25/136-138	25113	54	26	4	0		0		Y	0	MTT,TTH, HUM,TIB,AX I		0				LAMB
BKL02-25/136-138	25115	66	14	3	0	Y	0	MTT	Y	0	RAD		0				MTT SAWN PROX END
BKL02-25/136-138	25117	12	5	3	0		0			0			0				

site code	context	weight	frag nos	condition	measurability	cattle	bos tooth row	bos bones	sheep	ov tooth row	ov bones	pig	sus tooth row	sus bones	others	bird	comments
BKL02-25/136-138	25119	28	6	3	0		0			0			0		EQU-TTH	WILD BIRD	HORSE MOLAR
BKL02-25/136-138	25120	125	7	3	0		0			0			0		EQU-RAD		PONY
BKL02-25/136-138	25121	26	5	4	0		0			0			0				
BKL02-25/136-138	25127	23	21	4	0		0		Y	0	UM		0				SOME CALCINED
BKL02-25/136-138	25137	1	3	3	0		0			0			0				
BKL02-25/136-138	25139	40	5	2	0	Y	0	HC		0			0				
BKL02-25/136-138	25156	9	3	2	0		0		Y	0	RAD		0				
BKL02-25/136-138	25157	1	1	4	0		0			0			0				
BKL02-25/136-138	25161	1	1	4	0		0			0			0				
BKL02-25/136-138	25167	16	1	3	0		0			0			0		CSZ-LBF		SAWN
BKL02-25/136-138	25181	37	3	4	0	Y	0	UM,PMX,HC		0		Y	0	LM	EQU-HUM		
BKL02-25/136-138	25184	21	7	3	0	Y	0	ULN		0			0				
BKL02-25/136-138	25194	33	9	3	0	Y	0	CAL	Y	0	TIB,UM		0				
BKL02-25/136-138	25196	92	7	3	0	Y	0	MTT	Y	0	TIB		0				
BKL02-25/136-138	25213	35	29	2	0		0		Y	0	LM,TIB		0				
BKL02-25/136-138	25254	12	5	3	0		0		Y	0	MAX		0				
BKL02-25/136-138	25257	51	12	3	0	Y	0	MTC,LI	Y	0	MTT		0				SMALL SHEEP, CALF

site code	context	weight	frag nos	condition	measurability	cattle	bos tooth row	bos bones	sheep	ov tooth row	ov bones	pig	sus tooth row	sus bones	others	bird	comments
BKL02-25/136-138	25262	58	3	3	0	Y	0	MTT		0			0				
BKL02-25/136-138	25263	7	1	3	0		0			0			0		CRA-HC		SAWN
BKL02-25/136-138	25266	208	2	4	0	Y	1	MAN		0			0				
BKL02-25/136-138	25281	156	37	4	1	Y	0	HC,UM	Y	0	TIB		0				
BKL02-25/136-138	25282	325	51	4	1	Y	1	MAN,LM	Y	0	TIB	Y	1	MAX,UC,UI, MTP,PH1,PH 2			
BKL02-25/136-138	25285	125	2	4	0	Y	1	MAN		0			0				

Environmental Archaeology Assessment – Site 27/128 (NHER 37626 THM)

Introduction

Excavations conducted by Network Archaeology Ltd on the Bacton to Kings Lynn Pipeline at site 27/128 uncovered features dated to the medieval period. During the excavations 7 bulk samples (Table 1) were taken for environmental analysis and a small collection of 204 fragments of bone were collected by hand. The samples and animal bone were submitted to the Environmental Archaeology Consultancy for processing and assessment. The soil samples were processed in the same manner as the samples from site 1/251 (Rackham, 2004) and the individual components of the samples were then preliminarily identified and the results are summarised below in Tables 2 – 4.

Results

There was very little evidence for contamination of the samples. Modern and recent rootlets were largely absent from the flots and very few uncharred weed seeds were present in any of the samples.

The samples derive from pits, linears and a pit associated with a structure thought to be an oven, kiln or corn drier. All the samples are dated to the medieval period

Table 1: Bacton to Kings Lynn – Site 27/128. Samples taken for environmental analysis

plot	sample no.	context no.	sample vol. (l).	sample weight (kg)	feature/comment	Phase
27/128	73000	27201	37	44	Fill of rectangular pit 27202	Med Ph 2
27/128	73001	27292	36	44	Fill of short linear 29291	Med
27/128	73002	27358	37	46	Fill of pit 27357	Med
27/128	73003	27203	20	23	Upper part pit fill 27575	Med
27/128	73004	27203	37	44	Lower charcoal/ash layer in pit 27575	Med
27/128	73006	27487	4	6	Fill within oven pit 27485	Med Ph 1
27/128	73007	27551	14	17	Fill within oven pit 27485	Med Ph 1

The residues of all the samples are composed of flint gravel with varying amounts of chalk and pebbles, coarse sand and concreted sediments. The residue caught on a 1mm mesh represents less than 7% of the original sample in all cases.

The samples produced pottery, fired earth, flint chips (none of which appears to be obviously worked) a little animal bone, hammerscale and slag. The density of hamerscale in context 27292 (Table 2) and the occurrence of 50 grams of slag indicates that this feature probably has a fairly direct association with the smithing activity undertaken on the site. Six iron objects were recovered in the same sample. Sample 73004 described as the lower part of context 27203, a charcoal and ash layer in pit 27575, contains an appreciable amount of fired earth, possibly derived from the hearth from which the ash and charcoal came.

The environmental assemblages from all seven samples are fairly rich. The flots are relatively large and charcoal is abundant with several to many fragments potentially identifiable. Charred cereal grain is common in all the samples, but no chaff was recorded in any. Most flots contain the charred cotyledons of what appear to be peas, and three have beans, while a number of other seeds may be other legumes. All the samples except 73006 (27487) also contain large numbers of small weeds seeds and small round seeds that will require detailed investigation to identify. These seeds occur in considerable abundance and seem likely to reflect some functional use of the features or activities taking place at the site. These samples also contain considerable numbers of small charred tubers and plant stems, possibly grasses. Context 27487 contrasts with the other samples in that it does not contain any tubers, plant stems or the abundance of small round seeds, while it has a very high concentration of charred cereal grains, among which wheat grains appear to predominate. In the context of the functional use of the feature associated with this pit this might suggest a corn drier, but the detailed botanical analysis can be expected to be more informative on this.

In addition to the charred assemblages a few fragments of bird eggshell, fish bone, cockle shell and animal bone were recovered. The eggshell is probably chicken (Sidell 1993).

Table 2: Bacton to Kings Lynn – Site 27/128. Finds from the processed samples

samp no.	context no.	samp vol (l).	feature	residue volume (l)	pot no./g.	fired earth /daub g.	flint no./g.	magnetic component g.	hammer-scale no.	slag	bone g.	
73000	27201	37	Fill of rectangular pit 27202	2.25	14/9	94	7/1	<1			<1	
73001	27292	36	Fill of short linear 29291	1.25	24/61	6	5/1	18	>250	50	5	6 x Fe (21g); 1 x non-Fe (1g)
73002	27358	37	Fill of pit 27357	1	7/8	3	1/<1	1	6		2	
73003	27203	20	Upper part pit fill 27575	1	6/?	30	5/<1	2	2		2	
73004	27203	37	Lower charcoal/ash layer in pit 27575	1.5	5/5	283	8/1	2	2		4	
73006	27487	4	Fill within oven pit 27485	0.25	1/13	56		<1			1	
73007	27551	14	Fill within oven pit 27485	0.45	1/2	9	5/<1	1			<1	

Table 3: Bacton to Kings Lynn – Site 27/128. Summary of the environmental finds from the processed samples

samp no.	context no.	samp vol. (l).	feature	flot vol. (ml)	char coal $	char'd grain *	char'd chaff *	char'd seed *	fish bone g.	egg-shell g.	snail*	Preliminary identifications
73000	27201	37	Fill of rectangular pit 27202	26	4/5	4		4			3	Barley, wheat, oat, rye, pea?, legumes, tubers, charred stems
73001	27292	36	Fill of short linear 29291	55	5/5	3		5	<1	<1	3	Barley, wheat, oats, rye, pea?, bean?, legumes, tubers, charred stems, cockle, frog/toad, herring?, cyprinid, cf chicken eggshell
73002	27358	37	Fill of pit 27357	110	5/5	2		4	<1		1	Wheat, barley, oat, rye, pea, bean, legume, hazelnut, tubers, charred stems, weasel, rodent, indet fish
73003	27203	20	Upper part pit fill 27575	62	5/5	3		5		<1	4	Wheat, barley, oat, rye, pea?, bean?, legumes, Rumex, tubers, charred stems, cf chicken eggshell
73004	27203	37	Lower charcoal/ash layer in pit 27575	125	5/5	5		5	<1	<1	4	Wheat, barley, oat, rye, Rumex, pea?, legumes, stems, tubers, indet fish, cf chicken eggshell
73006	27487	4	Fill within oven pit 27485	325	5/5	5		3		<1	1	Wheat*, barley, rye, oat, pea?, sheep/goat, cf chicken eggshell
73007	27551	14	Fill within oven pit 27485	28	4/5	2		4	<1		2	Wheat, barley, oat, rye, legume, Rumex, tubers, charred stems, sheep/goat, indet fish

* = abundance: 1=1-10, 2=11-50, 3=51-150, 4=151-250, 5=250+ $ = abundance estimate of charcoal fragments >2mm and those <2mm in size

Table 4: Bacton to Kings Lynn – Site 27/128. Molluscan taxa recorded from the samples

Context	27201	27292	27358	27203	27203	27487	27551
Sample	73000	73001	73002	73003	73004	73006	73007
Abundance*	3	3	1	4	4	1	2
Open country							
Cecilioides acicula	+	+		+++	+++	+	++
Vertigo pygmaea	+	+			+		+
Vertigo sp.				+	+		
Pupilla muscorum							
Vallonia costata	+			+	+		
Vallonia excentrica	+	++	+	+	+	+	+
Vallonia pulchella	+	+		+	+		
Catholic							
Hygromia hispida		+		+	+	+	+
Helix aspersa	+	+		+	+		
Helix sp.							
Cochlicopa sp.	+	+		+			+
Shade loving							
Oxychilus sp.				+		+	
Aegopinella nitidula		+		+			+
Aegopinella pura	+			+	+		
Nesovitrea hammonis	+						
Vitrea sp.	+	+		+	+		+
Acanthinula sp				+	+		+
Punctum pygmaeum					+		
Carychium sp.	+	+		+	+	+	
Lymnaea truncatula	+			+	+		
Aquatic							
Planorbis leucostoma				+	+		
Valvata cristata					+		

* = abundance: 1=1-10, 2=11-50, 3=51-150, 4=151-250, 5=250+
habitat groupings broadly taken from Evans, 1972; Ellis 1969; Kerney and Cameron, 1979; Cameron and Redfern 1976

Each sample produced some terrestrial snails. These varied in number from a few to several hundred and have been preliminarily identified (Tale 4). The assemblages include taxa characteristic of both open country and grassland habitats and those of shaded and woodland environments. Both samples from 27203 include rare shells of aquatic taxa. For these assemblages to contribute to a consideration of the Palaeoecology of the site they will need to be quantified.

Excavated animal bone
The small assemblage of excavated animal bone comprises 204 fragments weighing 1.458 kilograms.

This has been assessed on a context by context basis and a summary record of the material in each context produced for this assessment (see Appendix A). The bone was scanned and recorded in the manner outlined in the report for site 1/251.

Despite the obvious calcareous nature of the soil and the survival of finds such as eggshell and snail shells the bone is fairly poorly preserved. Over 50% of the sample shows some sign of surface pitting and erosion and over 10% severe erosion, pitting and decalcification. This is sufficient for some material to have been lost completely from some of the contexts.

The only species recorded during this assessment are cattle, sheep/goat, pig and horse. The frequency with which these occur in different contexts in listed in Table 5. Sheep occurs with slightly greater frequency than cattle and also slightly greater in terms of fragments numbers.

Table 5. Frequency of contexts producing each taxa.

	No. contexts
Total no contexts	35
Cattle	7
Sheep/goat	8
Pig	3
Horse	1

Discussion and Conclusions

The food remains identified from the hand excavated bone and the samples include wheat, barley, oats, rye, peas, beans, cockle, cattle, sheep, pig, herring, cyprinid and chicken eggshell, although other taxa may be present among the charred seed remains. The abundance of charred seeds or grain in all the contexts suggests that several of these assemblages may represent more than mere rubbish disposal, perhaps the final sieving of a processed crop to clean the grain, but this will require a detailed analysis of the botanical samples to characterise the assemblages. The sample from context 27487, with such a high concentration of charred grain, apparently dominated by wheat, would be consistent with the function of this structure being a corn drier.

The hammerscale concentrations and slag from context 27292 indicates the presence of iron smithing in the immediate vicinity of the feature.

It is recommended that the following elements are dealt with in the post-excavation programme:
Specific identification of the cereal and charred seed remains from all the samples with specific attention to their origin and evidence for different stages of crop processing, and the dietary importance of the food plants.
Identification of the charcoal in contexts 27201, 27292, 27358, 27203 and 27487, specifically to consider potential differences in the wood selected for smithing, fuelling the corn drier (or oven) or domestic use.
Basic identification of the mammal and fish bones for presence data on the species consumed at the site.
Identification and quantification of three or four of the richest snail assemblages for their palaeoenvironmental information.

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Key to codes used can be found in the report on site 1/251, Appendix A.

Appendix A: Archive assessment catalogue of the hand collected bones from BKL02 - site 27/128

site code	context	weight	frag nos	condition	measurability	cattle	bos tooth row	bos bones	sheep	ov tooth row	ov bones	pig	sus tooth row	sus bones	others	bird	comments
27/128	27049	6	1	2	0		0			0			0				
27/128	27053	20	1	3	0		0			0		Y	0	MAN			
27/128	27057	1	1	2	0		0			0			0				
27/128	27068	2	1	2	0		0			0			0				
27/128	27085	21	1	2	0	Y	0	MTT		0			0				
27/128	27090	212	2	3	0	Y	0	HUM		0			0				
27/128	27099	1	1	3	0		0			0			0				
27/128	27124	3	3	3	0		0			0			0				
27/128	27131	88	20	3	0		0		Y	0	TIB		0				
27/128	27138	12	3	2	0	Y	0	LM		0			0				
27/128	27151	282	35	4	0		0			0			0				ALL VERT & RIBS
27/128	27156	149	3	4	0	Y	0	MTC	Y	0	TIB	Y	0	FEM			
27/128	27184	11	2	3	0		0			0			0				
27/128	27193	17	1	3	0	Y	0	HUM		0			0				CALF
27/128	27263	21	7	4	0		0		Y	0	MTC,SCP,HUM		0				
27/128	27292	18	7	3	0		0			0			0				
27/128	27303	9	2	4	0		0			0			0				
27/128	27325	14	1	4	0		0			0		Y	0	SKL			
27/128	27381	1	1	4	0		0			0			0				
27/128	27392	100	43	3	0	Y	0	HC,SKL	Y	0	TIB,FEM		0				LOTS HC FRAGS
27/128	27393	7	1	3	0	Y	0	PH3		0			0				
27/128	27444	51	10	3	0		0		Y	0	RAD		0				
27/128	27446	3	2	3	0		0			0			0				
27/128	27449	7	1	2	0		0		Y	0	HUM		0				
27/128	27459	75	14	4	0		0			0			0				CSZ-LBF LOTS

site code	context	weight	frag nos	condition	measurability	cattle	bos tooth row	bos bones	sheep	ov tooth row	ov bones	pig	sus tooth row	sus bones	others	bird	comments
27/128	27463	7	1	2	0		0			0			0				
27/128	27465	5	2	2	0		0		Y	0	RAD		0				
27/128	27466	4	1	4	0		0			0			0				
27/128	27467	15	1	4	0		0		Y	0	HC		0				
27/128	27472	11	1	4	0		0			0			0				
27/128	27475	1	1	4	0		0			0			0				
27/128	27513	219	10	4	0		0			0			0		EQU-TIB,INN		
27/128	27526	14	9	2	0		0			0			0				
27/128	27536	2	13	3	0		0			0			0				
27/128	27544	49	1	2	0		0			0			0				

Environmental Archaeology Assessment – Site 97 (NHER 37629 ZVL)

Introduction

Excavations conducted by Network Archaeology Ltd on the Bacton to Kings Lynn Pipeline at site 97 uncovered features of later Bronze Age, early Iron Age and possibly Romano-British date. A total of thirteen samples were taken for environmental analysis, three from the evaluation and ten from the main excavation (Table 1). The site produced a very small collection of hand recovered animal bone. The samples and animal bone were submitted to the Environmental Archaeology Consultancy for processing and assessment. The soil samples were processed in the same manner as the samples from site 1/251 (Rackham, 2004) and the individual components of the samples were then preliminarily identified and the results are summarised below in Tables 2 and 3.

Table 1: Bacton to Kings Lynn – Site 97. Samples taken for environmental analysis

plot	sample no.	context no.	sample vol. (l).	sample weight (kg)	feature/comment	Phase
36/97	71000	136	20	32	Fill of small circular pit 135	2
36/97	71001	134	20	32	Fill of rubbish pit 133	2
36/97	71002	139	20	27	Fill of pit 137	2
36/97	71750	36018	37	46	Fill of pit 36017	2
36/97	71751	36058	18	21	Fill of pit 36057	2
36/97	71752	36066	38	44	Fill of pit 36065	1
36/97	71753	36030	39	46	Fill of pit 36029	2
36/97	71754	36031	28	34	Lower fill of pit 36029	2
36/97	71755	36049	40	54	Top fill of pit 36045	2
36/97	71756	36059	15	18	Fill of pit	No info
36/97	71757	36060	25	30	Lower fill of pit	No info
36/97	71758	36046	12	19	Lower fill of pit 36045	2
36/97	71759	36028	36	48	Fill of pit 36027	2

Results

There was very little evidence for contamination in most of the samples. Modern and recent rootlets were largely absent from the flots and few uncharred weed seeds were present in any of the samples. The burrowing blind snail Cecilioides acicula is present in every sample, but since these deposits are largely decalcified they are certainly intrusive.

Three samples were collected from the fills of pits excavated from the evaluation trench and a further ten from pits in the main excavation. The majority of the sampled pits have been assigned to Phase 2, the early Iron Age, but one sample was taken from a late Bronze Age pit.

Pottery and flint was present in all the samples (Table 2) and abundant in several. Most of the samples also produced quantities of burnt flint. The samples with the larger burnt flint component are the western samples, with a high burnt flint component in adjacent pits 137 and 36065, and a further group of pits in the central part of the site. There is little or no burnt flint in the samples taken from features at the eastern end of the site. It seems probable that this reflects the location of the activities generating the flint debris. A few flakes of hammerscale are recorded from 4 samples, but perhaps more interesting is the presence of tap slag in context 36030, suggesting iron smelting somewhere nearby. The charcoal from context 36018 includes many largish fragments, flat in shape and with at least one smooth surface. This material looks as if it probably derives from a wooden object that was burnt. The object appears to be made from soft wood and does not appear substantial enough to be a structural timber.

The environmental finds are largely limited to charred plant remains. Although fragments of animal bone were recovered from many of the samples these are in poor condition or burnt and only two samples produced identifiable material. Sheep, cattle and field vole have been identified and a burnt coracoid of a small bird is present in context 36046 and may be identifiable.

Table 2. Bacton to Kings Lynn – Site 97. Finds from the processed samples

plot	samp no.	context no.	samp vol (l).	feature	residue volume (l)	pot no./g.	fired earth /daub g.	flint no./g.	burnt flint wt. g.	magnetic component g.	hammer-scale no.	slag wt g.	bone g.	
36/97	71000	136	20	Fill of small circular pit 135	8.25	13/22		3/1		<1	1s			
36/97	71001	134	20	Fill of rubbish pit 133	4.5	6/9		6/-	350	<1				
36/97	71002	139	20	Fill of pit 137	6.5	6/5		3/-	1250	1			<1	
36/97	71750	36018	37	Fill of pit 36017	4.5	43/28		8/5		1	1	<1	3	Fe slag, probable carbonised wooden object
36/97	71751	36058	18	Fill of pit 36057	5	27/26		1/<1	2860	1	4		1	
36/97	71752	36066	38	Fill of pit 36065	12.5	10/6		4/1	13700	<1				
36/97	71753	36030	39	Fill of pit 36029	5.5	83/85	22	12/2	250	1		80	25	Fe x1; tap slag
36/97	71754	36031	28	Lower fill of	5	10/6		10/1	90	<1	1		3	
36/97	71755	36049	40	Top fill of pit	8.5	120/171		8/20	860	<1			11	
36/97	71756	36059	15	Fill of pit	5	1/<1		7/8	270	<1			<1	
36/97	71757	36060	25	Lower fill of	8	4/3		36/5	160	<1			<1	
36/97	71758	36046	12	Lower fill of	4.5	116/175		7/1	660	<1			2	
36/97	71759	36028	36	Fill of pit	3	46/20		12/-	25	<1			9	

+ present, but not quantified – fragments only.

Table 3. Bacton to Kings Lynn – Site 97. Summary of the environmental finds from the processed samples

plot	samp no.	context no.	samp vol. (l).	feature	flot vol. (ml)	char coal $	char'd grain *	char'd chaff *	char'd seed *	snail*	Preliminary identifications
36/97	71000	136	20	Fill of small circular pit 135	2	2/3	1		1	2	Hazelnut, Cecilioides acicula
36/97	71001	134	20	Fill of rubbish pit 133	5	2/4	2			3	Wheat/barley, C.acicula, Helicella sp.
36/97	71002	139	20	Fill of pit 137	8	3/4	1		1	2	Barley?, hazelnut, burnt bone, C. acicula

plot	samp no.	context no.	samp vol. (l).	feature	flot vol. (ml)	char coal $	char'd grain *	char'd chaff *	char'd seed *	snail*	Preliminary identifications
36/97	71750	36018	37	Fill of pit 36017	250	3/5	2	1	1	4	Wheat?, hazelnut, burnt bone, C. acicula
36/97	71751	36058	18	Fill of pit 36057	12	2/4	5		2	4	Wheat, barley, hazelnut, burnt bone, C.acicula
36/97	71752	36066	38	Fill of pit 36065	20	3/4	1		2	4	Wheat?, barley?, C. acicula, Helicella sp., Vallonia excentrica
36/97	71753	36030	39	Fill of pit 36029	22	3/5	2	1	2	4	Barley, wheat?, pulse (pea?), grass, sheep, field vole, C. acicula
36/97	71754	36031	28	Lower fill of pit 36029	4	2/3	1		1	3	Barley, pulse (pea?), C. acicula, Cochlicopa sp., V. excentrica
36/97	71755	36049	40	Top fill of pit 36045	55	4/5	2		3	4	Wheat, barley, hazelnut, pulse (pea?), legumes, C.acicula, Helicella sp.
36/97	71756	36059	15	Fill of pit	12	3/4	3		1	2	Wheat, barley, C. acicula, Helicella sp.
36/97	71757	36060	25	Lower fill of pit	9	2/4	2	1	1	3	Hazelnut, pulse, C.acicula, Helicella sp.
36/97	71758	36046	12	Lower fill of pit 36045	10	3/4	2	1	2	3	Wheat, barley?, hazelnut, legume, bird bone, C. acicula
36/97	71759	36028	36	Fill of pit 36027	11	3/4	1	1	1	4	Barley?, cattle, C. acicula, Hellicella sp., V. excentrica

* = abundance: 1=1-10, 2=11-50, 3=51-150, 4=151-250, 5=250+

$ = abundance estimate of charcoal fragments >2mm and those <2mm in size

The flots are not generally large, except for the sample with the carbonised wooden 'object', and none contain sufficient charcoal to warrant its study. However considering the age of the site, the samples are relatively rich in charred cereal and seeds remains. This material is in an extremely poor condition and most of the grain will not be identifiable to species. A few grains have been tentatively identified to wheat and barley, but the assemblage will need to be studied by an archaeobotanist. Pulses (possibly peas), hazelnut shells and a number of other seeds are present and one or two fragments of chaff. The general dominance of charred cereal grains in the assemblages suggest that the bulk of this material derives from cleaned grain.

The snail shells are dominated by shells of C. acicula, although a few other taxa are present in very low numbers. The assemblages are too small to interpret.

One hundred and three fragments of poorly preserved animal bone were recovered by hand from eight contexts. These included the partial skeleton of a lamb in context 36030 assigned to early Iron Age (Phase 2), and several contexts with only tooth enamel fragments or burnt bone. The only species identified are cattle and sheep.

Discussion and Conclusions

The concentrations of pottery and charred cereal grain suggests that most of these features are receiving domestic rubbish. The material preliminarily identified indicates that wheat, barley, pulses, cattle and sheep were components of the agricultural economy, while hazelnuts were clearly gathered for consumption. This data set is limited but one or two other taxa might be added after specialist identification. There does not appear to be any evidence for crop processing waste.

While the few flakes of hammerscale are insufficient to indicate iron smithing on the site, the occurrence of a 46g piece of tap slag does suggest iron smelting may have been undertaken nearby.

The abundance of burnt flint in several of the samples indicates the use of heated flints in some manner, perhaps cooking or similar to the burnt mounds of Bronze Age date. The concentrations of pottery and charred grain in the same samples contrast with assemblages from burnt mounds and suggests that its function at this site is probably connected with domestic cooking activities.

Three areas of further work are suggested.

- The study of the lamb skeleton from context 36030 to establish whether it is a burial and at what age it died.
- The identification and study of the charred cereal and seed assemblages.
- Study of the charcoal 'object', including determination of the wood species and possibly some effort at reconstruction of the larger pieces to help its identification.

Bibliography

Williams, D. 1973 Flotation at Siraf, Antiquity, 47, 198-202

Key to codes used can be found in the report on site 1/251, Appendix A

Appendix A: Archive assessment catalogue of the hand collected bones from BKL02 – Site 97

site code	context	weight	frag nos	condition	measurability	cattle	bos tooth row	bos bones	sheep	ov tooth row	ov bones	pig	sus tooth row	sus bones	others	comments
36/97	36011	6	4	1	0		0			0			0			ENAMEL FRAGMENTS
36/97	36018	12	9	1	0		0			0			0			ENAMEL FRAGMENTS
36/97	36030	88	30	3	1		0		Y	0	MTC,UM,LM,HUM, FEM,INN,MAN		0			LAMB-PARTIAL SKELETON
36/97	36031	24	30	3	0	Y	0	SCP		0			0			
36/97	36033	15	1	2	0	Y	0	UM		0			0			
36/97	36042	5	4	3	0		0		Y	0	RUL		0			SHAFT FRAG-SL BURNT
36/97	36049	7	22	1	0		0			0			0			ENAMEL FRAGMENTS
36/97	36070	2	3	2	0		0			0			0			CALCINED

Environmental Archaeology Assessment – Site 38 (NHER 37987 ANT)

Introduction

Excavations conducted by Network Archaeology Ltd on the Bacton to Kings Lynn Pipeline at site 38 uncovered features of prehistoric and medieval date. Six samples were taken for environmental analysis (Table 1). Three of the samples had no phasing data at the time of writing but the other three are assigned to Phase 3, a period of Iron Age activity represented by pits and post-holes. Only one context on the site produced bone during excavation and these were all burnt. The samples and animal bone were submitted to the Environmental Archaeology Consultancy for processing and assessment. The soil samples were processed in the same manner as the samples from site 1/251 (Rackham, 2004) and the individual components of the samples were then preliminarily identified and the results are summarised below in Tables 2 and 3.

Table 1: Bacton to Kings Lynn – Site 38. Samples taken for environmental analysis

plot	sample no.	context no.	sample vol. (l).	sample weight (kg)	feature/comment	Phase
46/38	73807	46020	40	55	Fill of pit 46019	3
46/38	73809	46031	9	11.5	Fill of shallow burnt flint pit 46030	?
46/38	73811	46036	51	59.5	Fill of pit/post-hole 46035	?
46/38	73812	46029	40	52	Fill of shallow pit 46028, with burning	3
46/38	73813	46040	39	49	Fill of pit 46039	?
46/38	73814	46055	39	49	Fill of pit 46054	3

Results

Low levels of contamination of the deposits is indicated by the consistent presence of rootlets, uncharred seeds of taxa such as Chenopodium and Galium, and shells of the burrowing snail Cecilioides acicula.

The samples produced pottery, flint flakes, burnt flint, hammerscale, slag, coal and a little burnt bone (Table 2). The whole of the residue from context 46031 comprised fire-cracked flint, but this was the only sample with any substantial amount of burnt flint. Only burnt bone has survived at the site and all unburnt bone must have been lost from the deposits since burial. It is difficult to say whether the hammerscale is contemporary or has moved through the soil, although the coal is assumed to be intrusive. Since there is no evidence for more recent smithing activity at the site this scale and the small fragments of slag may indicate that blacksmithing was undertaken somewhere on the Iron Age site.

The environmental finds are fairly limited. Only charred plant remains have survived to be studied, and apart from the charcoal these occur in very low densities in most of the samples. Twenty four grains and fragments and one piece of chaff have been recognised from all the samples and few of these are identifiable to species. Fragments of large legume, probably pea, and hazelnut shell occur and a few weed seeds. One sample, context 46020, produced a larger assemblage of small weed seeds which may justify study. A single mussel shell fragment in the flot of sample 73809 seems likely to be a contaminant.

One sample, 46040, produced a large volume of charcoal but few other charred remains. Only a proportion of the flot from this sample was scanned but the density of cereals and weeds seeds is very low. This is the only sample from the site where an analysis of the charcoal could be expected to yield any information but without further archaeological information on the pit and adequate phasing information such work could not be justified unless the charcoal is used to radiocarbon date the pit.

One context, 46006, produced eight fragments of unidentifiable burnt bone that were recovered by hand.

Table 2: Bacton to Kings Lynn – Site 38. Finds from the processed samples

plot	samp no.	context no.	samp vol (l).	feature	residue volume (l)	pot no./g.	fired earth /daub g.	flint no./g.	burnt flint wt. g.	magnetic component g.	hammer-scale no.	slag wt g.	bone g.	
46/38	73807	46020	40	Fill of pit 46019	9	3/4		16/6		<1			<1	Coal & clinker – 4g
46/38	73809	46031	9	Fill of shallow burnt flint pit 46030	3				3687	<1				
46/38	73811	46036	51	Fill of pit/post-hole 46035	2	5/3				<1	3			Coal & clinker – 1g
46/38	73812	46029	40	Fill of shallow pit 46028, with burning	1.5	11/15	1	3/1		<1	1		<1	Coal & clinker – 1g
46/38	73813	46040	39	Fill of pit 46039	1.5			2/<1	+	<1	2	+		Coal - <1g
46/38	73814	46055	39	Fill of pit 46054	0.7	12/3		3/<1	+	<1	7			Coal - <1g

+ present, but not quantified – fragments only.

Table 3: Bacton to Kings Lynn – Site 38. Summary of the environmental finds from the processed samples

plot	samp no.	context no.	samp vol. (l).	feature	flot vol. (ml)	char coal $	char'd grain *	char'd chaff *	char'd seed *	snail*	Preliminary identifications
46/38	73807	46020	40	Fill of pit 46019	8	3/4	1		4	1	Barley, hazelnut, burnt bone, Cecilioides acicula
46/38	73809	46031	9	Fill of shallow burnt flint pit 46030	18	4/5	1		1		Hazelnut, mussel shell fragment
46/38	73811	46036	51	Fill of pit/post-hole 46035	12	3/4	1	1	1		Pea?, burnt bone
46/38	73812	46029	40	Fill of shallow pit 46028, with burning	23	4/5	1		1	1	Wheat?, pea?, burnt bone, C. acicula
46/38	73813	46040	39	Fill of pit 46039	1000	5/5	1		2		
46/38	73814	46055	39	Fill of pit 46054	14	3/4	1		1	1	C. acicula

* = abundance: 1=1-10, 2=11-50, 3=51-150, 4=151-250, 5=250+
$ = abundance estimate of charcoal fragments >2mm and those <2mm in size

Discussion and Conclusions

Clearly animal bone does not survive at the site unless burnt, but the concentrations of pottery, flint and charred cereals in the sampled features suggests that the bulk of the archaeological debris derives from domestic activity, although the few fragments of hammerscale also indicate some craft activity, if these are not intrusive.

Barley, wheat, probable pea and hazelnut are the only economic species identified during this assessment, but other taxa may be present.

Two areas of further work are suggested.

- The specific identification of the charred crop remains and weed seeds from the phased samples
- The identification and study of the charcoal in context 46040, but only if the archaeological context of the feature and its phasing or age can be established.

Bibliography

Williams, D. 1973 Flotation at Siraf, Antiquity, 47, 198-202

Environmental Archaeology Assessment – Site 47/34 (NHER 37631 WLN)

Introduction

Excavations conducted by Network Archaeology Ltd on the Bacton to Kings Lynn Pipeline at site 47/34 uncovered features dated to the prehistoric and medieval periods. During the excavations a total of 9 bulk samples (Table 1) were taken for environmental analysis and a very small collection of 21 fragments of bone were collected by hand. The samples and animal bone were submitted to the Environmental Archaeology Consultancy for processing and assessment. The soil samples were processed in the same manner as the samples from site 1/251 (Rackham, 2004) and the individual components of the samples were then preliminarily identified and the results are summarised below in Tables 2 and 3.

Results

There was very little evidence for contamination. Modern and recent rootlets were largely absent from the flots although a few uncharred seeds of Chenopodium (goosefoot/orache) and Galium (cleavers) were present in some of the samples.

The samples derive from a sequence of fills in two pits and a hearth. The fills of the two pits are dated to the late medieval period. The hearth is undated.

Table 1: Bacton to Kings Lynn – Site 47/34. Samples taken for environmental analysis

plot	sample no.	context no.	sample vol. (l). *	sample weight (kg)	feature/comment	Phase	Phase
47/34	73900	47128	13	17	Fill of hearth	?	?
47/34	73901	47109	20	22	Fill of pit 47195	5?	Late med
47/34	73902	47126	12	13	Fill of pit 47195	5?	Late med
47/34	73903	47200	19	21.5	Fill of pit 47195	5?	Late med
47/34	73904	47226	9	10	Fill of pit 47235	5?	Late med
47/34	73905	47227	15	17	Fill of pit 47235	5?	Late med
47/34	73906	47228	15	16	Fill of pit 47235	5?	Late med
47/34	73907	47229	16	17	Fill of pit 47235	5?	Late med
47/34	73908	47231	20	24	Fill of pit 47235	5?	Late med

The residues of all the samples are composed of flint and pebble gravel with coarse sand and varying amounts of concreted sediment and ironstone. The residues are all very small indicating that the elements of the sediment over 1mm in diameter comprise only a small (<2%) part of the sediment.

Archaeological finds from the samples include pottery, a little fired clay, flint, hammerscale, two iron objects and a few tiny fragments of burnt bone (Table 2). The flint recorded in Table 2 reflects the flint material retained during sorting but it is not necessarily worked or waste flint and a proportion is likely to be discarded after specialist examination. Pottery occurs in the fills of both pits. The only significant amount of fired earth derived from the hearth sample. The consistent occurrence of hammerscale, although at relatively low densities, suggests that iron smithing was undertaken somewhere on the site.

The environmental assemblages from all nine of the samples are very similar and it is evident that the individual fills of the two late medieval pits show little differentiation in their environmental components although charred cereal remains are more abundant in 47235 than in 47195. The general similarity between the pits and the hearth assemblage suggests the features may be contemporary. All samples include small volumes of charcoal, numerous small tubers and charred plant stems, possibly grasses, charred cereal grain, occasional pulses (probably peas), other legumes and an abundance of small round seeds of various sizes. These latter are abundant in all the samples, both pits and hearth, and suggest a similar origin for most of the plant material in all the sampled contexts. It seems clear that both pits and all the individual layers within these were receiving a very similar suite of material. A few chaff fragments were recovered from pit 47235, but these may be from grasses rather than cereals and will require specific identification.

The absence of bone other than burnt fragments and the enamel of teeth, and snails, other than a couple of shells of a burrowing species that is certainly intrusive, indicates an acid burial environment that has resulted in the corrosion and loss of this component of the deposit.

Table 2: Bacton to Kings Lynn – Site 47/34. Finds from the processed samples

samp no.	context no.	samp vol (l).	feature	residue volume (l)	pot no./g.	fired earth /daub g.	flint no./g.	magnetic component g.	hammer-scale no.	slag	bone g.	
73900	47128	13	Fill of hearth	0.3		30	7/1	1	1			
73901	47109	20	Fill of pit 47195	0.2	26/18	1	18/74	1	5			Coal->1g; Fe x 1 – 13g;
73902	47126	12	Fill of pit 47195	0.1	9/8		8/<1	<1	3		<1	
73903	47200	19	Fill of pit 47195	0.2	5/5	<1	13/1	<1	3			Fe x 1 – 7g
73904	47226	9	Fill of pit 47235	0.175	6/3		22/1	1	2			
73905	47227	15	Fill of pit 47235	0.25	10/6	1	17/9	2	1		<1	
73906	47228	15	Fill of pit 47235	0.3			20/1	1	6			
73907	47229	16	Fill of pit 47235	0.3			26/2	<1	4	<1		
73908	47231	20	Fill of pit 47235	0.3	15/19	2	24/4	1	7			Coal - <1g

Table 3: Bacton to Kings Lynn – Site 47/34. Summary of the environmental finds from the processed samples

samp no.	context no.	samp vol. (l).	feature	flot vol. (ml)	char coal $	char'd grain *	char'd chaff *	char'd seed *	snail*	Preliminary identifications
73900	47128	13	Fill of hearth	4	2/3	3		3	1	Wheat, barley, oats, pea?, legumes, Cecilioides acicula
73901	47109	20	Fill of pit 47195	10	3/4	2		4		Barley, oats?, pea?, legumes, tubers, charred stems
73902	47126	12	Fill of pit 47195	5	2/4	1		4		Wheat, oats, legumes, tubers, charred stems, tooth enamel fragment
73903	47200	19	Fill of pit 47195	9	2/4	1		5	1	Barley?, legumes?, tubers. Charred stems, C. acicula
73904	47226	9	Fill of pit 47235	9	2/3	1	1	5		Barley, pea?, legumes, tubers, charred stems
73905	47227	15	Fill of pit 47235	40	3/5	3	1	5		Barley, wheat, rye?, pea?, legume, dock, tubers, charred stems
73906	47228	15	Fill of pit 47235	10	3/4	2	1	5		Barley, wheat, pea?, legumes, tubers, charred stems
73907	47229	16	Fill of pit 47235	7	3/4	1	1	4		Barley, wheat, oat/rye?, legumes, tubers, charred stems
73908	47231	20	Fill of pit 47235	13	3/5	1	1	5		Wheat, pea?, legumes, tubers, charred stems

* = abundance: 1=1-10, 2=11-50, 3=51-150, 4=151-250, 5=250+ $ = abundance estimate of charcoal fragments >2mm and those <2mm in size

Excavated animal bone

The very few fragments of excavated animal bones are so poorly preserved and fragmented that only tooth fragments of pig could be identified (see Appendix). Bone has clearly not survived in the sandy soils of the site and its absence from the samples and excavated features cannot be given any significance.

Discussion and Conclusions

The frequency of pottery in the fills of the two pits suggests that these were probably receiving domestic rubbish, although the consistent character of the charred seed remains, as yet unidentified, might indicate other material entering the pits. Specific identification of these seeds will be needed to interpret the assemblage. The absence of animal bone and shell can be attributed to the soil conditions.

The consistency of the assemblages in each layer of the pits suggests that each had a very similar composition when deposited, although with some variations in the individual elements. All layers contained charred cereals, pulses, legumes, numerous small round seeds, small tubers and charred plant stems, as well as a little charcoal. These elements may have derived from a number of sources or activities, but this cannot be established until the material has been specifically identified. Functionally both pits appear to have been used in the same way.

The hammerscale indicates that iron smithing was undertaken at the site, but this may have been some distance from the pits and hearth since the densities of scale are low.

Only the charred plant remains justify further work and it is recommended that only the following elements are dealt with in the post-excavation programme:
Specific identification of the cereal and charred seed remains in samples 73900, 73901, 73905 and 73906 and their interpretation. The larger plant remains (cereals and pulses) from the other samples that have already been sorted should also be identified.

The quantities of charcoal in the sample are too small to justify analysis.

Bibliography

Williams, D. 1973 Flotation at Siraf, Antiquity, 47, 198-202

Key to codes used can be found in the report on site 1/251, Appendix A

Appendix A: Archive assessment catalogue of the hand collected bones from BKL02 - site 47/34

site code	context	weight	frag nos	condition	measurability	cattle	bos tooth row	bos bones	sheep	ov tooth row	ov bones	pig	sus tooth row	sus bones	others	bird	comments
47/34	47049	16	14	3	0		0			0		Y	0	TTH			PM+MOLAR
47/34	47058	1	3	2	0		0			0			0				
47/34	47199	10	1	2	0		0			0			0				CHEWED
47/34	47209	2	3	1	0		0			0			0				ENAMEL

Environmental Archaeology Assessment – Sites 50/26 (NHER 37996 SLD), 44/48 (NHER 37729 SFF), 39/88 (NHER 37942 JTT), 22/148 (NHER 37623 BTE), 8/219 (NHER 37826 LEX) and 6/226 (NHER 37821 RGH)

Introduction

Excavations conducted by Network Archaeology Ltd on the Bacton to Kings Lynn Pipeline at a series of small sites, 26, 48, 88, 148, 219 and 226, uncovered features of prehistoric, Romano-British and medieval date. At each of these sites one or two samples were collected (Table 1) for environmental analysis and three of the sites produced small collections of bone that were collected by hand. The samples and animal bone were submitted to the Environmental Archaeology Consultancy for processing and assessment. The soil samples were processed in the same manner as the samples from site 1/251 (Rackham, 2004) and the individual components of the samples were then preliminarily identified and the results are summarised below in Tables 2 and 3.

Table 1: Bacton to Kings Lynn – Sites 26, 48, 88, 148 and 226. Samples taken for environmental analysis

plot	sample no.	context no.	sample vol. (l).	sample weight (kg)	feature/comment	Phase
50/26	71003	240	20	25	Fill of burnt spread	
44/48	73700	44173	40	53	Burnt material from linear	2i ?
44/48	73701	44143	30	39	Burnt material from pit 44018	1
39/88B	71260	39444	4	5	Primary fill of possible water channel or ditch 39422	3
22/148	71150	22098	10	12	Burnt deposit	
22/148	71151	22099	4	5	Burnt deposit	
8/219	73100	8094	11	16.5	Possible burnt layer in base of pit 8092	3
8/219	73101	8120	10	13	Fill of pit 8119	2
6/226	71550	6043	15	17.5	Black fill of ditch 6042	1

Results

There was very little evidence for contamination in most of the samples. Modern and recent rootlets were largely absent from the flots and very few uncharred weed seeds were present in any of the samples.

Site 50/26 (NHER 37996 SLD)

A single sample from a burnt spread, 240, was taken on this site. The sample was taken from evaluation trench 90 and unfortunately no context information is available for the deposit and no date. The sample produced very little - a little burnt flint, one flake of hammerscale, a single charred barley grain, a fragment of charred hazelnut shell, and a couple of other charred seeds, and charcoal.

Without further archaeological data on this deposit no further work is warranted.

Fifty three fragments of animal bone were recovered by hand during excavation. The material is very degraded and fragmented and the only identifiable fragments were enamel fragments of cattle teeth in context 50200. (see Appendix).

Site 44/48 (NHER 37729 SFF)

Two samples were collected from this site. The fill of a Bronze Age pit and the fill of a medieval ditch apparently filled by redeposited material from a Bronze Age burnt mound. Both samples are characterised by a very high proportion of burnt flint (Table 2). This was particularly the case for the linear, where nearly fifty percent of the sample by weight and volume was composed of burnt flint. In contrast, less than 30% of the pit fill sample was composed of burnt flint. The contrast between these two fills might suggest that the burnt flint in the linear is as likely to be in-situ as the pit fill, and is unlikely to have accumulated as a result of ploughing which might be expected to have mixed in a much greater proportion of finer sediment and soil. The linear also produced three possible waste flakes of flint.

The environmental data was limited to charcoal, three charred cereal grains in the linear, and a few snails, among which the shells of the burrowing snail Cecilioides acicula dominated and almost certainly represent individuals that burrowed into the deposits. The charcoal was abundant and appears to have derived from branches, timber or billets among which many fragments are identifiable. No small roundwood or twigs were noted during this assessment. This material has potential for radiocarbon dating the site if suitably young

material can be identified among the charcoal and can be used to identify the tree species and types of wood exploited to fuel the fires used at the site.

Seventy six fragments of very degraded animal bone were recovered by hand during excavation from two contexts, 44259 and 44281. Both contexts are assigned to the medieval period. None of the material was identified during this assessment and further work is not warranted.

Site 39/88B (NHER 39518 JTT)
A single sample was collected from the base of a 'waterlogged' ditch or channel fill tentatively dated to the medieval period. The sample was small and produced a single sherd of pottery and a flint flake.

The environmental finds comprise nine charred cereal grains, including barley and oats, a small number of other charred seeds, and uncharred seeds of bramble (Rubus sp.), goosefoot/ oraches (Chenopodium sp.) and other seeds which may have survived as a result of the original waterlogging of the sediment. Of particular note is the slightly mineralised crumb of very degraded peat or organic sediment that comprises most of the flot, indicating that the deposit was originally waterlogged, although now largely dried out and destroyed except for the most robust seeds.

Site 22/148 (NHER 37623 BTE)
Two samples were taken at this site from contexts 22098 and 22099. Unfortunately no archaeological data or phasing is available for these contexts other than that they were both burnt deposits, although a medieval or later date appears probable.

Both samples are similar producing a little fired earth, a few flint flakes (possibly natural), a little animal bone, including burnt fish bone, and a large magnetic component. The latter is composed largely of fired earth and suggests either burning of the soil in situ or redeposition of a hearth floor, although the lack of any large lumps of heavily fired earth and a high proportion of very fine fired earth crumb perhaps suggests a bonfire or short lived fire event. Both deposits have a high concentration of charred cereal grains in their flots (Table 3) as well as numerous charred legumes and weed seeds. Wheat, barley, oats and peas have been preliminarily identified, and the latter are relatively abundant. Specific interpretation of this deposit requires detailed identification and analysis of the archaeobotanical remains, but the debris may derive from stages of crop processing, accidental burning or intentional discard of spoilt material. The charcoal in both samples includes small twiggy material and twisted stems, in addition to larger wood. Further information on the archaeological context for the two samples would help in their interpretation.

A small collection of 121 fragments of animal bone were recovered by hand during excavation, weighing a total of 1369 grams. Most of this material is in a reasonably good condition and it is unlikely that there has been significant loss through degradation in the soil. From the thirty one contexts that produced bone, six yielded cattle bones, seven sheep, four pig, four horse and one produced a dog mandible. The size of this sample is small and any further work will do little more than confirm the species present, their approximate frequency of representation in the deposits and a little data on their age at death.

Table 2: Bacton to Kings Lynn – Sites 26, 48, 88, 148 and 226. Finds from the processed samples

plot	samp no.	context no.	samp vol (l).	feature	residue volume (l)	pot no./g.	fired earth /daub g.	flint no./g.	burnt flint wt. kg.	magnetic component g.	hammer-scale no.	bone g.	
50/26	71003	240	20	Fill of burnt spread	0.1				+	<1	1		
44/48	73700	44173	40	Burnt material from linear	19.5		+	3/8	25.9	2			
44/48	73701	44143	30	Burnt material from pit 44018	8		+		10.3	1			
39/88B	71260	39444	4	Primary fill of possible water channel or ditch 39422	0.4	1/3		1/<1					Peat crumb?
22/148	71150	22098	10	Burnt deposit	1		16+	1/<1		45		1	Reduce fired sediment?
22/148	71151	22099	4	Burnt deposit	0.4		3+	6/1		18		<1	Corroded iron?; Reduced fired sediment?
8/219	73100	8094	11	Possible burnt layer in base of pit 8092	0.6					1			
8/219	73101	8120	10	Fill of pit 8119	1					<1			
6/226	71550	6043	15	Black fill of ditch 6042	1.25	3/5	1	4/1		6	1	1	

+ present, but not quantified – fragments only.

Table 3: Bacton to Kings Lynn – Sites 26, 48, 88, 148 and 226. Summary of the environmental finds from the processed samples

plot	samp no.	context no.	samp vol. (l).	feature	flot vol. (ml)	char coal $	char'd grain *	char'd chaff *	char'd seed *	fish bone g.	snail*	Preliminary identifications
50/26	71003	240	20	Fill of burnt spread	20	3/4	1		1			Barley, hazelnut shell
44/48	73700	44173	40	Burnt material from linear	160	5/5	1				2	Wheat?, Cecilioides acicula, Hygromia hispida, Helicella sp.
44/48	73701	44143	30	Burnt material from pit 44018	150	5/5					2	C.acicula, H. hispida
39/88B	71260	39444	4	Primary fill of possible water channel or ditch 39422	11	2/3	1		2			Barley, oats, legumes?, peat crumb?

plot	samp no.	context no.	samp vol. (l).	feature	flot vol. (ml)	char coal $	char'd grain *	char'd chaff *	char'd seed *	fish bone g.	snail*	Preliminary identifications
22/148	71150	22098	10	Burnt deposit	33	2/4	4		3	<1		Barley, oats, wheat?, peas, legumes, etc, indet burnt fish bone
22/148	71151	22099	4	Burnt deposit	15	2/4	3		2	<1		Wheat, barley, oats, peas, legumes, indet fish rays
8/219	73100	8094	11	Possible burnt layer in base of pit 8092	12	3/4					1	C. acicula
8/219	73101	8120	10	Fill of pit 8119	1	2/2			1		1	Hazelnut shell, C. acicula, H. hispida
6/226	71550	6043	15	Black fill of ditch 6042	26	3/4	2	1	2		1	Barley, wheat?, hazelnut shell, C. acicula, Vallonia excentrica

* = abundance: 1=1-10, 2=11-50, 3=51-150, 4=151-250, 5=250+
$ = abundance estimate of charcoal fragments >2mm and those <2mm in size

Site 8/219 (NHER 37826 LEX)
Two samples were collected from Site 219. The samples derive from pit fills dated to the late Neolithic/Early Bronze Age and later Bronze Age. No archaeological finds were recovered from the samples, and apart from a little charcoal, probable intrusive snail shells and two fragments of charred hazelnut shell, no environmental finds were present.

There is no further work required.

Site 6/226 (NHER 37821 RGH)
A single sample from a late Iron Age ditch was collected for analysis. The sample produced three sherds of pottery, a little fired earth, a few flint flakes (probably unworked), a little animal bone and a single flake of hammerscale.

The environmental assemblage includes charred cereal grains, a single piece of chaff, charred weed seeds, nutshell fragments and a few shells of C. acicula and Vallonia excentrica. Barley, wheat?, and hazelnut have been preliminarily identified. The charcoal includes numerous small twigs and twisted woody fragments which might be heather, as well as larger wood charcoal.

Discussion and Conclusions
Since all these sites are represented by no more than two samples their potential is limited for this reason. However three of the sites deserve a second look.

The burnt flint deposits, presumed Bronze Age, on site 48 have the potential for C14 dating the 'burnt mound' and yielding some information on the wood exploited and available to this activity in the Bronze Age.
The two samples from site 148 show appreciable concentrations of charred cereals and other plant remains, and some possible selection of fuel. The identification and analysis of the seeds and charcoal is worth pursuing but the archaeological context of the deposits needs to be reviewed before further work is undertaken. The animal bone from this site could be catalogued but the data collected would permit only very limited interpretation.
The small assemblage in the single sample from site 226 appears to be domestic in character, although an equal number of charred weed seeds and cereal grains might suggest some evidence for crop processing. The charcoal component may indicate some specific selection of the fuel, which could reflect the origin of the charred assemblage. For instance heather is sometimes used as a fuel in ovens, or as a tinder.

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17th February 2004

Key to codes used can be found in the report on site 1/251, Appendix A

Appendix A: Archive assessment catalogue of the hand collected bones from BKL02 – sites 26 and 48, 148

site code	context	weight	frag nos	condition	measurability	cattle	bos tooth row	bos bones	sheep	ov tooth row	ov bones	pig	sus tooth row	sus bones	others	bird	comments
50/26	50081	1	1	3	0		0			0			0				BURNT BLACK
50/26	50103	4	2	2	0		0			0			0				
50/26	50200	35	50	1	0	Y	0	UM		0			0				ALL TOOTH ENAMEL
44/48	44259	197	72	2	0		0			0			0				VERY FRAGMENTED AND ERODED
44/48	44281	15	4	2	0		0			0			0				
22/148	71	2	2	4	0		0			0			0				
22/148	75	3	3	3	0		0			0			0				
22/148	823	16	1	4	1		0			0			0		CAN-		
22/148	22013	47	3	4	0		0			0			0				
22/148	22025	98	1	4	0		0			0			0		EQU-HUM		GREENISH CESS LIKE CONC.
22/148	22029	48	6	4	0		0			0			0				
22/148	22034	76	6	4	0		0			0			0		CSZ-		
22/148	22038	1	1	4	0		0			0			0				
22/148	22046	10	5	4	0		0		Y	0	MAN,RAD,MTP		0				
22/148	22047	9	3	4	0		0			0		Y	0	L1			
22/148	22052	2	1	4	0		0			0			0				
22/148	22062	191	14	3	0	Y	0	LMV	Y	0	TIB		0				
22/148	22064	1	1	4	0		0			0			0				
22/148	22066	41	2	3	0		0			0			0		EQU-		MOLAR
22/148	22072	16	9	4	0		0		Y	0	HUM		0				
22/148	22101	1	1	4	0		0			0			0				
22/148	22109	126	4	4	1		0			0			0		EQU-		ALL ONE BONE
22/148	22110	1	1	4	0		0			0			0				
22/148	22117	3	1	4	0		0		Y	0	CAL		0				
22/148	22118	2	1	4	0		0			0			0				

site code	context	weight	frag nos	condition	measurability	cattle	bos tooth row	bos bones	sheep	ov tooth row	ov bones	pig	sus tooth row	sus bones	others	bird	comments
22/148	22119	1	1	4	0		0			0			0				
22/148	22123	2	1	4	0		0		Y	0	RAD		0				
22/148	22126	40	8	4	0	Y	0	UPM	Y	0	MTT,TIB	Y	0	TIB			VERY SMALL SHEEP
22/148	22142	55	6	4	0	Y	0	MAN	Y	0	UM,RAD	Y	0	LI,LC			SMALL SHEEP RAD
22/148	22144	2	5	4	0		0			0			0				
22/148	22174	12	2	4	0		0			0			0				
22/148	22249	22	1	4	0		0			0		Y	0	MAN			WITH 2
22/148	22270	270	3	4	0	Y	0	HUM		0			0				
22/148	22323	39	8	4	0		0			0			0				PROB ALL SAME BONE
22/148	22332	5	6	4	0	Y	0	L1		0			0				
22/148	22375	227	14	4	0	Y	0	TIB		0			0		EQU-HUM		

Summary of the environmental recommendations
All the sites along the pipeline were affected by the preservation conditions of the soils. At none of the sites were any deposits found to be waterlogged and this has severely limited the potential for any detailed palaeoecological reconstruction of the landscapes along the route. Some sites lay on clay soils, others on sands and gravels and yet others on chalk rich soils. Despite this variety, in general the best preserved evidence from all the sites is the carbonised or charred component of the environmental assemblages. The clays and sands and gravels have not been conducive to the good survival of animal bone, and even on the chalk soils the older features are leached and some of the bone may have been lost. These factors mean that although aspects of the arable economy of the sites can be considered, the pastoral economy remains undeterminable. Even on the two sites where the larger bone assemblages were obtained, sites 251 and 136-138, the sample sizes are small and when divided by phase give little data upon which the interpretation of the site economy or even diet can be based.

Nevertheless despite these obvious short comings the data for sites in this area of Norfolk and covering the periods represented by the excavated sites are not extensive (see Murphy 1998) and all additional well dated samples can make a continuing contribution to our knowledge.

Palaeoecology
Our understanding of the ancient landscape and environment along the route of the pipeline is minimal and the absence of waterlogged deposits from all the sites means that this aspect of the study is constrained within the information that terrestrial molluscs, charcoal and charred plant remains and small vertebrates can give. Because of the decalcification of most of the soils only three sites afford an opportunity to investigate the snails, sites 251, 136-138 and 128. One of these, site 251, is of Bronze Age date and the faunas include both open country/grassland and woodland elements. The samples from this site offer some potential for considering changes in the immediate environment of the site throughout its occupation, and identifying if the variation in the fauna reflect spatial or chronological patterns. The other two sites, 128 and 136-138, are both medieval in date and appear to be dominated by open country fauna, but detailed identification and quantification of the fauna should allow both interpretation of the immediate surroundings of the sampled features and comparanda for future sites.

The charred plant remains are problematic as a source of information on the local environments. Most of the charred seed remains are likely to have originated in association with crops and crop processing activities, or other human activities and are probably of multi-origin. The taphonomy of such assemblages is difficult to untangle and direct interpretation of the local landscape is rarely possible. The charcoal has perhaps greater potential. The charcoal assemblages can reflect the availability of local wood resources, particularly for domestic and cooking fires, but wood types may be selected where craft or industrial use is intended or even for oven baking. Study of suitable charcoal samples therefore may both reveal changes in the availability of local wood resources through time or the selection of material for specific functions. Several of the sites produced samples with sufficient charcoal to warrant its study. These include samples from the Bronze Age, Iron Age, Roman and medieval periods and contexts that are probably domestic, an oven or corn drier, craft (iron smithing and pot kiln) and those associated with burnt flint assemblages. These afford some opportunity for considering possible changes in the availability of wood for fuel with a chronological or spatial framework and also any evidence for selection of fuels for specific purposes. Sites 251, 226, 218, 144, 136-138, 128, 48 and 38 (Table 1) all produced samples with sufficient charcoal in large enough pieces for this study. One sample from site 97, in an early Iron Age context, may contain a fragmented carbonised wooden object. Although not relevant to the palaeoecology of the site it is the only other charcoal sample needing study.

A few of these charcoal samples are at present undated but afford the possibility for radiocarbon dating. If the charcoal study is to be pursued then these samples should be dated.

Table 5: The total number of samples and bone fragments from each site and those recommended for further study.

Site	total no samples	total no bone frags	No further work	C14	charcoal	charred seeds	bones	snails
251	58	891			1 - BA	20 - BA	yes	10 - BA
236	-	10	Nfw					
226	1	-			1 – IA	1 - IA		

Site	total no samples	total no bone frags	No further work	C14	charcoal	charred seeds	bones	snails
219	2	-	Nfw					
218	10	-		1 - ?	1 - ?	1 – BA 5 - IA		
202	4	132		1 - BA	1 -BA			
148	2	121				2 - ?	yes	
144	12	55			1 – IA 2 - Rom	2 – IA 10 - Rom		
136-138	5	917		1 - ?	1 BA/IA 1 IA/Rom	2 – IA/Rom 2 - med	yes	2 - med
128	7	204			5 – med	7-med	yes	4 -med
119	-	43	Nfw					
97	13	103			1 – IA obj?	1 - LBA 12 - EIA	con. 36030	
90	-	125	Nfw					
88	1	-	Nfw					
84A	-	215	Nfw					
48	2	76		1 - BA	2 - BA			
46	-	5	Nfw					
38	6	8		1 – IA?	1 – IA?	6 - IA		
34	9 -	42				9 – lmed		
28A	-	3	Nfw					
26	1	53	Nfw					
20	-	4	Nfw					
Watching brief	-	50	Nfw					
Totals	**138**	**3057**	**11**	**5**	**18**	**80**	**2163**	**16**

The few small mammal assemblages can make some contribution to an understanding of the local environment but only site 251 has these in sufficient numbers for them to be useful. Unfortunately they are represented largely by teeth fragments, the bones not generally surviving and the presence data has already been collected during this assessment so no further work is required.

Palaeoeconomy

The agricultural economies of the sites and the diets of the occupants can be targeted through the charred cereal and weeds remains and the animal bones and marine shells. Only on two sites, 251 and 136-138, can the excavated animal bones be expected to make any real contribution to our understanding of the pastoral economy and diet. These assemblages may permit some assessment of the importance of the different species at the sites and a little detail on the husbandry of the stock and when the animals were culled, although consideration will need to be given to the taphonomy of each collection before its interpretation. Three other sites require a slightly more detailed study than this assessment, sites 148, 128 and a single context in 97. The latter is the specific study of a lamb burial, while the other two require more specific identification data to indicate what species are present and any data on their age at death. The remaining sites with bone are in such poor condition or so small a sample that further work cannot be justified.

None of the sites have produced large assemblages of charred plants that would repay a detailed archaeobotanical study, but collectively the sites span the Bronze Age, Iron Age, Roman and medieval periods in North Norfolk. They therefore give a series of spot samples from these different periods which can be used to consider the changes in crop type in the region over the last three thousand years, and perhaps some information on the soils being cultivated. None of the sites produced any positive evidence for any of the early stages of crop processing, since very little chaff was found. Most of the samples suggest that the cereal remains derive from domestic contexts and therefore reflect the consumption of the cereals. The occurrence of large pulses in several of the later samples indicate other crop plants being grown, and one or two of the medieval samples may contain vetches and other plants cultivated for animal or human use. Although a large number of samples are noted in Table 1 as requiring study many of these have been pre-sorted during the assessment and contain only small seed assemblages. For instance the 20 samples from site 251 recommended for further study produced only 49 charred cereal grains and their specific identification, along with the weed seeds, by an archaeobotanist will not take long. The later Roman and medieval samples are appreciably richer and

hold a greater potential for more detailed information. The one area of study that may produce useful results for site 251 is the spatial analysis of the material in the samples. Many of the samples are of the dark spread or buried soil and the distribution of even small samples of charred cereal, weed seeds and charcoal may offer some insight into what was happening in different parts of the site. On the other sites the distributional data is too limited although individual samples can potentially reveal the functional character of the features or deposits they were taken from, for instance the seed rich assemblages on site 128, the possible burnt sheep in a late Iron Age/Romano-British context on site 136-138, and the early Iron Age cereal rich deposit on site 97.

The dietary evidence recovered from all the sites includes cattle, sheep, goat, pig, roe deer, chicken? and goose? eggs, wild birds, wild bird eggs?, eel, other small fish, mussels, cockles, oysters, wheat, barley, oats, rye, peas, beans, hazelnuts and other possible food plants. While this is nowhere near comprehensive it gives a useful range in which new items can be seen appearing and some estimate can be made of the relative importance of at least the major animal and crop foods.

Comments

Murphy in his review of the plant macrofossil evidence from the eastern counties notes the lack of sample series from rural sites of medieval date. The few samples collected from the medieval sites on this pipeline were the richest on the project and an opportunity has been missed for more extensive sampling at these sites that could have considerably enhanced our knowledge of the crops and their history in the medieval period. Numerous other features could have been sampled on these sites and infrastructure sites such as pipelines are more likely to pick up these rural sites than most other development projects. These sites also offer an opportunity to recognise the extent to which coastal resources such as marine fish and shell fish may have moved inland to rural medieval settlements, as well as the larger urban settlements of this date.

None of the excavated sites has produced any large animal bone assemblages. A cursory glance at any of the site plans of those sites that did produce bone is enough to explain this lack. So little of the archaeological deposits have been excavated that the volume of soil removed is a tiny fraction of that revealed by the stripping. For example the 917 bone fragments recovered from site 136-138 would have to be multiplied by at least 20 times in order to estimate the quantity of bone present within the excavated easement of the site. A sample of 20,000 bone fragments is a much more useful assemblage that can be expected to reveal a whole range of data on the pastoral husbandry of the site, its exploitation of wild animals, carcass processing, local rearing, and the diet of the inhabitants. A substantial increase in the volume of features excavated on a site with poor bone preservation would be pointless, but where a site has good preservation considerable thought should be given to adopting an excavation strategy that increases the size of the animal bone samples and thereby enhances the potential of this sample for understanding the site. This is sadly a factor of most modern excavations but on pipelines it has become more marked owing to the need to manage finances across a whole series of sites.

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ASSESSMENT OF HAND-COLLECTED CHARCOAL AND CHARCOAL FROM SITE 43/58 (NHER 37776/37972 CLB)

Assessment of Hand-Collected Charcoal and Charcoal from Site 43/58 (NHER 37972 CLB)

by Rowena Gale

Introduction
This report includes the assessment of an assemblage of charcoal recovered from17 sites located on the route of the pipeline. The samples were generally rather small (usually <10 fragments) and occasionally included only a single fragment. In contrast, comparatively huge amounts of charcoal were collected from an iron-working furnace and associated pits at site 43/58. The condition of the charcoal from these sites varied from firm and well preserved to very degraded; some samples included rather 'cokey' carbonized material. For the purpose of this assessment, three fragments were identified from each sample (when available) to give some idea of the range of species present, the character of the wood from which the charcoal derived and its potential for further work. In total, 69 samples were examined. Secure dating has yet to be established for most of the sites and, with this view, the charcoal samples were also assessed for C14 dating potential.

Methods
The charcoal was prepared using standard methods (Gale and Cutler 2000) and examined using incident light on a Nikon Labophot-2 microscope at magnifications up to x400. The anatomical features were matched to reference slides of modern wood. When possible, the maturity of the wood (i.e., heartwood/ sapwood) was assessed.

Results and potential for further work
The taxa identified are presented in Table 1, together with context details and suitability of the charcoal for radiocarbon dating, should this be required. With the possible exception of samples from site 43/58, none of the samples included sufficient charcoal for conventional dating, although most contain suitable material for AMS.

Site 1/251 (NHER 37617 WNE)
Although the area was previously thought to have been the site of an Anglo-Saxon cemetery, corroborative evidence was not forthcoming during the recent excavation. Charcoal was examined from three contexts (1028, 1124 and 1422), probably of prehistoric date, and identified as ash (*Fraxinus excelsior*), alder (*Alnus glutinosa*) and blackthorn (*Prunus spinosa*).

Potential for further work. Low – none recommended

Site 6/226 (NHER 37821 RGH)
This small settlement was located on a valley slope and was provisionally dated to *circa* 1st century AD. A single sample from the fill of ditch 6042 consisted of a piece of narrow oak (*Quercus* sp.) roundwood.

Potential for further work. Low – none recommended

Site 8/218 (NHER 37827 LEX)
The settlement was sited on a plateau overlooking the river Nar and probably dates from the Neolithic period. An associated scatter of pits was located mostly at the western end of the site and a single fragment of charcoal from pit 8316 was identified as hazel (*Corylus avellana*).

Potential for further work. Low – none recommended

Site 13/202 (NHER 37622 TTL)
The settlement was located on a west facing valley slope on sandy soils. Dating for many of the features is currently uncertain. Twenty two charcoal samples were examined, mainly from graves. Small fragments of charcoal from a cremation 3110 in Phase 6, provisionally attributed as Bronze Age, were identified as oak (*Quercus* sp.). A small Saxon cemetery (Phase 11) contained 24 individual inhumations. Charcoal from a triple burial, grave 13125, consisted of oak (*Quercus* sp.), hazel (*Corylus avellana*) and maple (*Acer* sp.) and a further sample from grave 13067 (an empty grave) included oak (*Quercus* sp.) and blackthorn (*Prunus spinosa*). Charcoal was also examined from fills of graves

13085, 13077, 13097, 13172, 13165 and 13284. Oak (*Quercus* sp.) occurred most frequently, although ash (*Fraxinus excelsior*), hazel (*Corylus avellana*) and blackthorn (*Prunus spinosa*) were also recorded (see Table 1). The presence of charcoal in these inhumation graves is not clear but implies some type of contemporary funerary practice or ritual.

Charcoal was also obtained from the undated ring-ditches 13232 and 13249 and included maple (*Acer* sp.), hazel (*Corylus avellana*) and hawthorn/ *Sorbus* group (Pomoideae) (See Table 1). The fills of pit 13177 and posthole13162, included oak (*Quercus* sp.).

The taxa identified from this site (oak, ash, maple, hazel and blackthorn) are consistent with those typically growing in a woodland community in a valley environment; however, it is probable that the region supported a wider range of trees/ shrubs than those represented by the charcoal.

Potential for further work. Low – none recommended

Site 25/138 & 136 (NHER 37624 & 37625 FLS)
The site occupied the upper region of a gentle south-west facing slope. Features were provisionally dated from the prehistoric to the medieval periods. Charcoal was sparse but examined from the fills of pits 25026 and 25083 and ditches 449 and 25138 and identified as oak (*Quercus* sp.), ash (*Fraxinus excelsior*) and the hawthorn/ *Sorbus* group (Pomoideae) (see Table 1).

Potential for further work. Low – none recommended

Site 22/148 (NHER 37623 BTE)
The single sample of charcoal from this site was collected from a ditch (context 22332) and identified as oak (*Quercus* sp.).

Potential for further work. Low – none recommended

Site 24/144 (NHER 37892 FLS)
The site was located on high ground north-east of the River Wensum valley. The dates of many features still need to be resolved. Charcoal from ditch 24231 was identified as oak (*Quercus* sp.) and from ditch 24249 as alder (*Alnus glutinosa*) and blackthorn (*Prunus spinosa*). Oak was also present in the fill of pit 24200.

Potential for further work. Low – none recommended

Site 27/128 (NHER 37626 THM)
The site was located on level ground between two streams. Several phases of occupation were recorded and appeared to be medieval. Charcoal was sparse at the site although small samples were examined from the fills of pits 27100, 27133 and 27575, and from ditches 27141, 27171, 27208, 27244, 27249 and 27445. Oak was common to all the samples, except ditch 27171. In addition, hazel (*Corylus avellana*) was recorded from pit 27575 and maple (*Acer* sp.) from ditch 27208. A single fragment of very degraded but uncarbonized blackthorn (*Prunus spinosa*) stem was recorded in ditch 27171 and seems likely to have derived from naturally accumulated debris. Smithing slag was recovered from the fills of ditches 27171 and 27444.

Potential for further work. Low – none recommended

Site 36/97 (NHER 37629 ZVL
Spot dates from pottery suggested that features at this site related to the Late Bronze Age or Early Iron Age. Charcoal, identified as oak (*Quercus* sp.), was recovered from ditch 36067

Potential for further work. Low – none recommended

Site 38/90 (NHER 37939 JTT)
Located on the a terrace above the floodplain on the west side of the River Bure, the site comprised of a number of pits, probably of medieval date. Charcoal from the fill of an associated gully 38081 consisted of oak (*Quercus* sp.).

Potential for further work. Low – none recommended

Site 39/84A (NHER 39520 JTT)
Further medieval features were recorded close to the flood plain of the River Bure, not far from site 38/90. Ash (*Fraxinus excelsior*) and blackthorn (*Prunus spinosa*) were identified from charcoal recovered from feature 57225, and *cf.* oak (*Quercus* sp.) from ditch 57574. The latter was poorly preserved.
Potential for further work. Low – none recommended

Sites 39/88 and 39/88B (NHER 37942 & 39518 JTT)
These two adjacent sites were located on the steep west-facing slope on the east side of the River Bure valley. Features at Site 39/88 were tentatively dated by pottery as prehistoric; charcoal from an associated pit included oak (*Quercus* sp.) and willow (*Salix* sp.) or poplar (*Populus* sp.). A number of medieval pits were excavated at Site 39/88B and poorly preserved hawthorn type (Pomoideae) charcoal was identified from the fill of pit 3934.

Potential for further work. Low – none recommended

Site 43/58 (NHER 37972 CLB)
This site was located on level ground not far from a tributary of the River Bure and included a metal-working complex. Although the date is currently unknown, evidence from slag deposits suggests either Iron Age or Saxon. The charcoal-rich fills of the metal-smelting furnace 43855 and associated pits provide ample opportunity to study the character of the fuel. Based on the initial results from this assessment (charcoal from contexts 43857, 43858, 43859, 43868 and 43869), it seems likely that the fuel may have consisted exclusively of oak (*Quercus* sp.), which included both roundwood and large fragments of heartwood from slow-grown large-wood. Similar material was recorded from the fills of pits 43873, 43876, 43870 and posthole 43880, although holly (*Ilex aquifolium*) was also recorded from pit 43876.

Potential for further work. High for all samples except from context 43458.
Aims of further work. To identify the type (species) and character of the iron-working fuel and to establish whether this was obtained from managed or unmanaged woodland.
Also, if possible, to collect evidence of woodland management, e.g., cropping cycles, season of felling.
C14 dating: suitable material for AMS has already been selected from contexts 43857, 43858, 43877 and 43881. Sufficient quantities for conventional dating may be forthcoming when further material is examined from the samples.

Site 46/38 (NHER 37987 ANT)
An area of land at the top of a valley slope formed the site of a Bronze Age cemetery. Charcoal, probably from pyre fuel debris, was recovered from cremation fills, contexts 46018 and 46033. The taxa identified included alder (*Alnus glutinosa*) and hazel (*Corylus avellana*). Fragments of very slow-grown oak (*Quercus* sp.) was recorded from context 39343, the fill of a pit.

Potential for further work. Low – none recommended

Site 47/34 (NHER 37631 WLN)
Several phases of occupation were recognised from prehistoric and later features located on a terrace on a steep valley slope. Charcoal from pit 47195 was identified as alder (*Alnus glutinosa*). Black material from the fill of pit 47119 consisted of crumbly 'cokey' material.

Potential for further work. Low – none recommended

Site 50/26 (NHER 37996 SLD)
A scattering of prehistoric and later pits were sited on a gentle east facing valley slope. Although three main phases of occupation were recorded, secure dates still need to be established. Charcoal was examined from pits 50186 and 50199. Alder (*Alnus glutinosa*) was present in both contexts, with the addition of oak (*Quercus* sp.) in 50186.

Potential for further work. Low – none recommended.

Environmental evidence
The sites spanned a considerable corridor of land from near King's Lynn north-eastwards to the coast. The sites were generally located on terraces or valley slopes in close proximity to rivers. Apart from Site 1/251, which was based on marginal land between chalk downland and fenland, the underlying soils were sandy. The taxa identified are typical of each environment. The relatively narrow range of taxa identified from each site probably reflects an element of selection and is therefore unlikely to be comprehensive. With the exception of Site 43/58, the charcoal available was insufficient to assess the presence or use of managed woodland. Further work on samples from Site 43/53 may present evidence of management practices.

Recommendations for further work
Owing to the paucity of charcoal from all the sites named above, except Site 43/58, the potential for further work is either very low or nil. The abundant charcoal from the iron-working site 43/58, however, is potentially important and should produce significant data on the use and sourcing of metal-working fuels in this region. It is recommended that the eight samples indicated on Table 1 should be included in a detailed analysis as outlined above and the results discussed in a full report.

Time Estimates
The identification of 8 samples
A full report of the charcoal analysis

Reference
Gale, R. and Cutler, D. 2000 *Plants in Archaeology.* Otley/ London: Westbury/ Royal Botanic Gardens, Kew

Hand Collected Charcoal Assessment

Appendix A: Taxa identified and potential of samples for further work and radiocarbon dating
Number of fragments: x = 1-10; xx = 11-50; xxx = 50+
Key. h/w = heartwood; s/w = sapwood; r/w = roundwood; g/r = growth rings
C14 dating. Taxa suitable for AMS are highlighted in bold

Context	Sample	Description	No. of frags.	Taxa identified	Further work recommended	Comments
Site 01/251						
1028	-	Spread	x	1 x ash (Fraxinus excelsior); 1 x alder (Alnus glutinosa); 1 x blackthorn (Prunus spinosa)	-	-
1124	-	Spread	x	1 x alder (Alnus glutinosa)	-	-
1422	-	Spread	x	1 x ash (Fraxinus excelsior); 2 x blackthorn (Prunus spinosa)	-	-
Site 6/226						
6043	-	Fill of ditch 6042	x	1 x oak (Quercus sp.) r/w	-	Narrow roundwood
Site 8/218						
8345	-	Fill of pit 8316	x	1 x hazel (Corylus avellana)	-	-
Site 13/202						
13010	-	Fill of pit 13011	x	-	-	Black 'cokey' material, cindery and vitrified
13076	71454	Fill of grave 13067 Phase 11	x	3 x blackthorn (Prunus spinosa)	-	Narrow roundwood
	-		x	1 x oak (Quercus sp.) h/w; 1 x oak s/w; 1 x oak r/w	-	-
13083	-	Fill of grave 13085	x	1 x oak (Quercus sp.) h/w; 1 x oak s/w; 1 x oak r/w	-	Roundwood diameter: 24mm
	71455		x	2 x oak (Quercus sp.) h/w; 1 x oak s/w	-	Very fragmented
13093	71458	Fill of grave 13077	x	1 x oak (Quercus sp.) s/w	-	-
13098	71459	Fill of grave 13097	x	3 x oak (Quercus sp.) s/w	-	Small fragments
	71461		x	2 x oak (Quercus sp.); 1 x ash (Fraxinus excelsior)	-	-
13104	71463	Skeleton 13077	x	2 x hazel (Corylus avellana)	-	-
13109	71465	Fill of cremation 13110 Phase 6	x	3 x oak (Quercus sp.)	-	Small fragments
13124	-	Fill of grave 13125	x	1 x hazel (Corylus avellana) r/w	-	-

Hand Collected Charcoal Assessment

Context	Sample	Description	No. of frags.	Taxa identified	Further work recommended	Comments
	71467	Phase 11	xx	1 x oak (Quercus sp.); 2 x maple (Acer sp.)	-	Small fragments
	71468		xx	1 x oak (Quercus sp.); 1 x ash (Fraxinus excelsior); 1 x blackthorn (Prunus spinosa)	-	Small fragments
13163	71474	Fill of p/hole 13162	xx	3 x oak (Quercus sp.)	-	Remainder probably similar
13171	71475	Fill of grave 13172	x	2 x oak (Quercus sp.) s/w; 1 x hazel (Corylus avellana)	-	Small fragments
13187	-	Fill of pit 13177	x	3 x oak (Quercus sp.) r/w	-	Narrow roundwood
13237	-	Fill of ring ditch 13232	x	1 x hazel (Corylus avellana)	-	-
13254	71479	Fill of ring ditch 13249	x	2 x maple (Acer sp.); 1 x hawthorn/ Sorbus group (Pomoideae)	-	Plus hazel nutshell
13263	71484	Fill of grave 13265	x	1 x ash (Fraxinus excelsior); 2 x hazel (Corylus avellana)	-	-
	71486		x	1 x oak (Quercus sp.) h/w; 1 x hazel (Corylus avellana); 1 x blackthorn (Prunus spinosa) r/w	-	Small fragments
13278	71485	Fill of grave 13277	x	3 x blackthorn (Prunus spinosa)	-	-
13285	71490	Fill of grave 13284	x	1 x oak (Quercus sp.) h/w; 1 x oak (Quercus sp.) r/w; 1 x hazel (Corylus avellana)	-	?Carbonised acorns
Site 22/148						
22332	71152	Fill of ditch	xx	3 x oak (Quercus sp.) h/w	-	Some largish chunks
Site 25/136-138						
448	-	Fill of ditch 449	x	1 x ash (Fraxinus excelsior) s/w	-	-
25027	-	Fill of pit 25026	x	2 x oak (Quercus sp.) s/w	-	-
25084	-	Fill of pit 25083	x	2 x oak (Quercus sp.) h/w; 1 x hawthorn/ Sorbus group (Pomoideae)	-	-
25115	-	Fill of ditch 25114	-	-	-	Heavy, black 'cokey'/ slaggy material
25139	-	Fill of ditch 25138	x	3 x oak (Quercus sp.) h/w	-	-
Site 24/144						
24232	-	Fill of ditch 24231	x	2 x oak (Quercus sp.) s/w; 1 x oak h/w	-	-
24201	-	Fill of pit 24200	x	3 x oak (Quercus sp.)	-	Very poor condition
24248	73412	Fill of ditch 24249	x	2 x alder (Alnus glutinosa);	-	Relatively large fragments

Hand Collected Charcoal Assessment

Context	Sample	Description	No. of frags.	Taxa identified	Further work recommended	Comments
				1 x Prunus sp.		
Site 27/128						
27085	-	Fill of pit 27100	x	1 x oak (Quercus sp.) h/w	-	-
27132	-	Fill of pit 27133	x	1 x oak (Quercus sp.) s/w	-	-
27138	-	Fill of ditch 27141	x	1 x oak (Quercus sp.) h/w	-	-
27160	-	Fill of ditch 27171	x	1 x blackthorn (Prunus spinosa)	-	Uncarbonized wood plus slag
27195	-	Fill of ditch 27191	-	-	-	Light, rather slag-like material
27203	-	Fill of pit 27575	x	2 x oak (Quercus sp.) h/w; 1 x hazel (Corylus avellana)	-	-
27207	-	Foundation trench fill 27208	x	2 x oak (Quercus sp.) h/w; 1 x maple (Acer sp.)	-	Some fragments knotty
27272	-	Fill of ditch 27244	-	-	-	'cokey' material
27383	-	Fill of ditch 27249	x	2 x oak (Quercus sp.) h/w	-	Large knotty fragments
27444	-	Fill of ditch 27445	x	3 x oak (Quercus sp.) h/w	-	-
Site 36/97						
36068	-	Fill of ditch 36067	x	3 x oak (Quercus sp.) h/w	-	Small fragments
Site 38/90						
38082	-	Gully fill 38081	x	1 x oak (Quercus sp.) h/w	-	-
Site 39/84A						
57226	-	Fill of 57225	x	2 x ash (Fraxinus excelsior); 1 x blackthorn (Prunus spinosa)	-	-
57568	-	Fill of ditch 57574	x	2 x cf. oak (Quercus sp.)	-	Poor condition
Site 39/88						
39191	-	Fill of pit 39192	x	2 x oak (Quercus sp.) h/w; 1 x willow (Salix sp.) or poplar (Populus sp.)	-	-
Site 39/88B						
39343	-	Fill of pit 39341	x	3 x hawthorn/ Sorbus group (Pomoideae)	-	Poor condition
Site 43/58						
43857	71850	Fill of furnace 43855	xxx	1 x oak (Quercus sp.) h/w; 2 x oak r/w	Yes	R/w diameters: 15mm (3 g/r); 13mm (7 g/r). H/w very slow-grown
43858	71853		x	2 x oak (Quercus sp.) s/w; 1 x oak h/w	-	-
43859	71852		xxx	3 x oak (Quercus sp.) h/w	Yes	Huge amount, including large fragments

Hand Collected Charcoal Assessment

Context	Sample	Description	No. of frags.	Taxa identified	Further work recommended	Comments
43868	71854		xx	3 x oak (Quercus sp.) h/w	Yes	Slow-grown large-wood
43869	71855		xxx	3 x oak (Quercus sp.) h/w	Yes	Large-wood
43872	71856	Fill of pit 43870	xxx	3 x oak (Quercus sp.) h/w	Yes	Large-wood
43875	71857	Fill of pit 43873	xxx	3 x oak (Quercus sp.) h/w	Yes	Huge amount, including large fragments
43877	71858	Fill of pit 43876	xx	1 x oak (Quercus sp.) narrow r/w; 2 x holly (Ilex aquifolium)	Yes	Small fragments
43881	71859	Fill of p/hole 43880	xxx	3 x oak (Quercus sp.) s/w	Yes	Huge amount, including large fragments
Site 46/38						
46012	73803	Fill of pit	x	3 x oak (Quercus sp.)	-	Slow-grown
46018	73806	Cremation fill	x	2 x alder (Alnus glutinosa); 1 x hazel (Corylus avellana)	-	Small fragments
46033	73810	Cremation fill	x	3 x alder (Alnus glutinosa)	-	-
Site 47/34						
47126	-	Fill of pit 47195	x	1 x alder (Alnus glutinosa)	-	-
47120	-	Fill of pit 47119	-	-	-	Black crumbly 'cokey' material
Site 50/26						
50029	-	Fill of pit 50027	x	-	-	Insufficient for id
50183	-	Fill of pit 50186	x	1 x oak (Quercus sp.); 2 x alder (Alnus glutinosa)	-	Very poor condition
50200	-	Fill of pit 50199	x	3 x alder (Alnus glutinosa)	-	Poor condition

APPENDIX 2

FIGURES

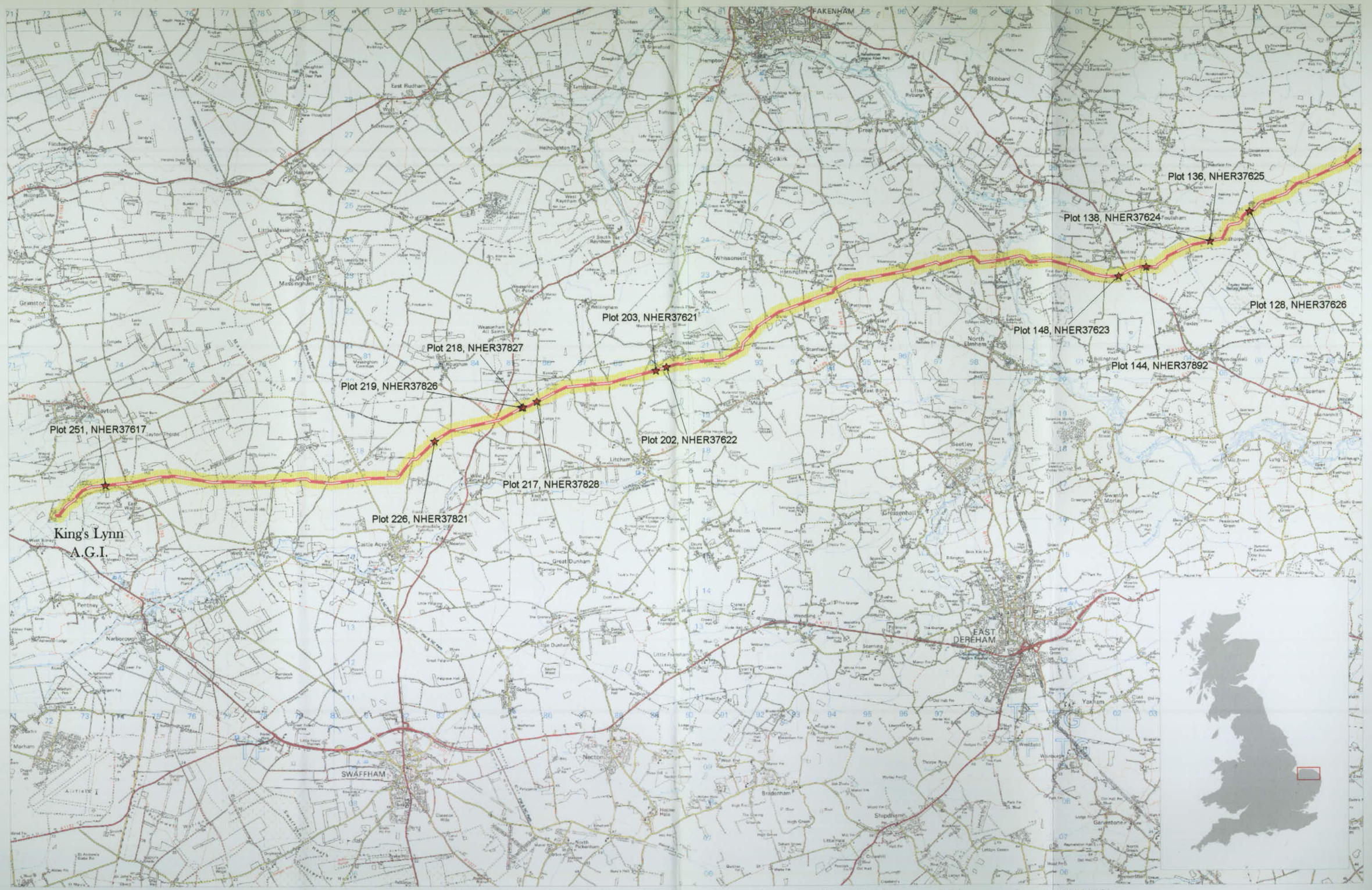

Figure1a: Location of the sites on the western part of the pipeline, scale 1:100 000

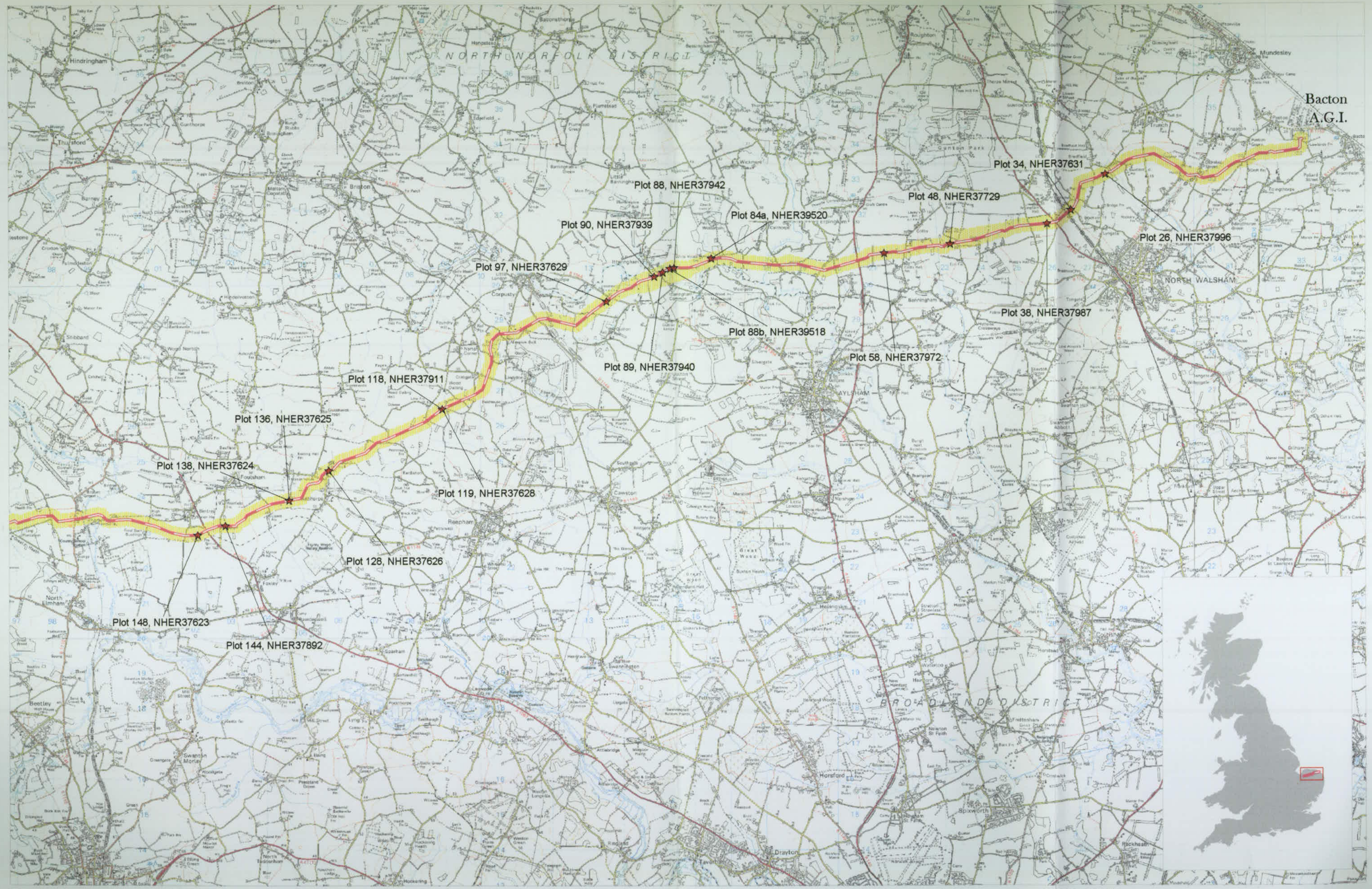

Figure1b: Location of the sites on the eastern part of the pipeline, scale 1:100 000

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