

Palaeoecology Research Services

**Technical report: Biological remains from sites
along the route of the Transco West Hull
pipeline, East Riding of Yorkshire
(site codes: OSA02EX02, OSA02EX04,
OSA02EX05, OSA02EX07, OSA02EX08,
OSA02WB23 and OSA01WB33)**

PRS 2004/36

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by

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Summary

Plant, invertebrate and vertebrate remains, recovered from sediment samples from a series of sites along the route of the of the Transco West Hull reinforcement gas pipeline, in the East Riding of Yorkshire, were investigated. Assessments were undertaken in 2002 and some further work on samples from two of the sites at Wawne and Elloughton (site codes: OSA02EX02 and OSA02EX08, respectively) was thought worthwhile. This report presents the results of the further study, summaries of the assessments and the dates obtained by radiocarbon assay of material from selected deposits.

In general, biological remains were rather sparse in the deposits. Plant macrofossils were, in the main, restricted to small quantities of charred remains (the more interpretatively valuable often being of charred grains and sometimes associated chaff). There were also occasional small assemblages of snails and rare concentrations of bone.

For the site at Wawne (OSA02EX02), charred plant material that perhaps originated in straw or animal feed was present in the floor deposits, as were traces of plants probably derived from charred peat or turves, and represented cereals included remains of wheat, barley and oats. Context 1139 interpreted as either a soil horizon or alluvium seems almost certain to be the latter, given the many freshwater planorbids recovered from it. Similarly, the primary ditch fill, Context 1209 (of ditch 1202) contained freshwater planorbid snail shell fragments strongly suggesting aquatic deposition.

The late Roman deposits at Elloughton (OSA02EX08) gave very few remains, though the sample from pit fill 1111 contained traces of both free-threshing and glume wheats and traces of material which might have originated in burnt peat or turves. The Anglo-Saxon oven, on the other hand, gave rather more substantial evidence in support of the nature of the feature, and for the material being dried. For the most part, the grain was oats, the small amounts of other cereals present perhaps representing other, minor, grain drying events. Other biological evidence, in the form of mineralised plant remains and bone, from this site was primarily from the fills of pit 1221 (late Anglo-Saxon ?latrine) and supported the archaeological interpretation (though this pit also received more general refuse). Small snail assemblages suggested a generally rather open landscape of calcareous short-turfed grassland, with some areas of greater moisture/cover within ditch features, and perhaps some accidental transportation (e.g. with fuel for the oven).

KEYWORDS: SITES ALONG THE ROUTE OF THE TRANSCO WEST HULL REINFORCEMENT GAS PIPELINE; WAWNE; ELLOUGHTON; EAST RIDING OF YORKSHIRE; OSA02EX02; OSA02EX04; OSA02EX05; OSA02EX07; OSA02EX08; OSA02WB23; OSA01WB33; TECHNICAL REPORT; ROMAN; ANGLO-SAXON; MEDIEVAL; LATE MEDIEVAL; PLANT REMAINS; CHARRED PLANT REMAINS; CHARRED GRAIN; INVERTEBRATE REMAINS; SNAILS; VERTEBRATE REMAINS; FISH BONE; HUMAN BONE; ?BURNT TURVES

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Introduction

Excavations were carried out at sites located in a series of interventions along the route of the Transco West Hull reinforcement gas pipeline, East Riding of Yorkshire, by On-site Archaeology (OSA) during 2001 and 2002.

Sediment samples and some hand-collected biological remains were assessed by Palaeoecology Research Services Ltd (PRS), County Durham, during 2002. Much of the material was submitted as dried washovers and residues from bulk sediment samples processed by the excavator, but in some cases subsamples of raw sediment were processed by PRS. Most of the sites gave little in the way of environmental evidence and, in general, no further study was recommended. The exceptions to this were the sites at Wawne (OSA02EX02) and near Elloughton (OSA02EX08), where the investigation of additional samples was considered worthwhile.

The Wawne site (OSA02EX02, centred upon NGR TA 08291 37124) was excavated between the 3rd and the 20th May 2002. The site was situated to the west of the modern day village of Wawne on the eastern flood plain of the River Hull. The village of Wawne is a 'shrunk' medieval village. Archaeological and documentary evidence indicates that occupation originated during the 12th century and continues to the modern day. It is probable that occupation started earlier as the village occupies a low gravel island in what would have been an extensive wetland environment, however.

The site near Elloughton (OSA02EX08, centred upon NGR SE 95103 28333) was

excavated between the 3rd and the 30th of May 2002. The site was situated at the bottom of the southern scarp slope (spring line) of the Yorkshire Wolds within an extensive late Iron Age/Romano-British landscape. Nearby during the Romano-British period there was a fort, town and ferry crossing point at Brough on Humber (*Petuaria*), a probable entrepôt at Redcliff, and villa sites at Welton and Brantingham. This site forms a continuation of that excavated as OSA01WB33 (Elloughton), the biological remains from which were reported by Hall *et al.* (2002).

This report presents the results of the post-assessment bioarchaeological analysis undertaken (including the assessment results for the two sites detailed above) in the main text and summarises the results of the assessments for which no further work was warranted (Appendix 3). Also included (as Appendix 1) is a summary of the assessment stage investigations of the sediment contained within the sockets of a number of bronze axe heads and notes on two sites designated Fields 49 and 51 (Appendix 2).

Methods

Bulk sediment samples ('BS' *sensu* Dobney *et al.* 1992) were processed to 1 mm (with a 300 micron sieve for the lighter washover fraction) by the excavator.

Subsamples processed by PRS for the recovery of plant and invertebrate macrofossils followed the procedures of Kenward *et al.* (1980; 1986) and are designated '/T' (assessment) or '/T2' (analysis). For these, the sediment samples were inspected in the laboratory and their

lithologies recorded following a standard *pro forma*.

The washovers and residues resulting from processing were examined for plant and invertebrate macrofossils. The residues were examined for larger plant macrofossils, bone, and other biological and artefactual remains.

Plant remains (and the general nature of the residues, flots and washovers) were recorded briefly by ‘scanning’, identifiable plant taxa and other components being listed directly to a PC using *Paradox* software. Notes on the quantity and quality of preservation were made for each fraction.

Five of the samples were examined for the eggs of intestinal parasitic nematodes using the ‘squash’ technique of Dainton (1992).

The washovers and residues were sorted for snails and the remains identified to species (main source, Kerney and Cameron 1979) where possible. The abundance of the snail taxa present was recorded either as a minimum number of individuals (where the shells were fairly intact), or semi-quantitatively on a four-point scale (for more fragmented remains): f – few (up to 3 individuals); s – some (4 to 20 individuals); m – many (21 to 50 individuals); v – very many (more than 50 individuals).

Bone fragments were sorted from the residues and identified to species or species group, using the reference collection at Palaeoecology Research Services Limited, County Durham. Fragments not identifiable to species were described as the ‘unidentified’ fraction. Within this fraction fragments were grouped into a number of categories: large mammal (assumed to be cattle, horse or large cervid), medium-sized mammal (assumed to be caprovid, pig or small cervid), unidentified fish, and totally unidentifiable.

Material from five of the deposits from site OSA02EX08 (mostly small amounts of charred grains) were submitted to Beta

Analytic, Miami, Florida, for radiocarbon dating via Accelerator Mass Spectrometry (AMS). Two further samples of bone, one each from sites OSA02EX04 and OSA02EX08, were submitted later, the first for dating via radiometric technique and the second by AMS—these results are presented in Appendix 3 (site OSA02EX04) and in the main body of the text below (OSA02EX08).

Results

The results are shown in Tables 1-4. A complete list of plant taxa is given in Table 1, and summary data for each sample separately in Table 2. Summary information for the snails is presented as Table 3. Table 4 details the fish bone assemblage recovered from Context 1216 of the site near Elloughton (OSA02EX08).

Samples are presented by site in context number order. Archaeological information, provided by the excavator, is given in square brackets. A brief summary of the processing method and an estimate of the remaining volume of unprocessed sediment follows (in round brackets) after the sample numbers. Contexts followed by a double star (**) were examined as part of the earlier assessment but were not examined further for the analysis.

Radiocarbon dates were provided by Beta Analytic Inc., Miami, Florida, USA.

Wawne – OSA02EX02

Context 1100** [sediment lens with charred grain fragments]

Sample 3/T (3 kg processed to 300 microns with washover; approximately 2 litres of unprocessed sediment remain)

Moist, light brown to light grey-brown (to light to mid grey in places), stiff (working more or less plastic), slightly sandy clay, with stones (2 to 20 mm), fragments of charcoal (to 15 mm) and charred grain, present.

The small washover of about 15 ml consisted mostly of charred cereal grains; many were distorted, but the majority seemed to be oats (*Avena*), with rare specimens of wheat, including bread wheat (*Triticum aestivo-compactum*) and barley (*Hordeum*). Other charred remains included small numbers of probable cornfield weeds (stinking mayweed, *Anthemis cotula*) and some taxa perhaps representing charred peat or cut wetland vegetation (nutlets of saw-sedge, *Cladium mariscus*, and spike-rush, *Eleocharis palustris* s.l.). The only uncharred material present comprised a few ?modern elder (*Sambucus nigra*) seeds.

The small residue (0.4 kg) was of sand, with some stones (to 40 mm) and a few fragments of charcoal (to 15 mm).

Context 1139** [?soil horizon or alluvium]

Sample 5/BS (25 litres processed to 1 mm with 300 micron washover; approximately 5 litres of unprocessed sediment remain)

Moist, light to mid grey-brown, stiff (working plastic), clay, with some stones (2 to 20 mm), occasional black flecks of ?rotted charcoal, modern rootlets, and some land and freshwater snails, present.

The very small washover of about 20 ml consisted mainly of snails with a few rather poorly preserved charred cereal grains, including one or a few specimens of oats, barley and wheat, and traces of coal and charcoal.

The snails present were mostly of the freshwater species *Planorbis leucostoma* (white-lipped ram's-horn snail) typically found in ponds and ditches (and which resists drought in mud). There were also some land snails, including *Cochlicopa ?lubrica* and *Vallonia ?excentrica*, and snails of waterside vegetation (Succineidae sp. indet.).

The small residue (1.1 kg) was of stones (to 30 mm) and occasional fragments of snail shell (further remains of those taxa more fully represented in the washover).

Context 1156** [fill of robber cut]

Sample 11/BS (25 litres processed to 1 mm with 300 micron washover; approximately 5 litres of unprocessed sediment remain)

Moist, mid grey-brown (with some light brown mottling in places), crumbly (working more or less plastic and slightly sticky), slightly silty clay, with a little charcoal (to 8 mm).

The small washover of about 50 ml was mainly charcoal but there were also a few grains of *Triticum*

aestivo-compactum' and at least one specimen which might have been a pea (*Pisum sativum*) seed. There were also a few fragments of unidentified snail shell.

The small residue (1.2 kg) was mostly of stones (to 25 mm). Larger fragments of charcoal (to 35 mm in largest dimension) from the residue were identified as of alder (*Alnus*, two pieces), and oak (*Quercus*, one smaller fragment).

An assemblage of well preserved bone amounting to 56 fragments was also recovered from this sample. Most fragments were less than 10 mm in any dimension and few could be identified to species. Twenty-one fragments were burnt, including a number of fish spine and rib fragments. Identified fragments included, two herring (*Clupea harengus* L.) vertebrae, a cow carpal, a ?partridge (cf. *Perdix perdix* L.) carpometatarsus (burnt) and a Turdidae (thrush/blackbird family) humerus.

Context 1161** [possible floor deposit]

Sample 6/BS (15 litres processed to 1 mm with 300 micron washover; approximately 5 litres of unprocessed sediment remain)

Moist to wet, light grey-brown, sticky and crumbly (working soft and somewhat plastic), clay silt to silty clay, with occasional flecks of charcoal.

The very small washover (approximately 30 ml) was mostly of modern rootlets, small pieces of undisaggregated sediment, and sand. A little charcoal (to 6 mm) and a few earthworm (*Oligochaeta* sp.) egg capsules were also noted. Two other small (to 5 mm) fragments of charred plant material from the washover were of monocotyledonous rhizome, probably from a grass or sedge; though they cannot currently be identified further, the likelihood is that they originated in the burning either of turves or cut vegetation which included some pulled (subterranean) material.

The small (0.9 kg) residue was of stones (to 20 mm) and three fragments of ?pot.

Context 1197 [?floor deposit]

Sample 7/T2 (23.5 kg processed to 300 microns with washover; no unprocessed sediment remains)

Moist, mid brown, to mid grey-brown, brittle to crumbly, (working plastic, rubs brown), slightly silty clay. Stones (2 to 20 mm, including rotted micaceous sandstone), charcoal traces and other fine charred material were present.

The washover consisted of about 20 ml of charcoal and some fine modern rootlets; amongst the charred remains traces of root/rhizome, perhaps from peat or turf.

This sample produced a medium-sized residue (2.6 kg) which comprised mainly of sand and stones. Pottery fragments, metal slag, burnt clay or daub and charcoal were also present within the residue.

Context 1199 [?floor deposit]

Sample 8/T2 (23.1 kg processed to 300 microns with washover; no unprocessed sediment remains)

Moist, mid brown to mid grey-brown, brittle to crumbly, (working plastic, rubs brown), slightly silty clay. Stones (2 to 6 mm), charcoal traces and burnt bone were present.

The small washover (<10 ml) was of charcoal with a few poorly preserved cereal grains (mainly short, square bread/club wheat) and some charred root/rhizome perhaps from burnt peat or turves. The fine fraction was largely charred herbaceous detritus, perhaps from monocot stems (though not necessarily grass/cereal)—the presence of charred *Cladium* and *Eleocharis* fruits and *Menyanthes* seeds perhaps points to burnt cut wetland vegetation (e.g. from roofing or fuel) or peat. Traces of land snail shell were present as five unidentified fragments and single individuals of *Vertigo pygmaea* and *Vallonia excentrica*.

The medium-sized residue (3.1 kg) was mainly sand, with a few stones. Pottery fragments, iron nails and charcoal were also present.

Context 1209 [part of primary silting of ditch 1202]

Sample 12/T2 (4.6 kg processed to 300 microns with washover; no unprocessed sediment remains)

Moist, mid grey-brown to light to mid grey in places, stiff and sticky, (working soft and sticky then more or less plastic), silty clay to clay silt. Charcoal or other fine charred material was common.

The washover was of about 15 ml of charcoal, with some uncharred taxa perhaps indicative of wet tracks or the ditch itself. Aquatic deposition was confirmed by the presence of some invertebrate remains including *Daphnia* (water flea) ephippia (resting eggs), ostracod shells and apex fragments of perhaps ten planorbis snails.

The small residue (0.5 kg) was mostly of sand, with a few stones. Charcoal and a few snail shell fragments were also noted.

Context 1220 [?floor deposit]

Sample 15/T2 (3.6 kg processed to 300 microns with washover; no unprocessed sediment remains)

Just moist, mid grey-brown, stiff to crumbly, (working plastic), slightly silty clay. Stones (2 to 6 mm) were present and charcoal and other fine charred material was common.

There was a small washover (of about 20 ml) of mainly charred rhizome/culm base material and a few poorly preserved cereal grains, much of the fine fraction consisting of comminuted charred ?grass/cereal culm fragments perhaps from straw or other cut vegetation.

The small residue (0.6 kg) was mostly sand and stones. Small amounts of pottery and charcoal were also present.

Elloughton – OSA02EX08

Context 1020** [fill of truncated gully/ditch]

Sample 1/BS (25 litres processed to 1 mm with 300 micron washover; approximately 5 litres of unprocessed sediment remain)

Moist, light to mid grey-brown, unconsolidated to crumbly (working more or less plastic), slightly silty clay, with chalk fragments (2 to 60+ mm) common and traces of rotted charcoal, modern rootlets and snails present.

The very small washover (approximately 30 ml) was mostly of land snails with some modern rootlets and a few fragments of charcoal (to 3 mm). The small land snail assemblage included many *Vallonia ?excentrica*, *Carychium ?tridentatum*, *Trichia ?hispidia*, and *Cecilioides acicula*. There were also some *Vallonia ?costata*, *Cochlicopa ?lubrica*, and *Oxychilus ?cellarius*, a few *Discus rotundatus* and *Cepaea/Arianta* sp., and a single fragment of an unidentified clausilid.

There was a large residue (approximately 20 kg) mostly of chalk (to 110 mm), with some flint (to 40 mm), a few snails (further individuals of the same taxa noted from the washover), a little bone, and rare fragments of charcoal (to 6 mm).

The vertebrate material recovered from this sample was rather poorly preserved, with the bones having rounded edges and eroded surfaces. A high degree of fragmentation was noted, but this was mainly the result of fresh breakage damage. The assemblage amounted to 80 fragments of bone, ranging in size from less than 10 mm to 95 mm in maximum dimension. Most fragments, although unidentifiable to species, represented large or medium-sized mammals. Some cattle cranium and

pelvis fragments were identified, together with a single caprovid upper premolar. Several small mammal and amphibian bones were also noted.

Context 1071** [fill of small pit]

Sample 2/BS (25 litres processed to 1 mm with 300 micron washover; approximately 5 litres of unprocessed sediment remain)

Moist, mid grey-brown, crumbly (working soft), clay silt with abundant chalk fragments (2 to 60 mm).

The very small washover (approximately 20 ml) was mostly of land snails with a few fragments of charcoal (to 3 mm) and modern rootlets. The small land snail assemblage was mostly of *Cecilioides acicula* (of which there were very many), with *Trichia ?hispidia*, *Vallonia ?excentrica*, *Pupilla muscorum*, and *Cepaea/Arianta* sp. also represented (the last two by only single individuals). There were also many unidentified fragments of snail shell.

The large residue (approximately 20 kg) was of chalk (to 70 mm), with a little flint (to 40 mm), a few fragments of bone and charcoal (to 8 mm), and a very few snails (as in the washover).

A rather poorly preserved assemblage of bones was produced by this sample. Most fragments were small (less than 15 mm) and unidentifiable, with the exception of a caprovid tibia and a few fragments of pig mandible and tooth enamel. Two fragments representing a small thrush-sized bird (ulna and ?carpometatarsus) were noted, but were too eroded to identify to species. Several of the fragments were burnt.

Context 1077** [pit fill]

Sample 9/BS (25 litres processed to 1 mm with 300 micron washover; approximately 5 litres of unprocessed sediment remain)

Moist, mid grey-brown, crumbly to unconsolidated (working more or less plastic), slightly sandy slightly silty clay. Chalk fragments (2 to 60+ mm) were common and traces of very rotted charcoal and snails were present.

The tiny washover (approximately 3 ml) was mostly mm-size pieces of undisaggregated sediment, a few fragments of charcoal (to 2 mm), some snails, and a single unidentified charred seed. Most of the snails present were *Cecilioides acicula*, with a few other fragments of land snails (mostly unidentified but including two *Trichia ?hispidia*, and single representatives of *Pupilla muscorum* and *Cochlicopa ?lubrica*).

The small residue (2.45 kg) was mostly of chalk (to 70 mm) with a little flint (to 30 mm), sand, bone, charcoal (to 6 mm), and two fragments of very rotted ?oyster shell.

Fourteen bone fragments were recovered from this sample. Most were small (less than 10 mm in maximum dimension), poorly preserved and could not be identified.

Context 1107 [fill of ?pit]

Sample 6/T2 (12.5 kg processed to 300 microns with washover; no unprocessed sediment remains)

Just moist, mid brown to mid grey-brown, unconsolidated to crumbly (working soft, rubs brown), very stony, clay silt. Stones (2 to 20 mm), including chalk, were abundant and larger stones (20 to 60 mm) were common.

The tiny washover (1 or 2 ml at most) was of land snails, mainly *Cecilioides acicula* (50+), with only one small charcoal fragment and one small cereal caryopsis fragment. Other snail taxa present included *Pupilla muscorum* (7 adult and 4 juvenile individuals), *Vallonia excentrica* (6), *Discus rotundatus* (a single apex fragment) and *Trichia hispidia* (3).

The large residue (>5 kg) was mainly of stones, with a little sand. Pottery and some land snail shell fragments were also present. This sample produced only five fragments of bone (1 g); none could be identified to species.

Context 1111 [pit fill]

Sample 10/T2 (10.6 kg processed to 300 microns with washover; no unprocessed sediment remains)

Just moist, light to mid grey-brown to mid to dark grey-brown, unconsolidated to crumbly (working more or less plastic, rubs black), very stony, slightly silty clay. Stones (2 to 20 mm) were abundant, larger stones (20 to 60 mm) common, and ash lumps were present.

The washover (about 45 ml) was of charred plant material with many *Cecilioides acicula* (certainly more than 100 and perhaps as many as 500) and some other snail shells. The plant material was mostly of rather variably preserved grains, with a few ?modern weed seeds and there were also some fragments of tuber-like structure. The cereal grains were mainly wheats and a little barley, one spelt spikelet-fork and some glume-bases of this taxon. The concentration of wheat grains reached 2 on the 4-point scale used and there were traces of ?heather root/twig material. Other land snails present included *Vertigo pygmaea* (4 individuals, 2 of which were burnt), *Vallonia excentrica* (12), *Carychium ?tridentatum* (2), *Pupilla muscorum* (1),

Discus rotundatus (3, all as apex fragments) and *Trichia hispida* (5).

The medium-sized residue (1.8 kg) consisted of stones, with a little sand. Pottery, metal, bone (two unidentified fragments) and charred grains were also present.

Context 1167** [backfill of grave – sample taken from stomach area of inhumation]

Sample 12/P (microfossil ‘squash’ only; approximately 10 litres of unprocessed sediment remain)

Moist, mid grey-brown, crumbly (working soft), clay silt, with fragments of chalk (2 to 60 mm).

The ‘squash’ was wholly inorganic – no parasite eggs or other identifiable microfossils were seen.

Sample 13/T2 (7.5 kg processed to 300 microns with washover; no unprocessed sediment remains)

Dry, light to mid grey-brown to mid grey-brown, unconsolidated to crumbly (rubs brown), very stony, slightly sandy silty clay. Stones (2 to 6 mm abundant, 6 to 60 mm common), mostly chalk and occasional pieces of flint, were noted.

The very small washover (of only a very few ml) was mainly snails (again mostly *Cecilioides acicula*, of which there were at least 50), with some modern roots. Other snails present included *Vallonia excentrica* (3) and *Trichia hispida* (8). A single charred cereal grain and traces of modern weeds seeds were also noted.

The large residue (3 kg) contained stones and a little sand. Small amounts of charcoal and further fragments of land snail shell were also present. A total of 16 fragments of bone were recovered from the sample. Most could not be identified to species but six were human phalanges, presumably belonging to the occupant of the grave!

Context 1173** [pit fill]

Sample 8/BS (15 litres processed to 1 mm with 300 micron washover; approximately 5 litres of unprocessed sediment remain)

Moist, mid grey-brown, crumbly (working soft), clay silt. Stones (chalk, 2 to 60 mm) were common and modern rootlets present, in the sample.

The very small washover (approximately 15 ml) was mostly land snails (primarily *Cecilioides acicula*, with some other snails which were mostly represented by unidentified fragments but included at least eight *Pupilla*

muscorum), with a few modern rootlets and traces of charcoal (to 2 mm).

The small residue (2.3 kg) was of chalk (to 55 mm) and occasional fragments of charcoal (to 5 mm).

Context 1214** [fill of linear slot]

Sample 20/BS (8 litres processed to 1 mm with 300 micron washover; approximately 2 litres of unprocessed sediment remain)

Moist, light to mid grey-brown, crumbly to unconsolidated (working more or less plastic), slightly sandy slightly silty clay. Chalk fragments (2 to 60+ mm) were common and modern rootlets were present.

The tiny washover (less than 1 ml) was of a few *Cecilioides acicula*, fragments of other unidentified snail shell and modern rootlet, and a single unidentified charred seed.

The small residue (0.63 kg) was mostly chalk (to 50 mm), with a little bone, a few snail fragments (including 2 *Trichia ?hispida*), and an iron nail.

This sample produced a collection of bones which were mainly identified as pig. Twenty of the thirty fragments recovered were pig phalanges (including unfused epiphyses), carpals and metapodial fragments. Preservation was recorded as ‘fair’, although the bones were rather battered in appearance. A single fragment had been burnt.

Context 1216** [pit fill]

Sample 16/BS (25 litres processed to 1 mm with 300 micron washover; approximately 5 litres of unprocessed sediment remain)

Just moist, mid brown, unconsolidated to crumbly (working more or less plastic), slightly silty clay, with chalk fragments (2 to 20 mm), bone, and traces of ?charcoal.

The small washover (approximately 70 ml) was mostly mm-size pieces of undisaggregated sediment, with some charcoal (to 10 mm) and modern rootlets. There were also many *Cecilioides acicula* and a few fragments of other unidentified land snails.

The residue (2.9 kg) was mostly small lumps of undisaggregated sediment (to 5 mm) and chalk (to 30 mm), with a little bone, a few fragments of charcoal (to 5 mm), and some ?mineralised plant remains. Subjectively, the lumps of concreted sediment appeared to be faecal (this was supported by the acid etching noted on the recovered bones, see below), and a ‘squash’ subsample

from this material was examined but no eggs of intestinal parasitic nematodes were seen.

Some very small (most less than 10 mm in any dimension) fragments of bone (181 fragments; 14 g) were recovered from this sample. Preservation was extremely variable. It was clear from the extensive acid etching on a number of bones, including both pig and caprovid phalanges, that much of the assemblage derived from faecal material. Several fish vertebrae showed characteristic damage consistent with the bones having been digested. Although it is possible that the faecal material may be of human origin, the size of the phalanges (and the lack of parasite eggs) suggests that this material may represent dog coprolites.

The fish remains included eel (*Anguilla anguilla* (L.)), flatfish (Pleuronectidae), smelt (*Osmerus eperlanus* (L.)) and small gadid vertebrae and a number of stickleback (Gasterosteidae) spines, scutes and cranial fragments. A part skeleton of a mouse (*Mus* sp.) was also identified. The bones belonging to the latter showed excellent preservation and were paler in colour than the rest of the assemblage; this individual is likely to be an intrusive component within the deposit and is probably of recent origin.

Context 1216 [pit fill]

Sample 16/T2 (5.2 kg processed to 300 microns with washover; no unprocessed sediment remains)

Just moist, mid grey-brown to mid to dark grey-brown, unconsolidated to crumbly, (working soft), clay silt. Stones (2 to 6 mm, including chalk) and charcoal present.

The washover was of about 20 ml of charcoal, numerous *Cecilioides acicula* shells (50 or more) and one unidentifiable cereal grain fragment. Some fine amorphous mineralised material was also noted that might represent the remains of very decayed faecal material (the presence of a mineralised apple seed reinforces this suggestion). A 'squash' subsample from this material was examined but no eggs of intestinal parasitic nematodes were seen.

The medium-sized residue (1.2 kg) contained stones and a little sand. Pottery, metal, 'concretions', charcoal and land snails were also present.

Bone (5 g) recovered from this sample was fairly well preserved, although again, as seen in the previous sample, there was some damage caused by acid etching. Pig was the only mammal identified and was represented by phalanges and sesamoids, whilst several bird vertebrae were present but could not be identified to species level. A total of 59 fish fragments were also

recorded, of which 45 were identifiable and included eel, smelt, small gadid and flatfish.

Two barley (*Hordeum*) grains (28 mg) were submitted for radiocarbon dating. They returned a 2-sigma calibrated date of AD 700 to 900 (lab number: Beta – 189170).

Sample 17/T2 (0.65 kg washed to 300 microns with washover; no unprocessed sediment remains)

Just moist, mid grey-brown to mid to dark grey-brown, unconsolidated to crumbly, (working soft), clay silt. Stones (2 to 6 mm, including chalk) were present while charcoal was common.

There was a washover of about 20 ml of charcoal and some *Cecilioides acicula* (~10), with a background of fine mineralised material like very comminuted faecal concretion; mineralised corncockle seed material again suggests there may have been faecal matter present in this fill. A 'squash' subsample from this material was examined but no eggs of intestinal parasitic nematodes were seen.

The small residue (0.15 kg) consisted of sand, with some 'concretions', charcoal and unidentified fragments of land snail shell present.

Not surprisingly, given the material recovered from previous samples from this deposit, this sample produced an assemblage of bone much of which had been damaged by acid etching. Identified mammal was restricted to a pig phalanx, while the 'unidentified' material consisted of a medium-sized mammal patella, two burnt bird ribs and 25 small fragments. Fish species present in this sample included stickleback, smelt, herring, whiting, eel, gadid and flatfish. A whiting premaxilla and articular were from a small individual measuring approximately 150 mm. Twenty indeterminate fish fragments were also recovered.

Sample 18/T (1.7 kg processed to 300 microns with washover; no unprocessed sediment remains)

Sediment description as Sample 16 above.

The small washover (approximately 10 ml) gave the same components as that from Sample 16 but with lesser proportions of bone and charcoal (to 5 mm).

The components of the modest residue (0.5 kg) were as described for Sample 16 (above).

This sample produced a similar assemblage of bone (8 g) to that recovered from Sample 16. Acid etching was again apparent on pig and caprovid phalanges and

sesamoids, suggesting the bones mainly originated from faecal material. Additionally, the remains of a small corvid were identified; several fish bones were also present.

Context 1217 [neo-natal human bone associated with a structural pit for a rectangular, probably Roman, ?domestic building]

A small quantity of neo-natal human bone (approximately 7 g) from this deposit was submitted for dating via AMS. The 2-sigma calibrated date returned was AD 220 to 400 (lab number: Beta – 192255).

Context 1220** [pit fill]

Sample 19/BS (8 litres processed to 1 mm with 300 micron washover; approximately 2 litres of unprocessed sediment remain)

Moist, mid grey-brown, crumbly (working soft), clay silt. Fragments of chalk (2 to 60 mm) were common and modern rootlets were present.

The very small washover (approximately 10 ml) was mostly pieces of undisaggregated sediment (to 2 mm) with a few small fragments of charcoal (to 3 mm), some *Cecilioides acicula*, and a single fragment of another unidentified land snail.

The small residue (0.7 kg) was mostly chalk (to 60 mm) and lumps of concreted sediment (to 25 mm), with a little charcoal (to 20 mm), some bone, a few pieces of coal (to 6 mm), ?mineralised plant material, and a few unidentified fragments of snail shell. Subjectively, the lumps of concreted sediment appeared to be faecal (this was supported by the acid etching noted on the recovered bones, see below), and a 'squash' subsample from this material was examined but no eggs of intestinal parasitic nematodes were seen.

This sample produced a small assemblage of bone, of variable preservation, which showed similarities with the assemblages recovered from samples 16, 17 and 18 (Context 1216). Acid etching was prevalent and had almost completely destroyed a caprovid third phalanx. Again, it seems likely that these remains derived from faeces. Caprovid phalanges, several fish bones (including flatfish and gadid remains) and a small mammal vertebra were noted, however, most fragments remained unidentified; all were less than 20 mm in any dimension.

Context 1242 [deposit from oven]

Sample 22/T2 (10.6 kg processed to 300 microns with washover; no unprocessed sediment remains)

Moist, mid grey-brown, soft to slightly sticky (working more or less plastic, rubs brown), slightly silty clay. Mortar/plaster and charcoal were present, while rotted brick/tile was abundant.

The washover (about 15 ml) of charred material was mainly oat grains—though only a few and mostly fragments. Where more complete, the grains usually showed evidence of some germination in the form of short coleoptiles; there were some detached coleoptiles presumably also from oat. There were numerous *Cecilioides acicula* present (50 or more) as well as some unidentified snail shell fragments, two *Vallonia excentrica* and a single *Vertigo pygmaea*.

The medium-sized residue (3.4 kg) consisted of roughly equal proportions of sand and stones with a large amount of brick/tile or burnt daub. Cinders, charcoal, charred grains and fragments of land snail shell were also present.

Twenty-five fragmentary or whole oat (*Avena*, with some evidence of sprouting) grains, one unusually long and narrow barley, three wheat (*Triticum*) and one brome (*Bromus*), with a total weight of 168 mg, were submitted for radiocarbon dating. They returned a 2-sigma calibrated date of AD 870 to 1010 (lab number: Beta – 189171).

Context 1244** [deposit from oven]

Sample 23/BS (15 litres processed to 1 mm with 300 micron washover; approximately 5 litres of unprocessed sediment remain)

Moist, mid grey-brown, crumbly (working soft), clay silt. Stones (2 to 20 mm), fine charcoal and occasional charred grains were present.

The very small washover (approximately 30 ml) was mostly charcoal and charred grains, with many *Cecilioides acicula* and a few fragments of other unidentified snail shell. The grain was rather variable in its state of preservation but there were many fragments and rather puffed specimens. Wheat, oats, barley and one ?rye (*Secale cereale* L.) grain were noted, the oats being usually rather shrunken-grooved in appearance.

The residue (1.4 kg) was mostly of baked clay/daub (to 30 mm, presumably part of the oven lining), with some chalk (to 35 mm) and other stone (including oolitic limestone to 60 mm and a little flint to 20 mm). There was also a trace of unidentified snail shell, a little charcoal (to 8 mm), and an occasional charred grain.

Eight bone fragments were recovered from this sample. Only a common shrew (*Sorex araneus* L.) humerus could be identified and this was probably intrusive and

of modern origin. The other fragments were poorly preserved, being rather eroded and battered in appearance.

Context 1245 [deposit from oven]

Sample 24/T2 (2 kg processed to 300 microns with washover; no unprocessed sediment remains)

Moist, mid grey-brown, crumbly to slightly sticky (working more or less plastic, rubs brown), slightly stony, slightly silty clay. Stones (2 to 20 mm), ?rotted brick/tile and ?charcoal were present.

The washover (about 30 ml) was of charred plant remains and a few snails; the former mainly charred oats, including some long-coleoptiled sprouted specimens in a moderately good state of preservation. Bread wheat and barley not showing evidence of germination were also present, as were some small *Vicia* seeds. There were also some detached coleoptiles, presumably from oats. The fine fraction consisted mainly of small broken grain fragments (probably all oat), with detached coleoptiles and a few charred weed seeds. The snails were, once again, mostly *Cecilioides acicula* (40 or more) or represented by unidentified shell fragments (~10). The identifiable remains were restricted to three *Vallonia excentrica* and single representatives of *Cochlicopa ?lubrica* and *Trichia hispida*.

The small residue (0.22 kg) consisted of stones and a little sand. Brick/tile, a few further charred grains and land snail shell fragments were also present.

Thirty oat grains (296 mg) were submitted for radiocarbon dating. They returned a 2-sigma calibrated date of AD 670 to 870 (Lab number: Beta –189172).

Context 1246 [floor of oven]

Sample 26/T2 (4.3 kg processed to 300 microns with washover; no unprocessed sediment remains)

Moist, mid brown, crumbly to brittle in places (working soft and slightly sticky), slightly clay sandy silt. Some lumps seem baked or indurated making them brittle. Stones (2 to 6 mm) were present.

There was a tiny washover (~1 ml) of a very little fine charred material, *Cecilioides acicula* shells (~15), *Vallonia excentrica* (2) and a single fragment of oat.

The small residue (1 kg) consisted of stones, with a little sand. Slag or iron ore, daub or burnt clay and charred grains were also present.

Context 1271 [deposit from oven]

Sample 27/T2 (13.5 kg processed to 300 microns with washover; no unprocessed sediment remains)

Moist, mid grey-brown to mid to dark grey-brown, crumbly (working more or less plastic), slightly silty clay. Stones (2 to 20 mm) and ?coal/?charcoal (to 1 mm) were present.

There was a very small washover (of only a few ml) of a little charred material, including oat, barley and unidentifiable cereal grains, a few weed seeds, and some land snails. The last were mostly *Cecilioides acicula* (20+) and unidentified shell fragments (~10), with *Carychium tridentatum* (6), *Vallonia excentrica* (1), *Trichia hispida* (1) and a clausilid apex fragment (probably of *Clausilia bidentata*).

The medium-sized residue (2.9 kg) contained stones with a little sand. Traces of charcoal were also present, together with a small assemblage of bone (17 fragments). The latter were rather poorly preserved and included both mammal and bird bone but none could be identified to species level.

Five fragments of oat and one barley grain (total weight 35 mg) were submitted for radiocarbon dating. They returned a 2 sigma calibration date of AD 690 to 890 (Lab number : Beta – 189173).

Context 1276 [deposit from oven]

Sample 25/T2 (1.1 kg processed to 300 microns with washover; no unprocessed sediment remains)

Moist, mid grey-brown, brittle to crumbly, (working more or less plastic), slightly silty clay, with patches of dark grey and patches of light-orange brown clay. Charcoal or ash lumps were present.

The tiny washover (a few ml) contained many *Cecilioides acicula* (50 or more), traces of oat grains, cereal coleoptile and charred weed seeds, and a single amphibian vertebra.

The small residue (0.92 kg) contained stones and some sand. Pottery or burnt clay, further charred grains and fragments of unidentified land snail shell were all noted.

Six fragments of oat and one barley grain (total weight 39 mg) were submitted for radiocarbon dating. They returned a 2-sigma calibrated date of AD 700 to 900 (lab number: Beta –189174).

Discussion

Wawne – OSA02EX02

Plant remains—even of wood charcoal—were generally very sparse in these deposits, and no material was ever scored with an abundance greater than 1 (a trace) except for the highly fragmented grass/cereal culm debris in one of the samples from the late medieval crewyard/building floor (Context 1220) and oat grains in a charcoal-rich lens (1100). Certainly charred material that perhaps originated in straw or animal feed was present in the floor deposits and the presence in these deposits also of traces of plants probably derived from charred peat or turves is consistent with ash from domestic fires, although debris from the burning of structural material (e.g. in a roof) cannot be discounted. The ditch fill (1209) yielded a few uncharred remains of plants likely to be found in or by such a water-retaining feature and these may be ancient (though marked ‘?modern’ in Table 2). The plant remains probably warrant no further comment other than to observe that the cereals present were wheat, barley and oats, and that the first of these consisted in large part of typically short and square bread/club wheat. No chaff was noted. All of the remains seem to be consistent with the dating.

Two of the deposits from this site (Contexts 1139 and 1209) gave small snail assemblages of some interpretative value. Both were dominated by freshwater taxa. Context 1139 interpreted as either a soil horizon or alluvium seems almost certain to be the latter, given the many freshwater planorbids recovered from it. Similarly, the primary ditch fill 1209 contained freshwater planorbid snail shell fragments strongly suggesting aquatic deposition. *Daphnia ephippia* were also identified in Context 1209, suggesting that ditch 1202 might not have contained water on a permanent basis.

Elloughton – OSA02EX08

The late Roman deposits at this site yielded very few plant remains, though the sample from pit fill 1111 contained traces of both

free-threshing and glume wheats, the latter including tentatively identified grains of spelt and the characteristic glume-bases and spikelet forks of this species. This sample also contained a few traces of material which might have originated in burnt peat or turves, very typically for deposits of Romano-British date in South East Yorkshire (cf. data from various sites along the BP Teesside-Sandsend Ethylene Pipeline discussed by Hall 2003).

The deposits from the tentatively identified Anglo-Saxon latrine gave the only preservation of plant material by mineral-replacement for this group of samples. Though there were only a very few remains, the corncockle and apple seed material is typical of the kinds of plants likely to have been deposited with human faeces.

The Anglo-Saxon oven, on the other hand, gave rather more substantial evidence in support of the nature of the feature, and for the material being dried. For the most part, the grain was oats, the small amounts of other cereals present perhaps representing other, minor, grain drying events. The oats generally gave evidence of having been charred whilst in the process of germinating. Grains with sprouts were regularly observed, and detached coleoptiles (sprouts), presumably mainly of oats, were seen in the finer fractions. The sprouted grain, whilst it may merely indicate the result of an attempt to ameliorate the effects of a wet harvest or poor storage is also consistent with the preparation of malt for which oats were, apparently, often used in the past, at least for the post-Roman period (cf. Campbell in prep.). It may be compared with the evidence from the region for sprouted grain (in this case barley) from a single (presumably Anglo-Saxon) sample from West Heslerton, North Yorkshire, mentioned by Carruthers and Hunter (2001) and with a 10th century deposit from a site in Lawrence Street, York (Kenward *et al.* 2004), where barley and oats were both important.

Several of the deposits from this site (notably Contexts 1020, 1107, 1111, 1173 and 1271)

gave small snail assemblages of some interpretative value. In all cases the remains of the burrowing land snail *Cecilioides acicula* were present in fairly large (sometimes very large) numbers and these are most likely intrusive to the deposits. Where only a few other snail remains (Contexts 1071, 1077, 1167, 1173, 1242, 1245 and 1246) were present these were generally indicative of rather exposed, lightly vegetated areas (e.g. calcareous short-turfed grassland). Some of the larger (though still small) snail assemblages (Contexts 1020, 1111 and 1271) suggested a more varied habitat, still perhaps largely exposed and lightly vegetated but with hints of greater cover/moisture (from shade/moisture loving taxa such as *Carychium* and *Discus rotundatus*). The assemblage from Context 1020 may reflect an active community exploiting the modified environment of the ditch—the *Carychium* present perhaps suggesting longer grass growth in the cut and the *D. rotundatus* moist ground litter and the shade offered by the ditch. These taxa may also have been introduced by disposal of vegetation from further afield, however. The *Carychium* and other snails in the oven deposit (Context 1271) may have been introduced along with kindling, for example.

Similar (though rather larger) snail assemblages have been recorded from other nearby sites (e.g. Melton, Carrott *et al.* 1999; Carrott 2002, and indeed the OSA watching brief site at Elloughton, OSA01WB33, Hall *et al.* 2002 and presented in brief in Appendix 3). The snail assemblages reported here (though small) add valuable data to our knowledge of the late Iron Age/Romano-British and Anglo-Saxon landscape of the Yorkshire Wolds.

With the exception of the material from pit 1221, the putative late Anglo-Saxon latrine, few vertebrate remains were recovered from the samples from this site. The fills, Contexts 1216 and 1220, of the latrine produced an assemblage that was characterised by small fragments (most being less than 20 mm in maximum dimension), some (mainly the

mammal bones) of which had been damaged by acid etching. These remains were predominantly pig terminal limb elements, e.g. phalanges, metapodial fragments and other small bones, such as, carpals and tarsals, although some caprovid phalanges were also identified. Damage caused by acid etching is frequently encountered on bones recovered from deposits that derive from faecal material or have a component originating from such matter. The content of bones that appear to have been eaten and derive from faecal material strongly supports the tentative archaeological interpretation of this feature as a latrine pit. Additionally, some of the fish vertebrae recovered had a 'crushed' appearance consistent with their having been eaten.

Although 'squash' subsamples on the concretions from these 'latrine' deposits did not reveal any eggs of intestinal parasites (indeed, all of the 'squash' subsamples examined were barren of such remains) this does not exclude the possibility of their being faecal in origin. Overall, the weight of evidence from the mineralised plant remains and the characteristic damage to some of the vertebrate remains strongly supports the use of this pit for the disposal of faecal waste (though it seems also to have received more general refuse rather than being exclusively used as a latrine or cess pit, see below).

It is difficult to determine whether the faecal matter is of human or animal origin. On the basis of the size of the fragments and that some of the elements had been ingested whole (e.g. sheep and pig phalanges), it seems more likely to be the remains of dog coprolites but human waste cannot be ruled out (particularly given the supporting evidence from the plant remains). It is apparent from the other small bones in the samples that refuse of a domestic nature, not associated with cess, must also have been present in these deposits. Comments regarding the relative size of this component cannot be made without information regarding the hand-collected

vertebrate remains (if any), which were not submitted to PRS.

The fish assemblage recovered from the samples, although quite small, was dominated by estuarine/migratory species, such as eel, smelt and flatfish, all of which could have been caught by traps or nets in the nearby Humber estuary. Some gadid remains, including cod and whiting, were also present, mainly representing small individuals. It is unlikely that these fish were imported, as smaller gadids are commonly found in inshore waters and could easily have been caught locally. This pattern of fish exploitation fits well with other Anglo-Saxon assemblages in the region. For example, seven taxa dominated the large Anglo-Saxon assemblage from Flixborough, North Lincolnshire (Dobney *et al.* in prep.) and all of these were migratory, with eel, smelt, and flatfish being the most abundant species represented. The evidence from the fish bones was consistent with local use of the Trent and the Humber. There was little indication from either site of long distance trade or North Sea fishing.

Archive

The remains reported here are currently stored by Palaeoecology Research Services (Unit 8, Dabble Duck Industrial Estate, Shildon, County Durham), along with paper and electronic records pertaining to the work described here. Artefacts sorted from the samples were returned to the excavator.

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Table 1. Complete list of plant taxa recorded from deposits from two sites along the Transco West Hull reinforcement gas pipeline, East Riding of Yorkshire (OSA02EX02 and OSA02EX08). Material from site OSA02EX08 has been divided into Roman (R) and Anglo-Saxon (S). Taxa preserved by waterlogging which are thought to be of recent origin are marked * and those uncharred remains which may be ancient are marked '\$'. Taxonomic order and nomenclature follow Tutin et al. (1964-80). The last two columns show the numbers of contexts for each site in which the various remains were recorded.

Taxon	Parts	..02		..08	
			R	S	
Number of contexts		4	3	6	
<i>Salix/Populus</i> (willow/poplar/aspens)	charcoal fragments	-	-	1	
<i>Alnus/Corylus</i> (alder/hazel)	charcoal fragments	1	-	1	
<i>Quercus</i> sp(p). (?oak)	charcoal fragments	1+?1	-	-	
* <i>Urtica dioica</i> L. (stinging nettle)	uncharred achenes	1	-	-	
<i>Polygonum aviculare</i> agg. (knotgrass)	charred fruits	2	-	-	
<i>P. persicaria</i> L. (persicaria/red shank)	charred fruits	-	-	1	
<i>Bilderdykia convolvulus</i> (L.) Dumort. (black bindweed)	charred fruits	-	-	1	
<i>Rumex</i> sp(p). (docks)	charred fruits	3	-	-	
* <i>Chenopodium album</i> L. (fat hen)	uncharred seeds	1	-	2	
<i>C. album</i>	charred seeds	-	-	1	
* <i>Atriplex</i> sp(p). (oraches)	uncharred seeds	2	3	1	
	charred seeds	-	-	1	
* <i>Stellaria media</i> (L.) Vill. (chickweed)	uncharred seeds	1	-	-	
<i>S. media</i> (L.) Vill.	charred seeds	1	-	-	
* <i>S. cf. neglecta</i> Weihe in Bluff & Fingerh. (?greater chickweed)	uncharred seeds	1	-	-	
<i>Agrostemma githago</i> L. (corncockle)	mineralised seeds	-	-	1	
<i>Silene alba</i> (Miller) Krause in Sturm (white campion)	charred seeds	-	-	1	
\$ <i>Ranunculus sardous</i> Crantz (hairy buttercup)	uncharred achenes	1	-	-	
\$ <i>R. flammula</i> L. (lesser spearwort)	uncharred achenes	1	-	-	
	charred achenes	1	-	1	
\$ <i>Ranunculus</i> Subgenus <i>Batrachium</i>	uncharred achenes	1	-	-	
* <i>Fumaria</i> sp(p). (fumitories)	uncharred seeds	-	-	3	
	charred seeds	-	1	-	
<i>Brassica</i> sp./ <i>Sinapis arvensis</i> L. (brassica/charlock)	charred cotyledons	-	-	2	
<i>Brassica</i> sp(p). (cabbages, etc.)	charred seeds	-	-	1	
* <i>Rubus idaeus</i> L. (raspberry)	uncharred seeds	2	-	-	
cf. Pomoideae (<i>Crataegus/Malus/Pyrus/Sorbus</i>)	charcoal fragments	-	-	1	
<i>Malus sylvestris</i> Miller (crab apple)	mineralised seeds/embryos	-	-	1	
Leguminosae (pea family)	charred seeds	-	-	1	
	charred cotyledons	1	-	1	
<i>Vicia</i> sp(p). (vetches, etc.)	charred seeds	-	-	2	
cf. <i>Pisum sativum</i> L. (pea)	charred seeds	1	-	-	
* <i>Aethusa cynapium</i> L. (fool's parsley)	uncharred mericarps	-	1	-	
cf. <i>Calluna vulgaris</i> (L.) Hull (?heather, ling)	charred root and/or basal twig fragments	-	1	-	
<i>Fraxinus excelsior</i> L. (ash)	charcoal fragments	1	-	-	
<i>Menyanthes trifoliata</i> L. (bogbean)	charred seeds	1	-	-	
<i>Plantago major</i> L. (greater plantain)	charred seeds	-	-	1	
<i>P. cf. media</i> L. (?hoary plantain)	charred seeds	-	1	-	
* <i>Sambucus nigra</i> L. (elder)	uncharred seeds and seed fragments	1	-	-	
	charred achenes	4	-	1	
<i>Anthemis cotula</i> L. (stinking mayweed)	(fused clusters)	1	-	-	
<i>Matricaria maritima</i> L./ <i>M. perforata</i> Mérat (sea/scentless mayweed)	charred achenes	-	-	1	
<i>Lapsana communis</i> L. (nipplewort)	charred achenes	-	-	1	
\$ <i>Juncus bufonius</i> L. (toad rush)	uncharred seeds	3	-	-	

Gramineae (grasses)	charred caryopses	1	-	-
Gramineae/Cerealina (grasses/cereals)	charred culm nodes	1	-	-
	charred culm fragments	3	-	-
Cerealina indet. (cereals)	charred caryopses	1	2	3
	charred coleoptiles	-	-	3
<i>Triticum spelta</i> L. (spelt wheat)	charred glume-bases	-	1	-
	charred spikelet forks	-	1	-
<i>T. cf. spelta</i>	charred caryopses	-	1	-
<i>T. 'aestivo-compactum'</i> (bread/club wheat)	charred caryopses	6	1	1
<i>Triticum</i> sp(p). (wheat)	charred caryopses	1	-	1
cf. <i>Secale cereale</i> L. (?rye)	charred caryopses	-	-	1
<i>Hordeum</i> sp(p). (barley)	charred caryopses	4	1	2
<i>Avena</i> sp(p). (oats)	charred caryopses	4	-	6
<i>Sparganium</i> sp(p). (bur-reeds)	charred fruits	1	-	-
<i>Eleocharis palustris sensu lato</i> (common spike-rush)	uncharred nutlets	1	-	-
	charred nutlets	2	-	-
<i>Cladium mariscus</i> (L.) Pohl (great sedge/saw-sedge)	charred nutlets	2	-	-
<i>Carex</i> sp(p). (sedges)	charred nutlets	2	-	1

Table 2. Lists of plant remains and other components of the washovers from two sites along the Transco West Hull reinforcement gas pipeline, East Riding of Yorkshire (OSA02EX02 and OSA02EX08). Records are listed in alphabetical order. Scores on a four-point semi-quantitative scale of abundance are also shown. Parts recorded may be found in Table 1. Contexts only examined in the evaluation are marked *.

Abbreviations: *ch*—charred; *c/n*—culm nodes; *cole*—coleoptiles (sprouts); *cot*—cotyledons; *fgts*—fragments; *glb*—glume-bases; *inc spr*—includes sprouting grains; *mx*—maximum dimension; *min*—mineral-replaced; *rt-tw*—root/basal twig; *sf*—seed fragments; *spklt*—spikelet.

OSA02EX02

root/rhizome fgts (ch) 1 mx 5 mm

***Context 1100 (charcoal rich lens, late medieval or later), Sample 3/T**

Anthemis cotula (ch)	1
Avena sp(p).	2
Chenopodium album	1 ?modern
Cladium mariscus (ch)	1
Eleocharis palustris sl (ch)	1
Hordeum sp(p).	1
Polygonum aviculare agg. (ch)	1
Ranunculus Subgenus Batrachium	1 ?modern
Ranunculus flammula (ch)	1
Rumex sp(p). (ch)	1
Sambucus nigra	1 ?modern
Triticum aestivo-compactum	1
Triticum sp(p).	1

***Context 1139 (?alluvium, late medieval or later), Sample 5/BS**

Avena sp(p).	1
Hordeum sp(p).	1
Triticum aestivo-compactum	1
charcoal	1 mx 5 mm
coal	1 mx 10 mm
snails	2

***Context 1156 (fill of robber cut, late medieval or later), Sample 11/BS**

Avena sp(p).	1
cf. Pisum sativum	1
Rumex sp(p). (ch)	1
Triticum aestivo-compactum	1
burnt bone fgts	1 mx 5 mm
charcoal	1 mx 15 mm
concreted sediment	1 mx 5 mm
fish bone	1 mx 20 mm
fish scale	1
snails	1

***Context 1156, Sample 11/SPT**

cf. Alnus (charcoal)	1 mx 35 mm
Quercus sp(p). (charcoal)	1 mx 20 mm

***Context 1161 (?floor deposit, late medieval or later), Sample 6/SPT**

Context 1197 (floor of crewyard or building, 13th century), Sample 7/T2

Anthemis cotula (ch)	1
Atriplex sp(p).	1 ?modern
Cenococcum (sclerotia)	1
Fraxinus excelsior (charcoal)	1 mx 10 mm
Gramineae (ch)	1
Gramineae/Cerealialia (ch culm fgts)	1
Juncus bufonius	1 ?modern
Triticum aestivo-compactum	1
amphibian bone	1
bark fgts (ch)	1 mx 5 mm
charcoal	1 mx 5 mm
coal	1 mx 3 mm
root/rhizome fgts (ch)	1 mx 10 mm
root/rootlet fgts (modern)	1
snails	1

Context 1199 (floor of crewyard or building, 13th century), Sample 8/T2

Anthemis cotula (ch)	1
Carex sp(p). (ch)	1
Cladium mariscus (ch)	1 single spec
Eleocharis palustris sl (ch)	1
Hordeum sp(p).	1
Juncus bufonius	1 ?modern
Menyanthes trifoliata (ch)	1
Rubus idaeus	1 ?modern
Rumex sp(p). (ch)	1
Stellaria media	1 ?modern
Stellaria media (ch)	1
Triticum aestivo-compactum	1
charcoal	1 mx 10 mm
coal	1 mx 3 mm
root/rhizome fgts (ch)	1 mx 5 mm
root/rhizome fgts (modern)	1
snails	1

Context 1209 (charcoal-rich deposit in ditch fills, late 14th-mid 15th century), Sample 12/T2

Alnus/Corylus (charcoal)	1 mx 10 mm
Daphnia (ephippia)	1
Gramineae/Cerealialia (ch culm fgts)	1
Juncus bufonius	1 ?modern
cf. Quercus (charcoal)	1 mx 5 mm

Ranunculus flammula	1 ?modern
Ranunculus sardous	1 ?modern
Rubus idaeus	1 ?modern
Sambucus nigra (sf)	1 ?modern
Stellaria cf. neglecta	1 ?modern
Urtica dioica	1 ?modern
amphibian bone	1
beetles	1
charcoal	1 mx 10 mm
coal	1 mx 3 mm
insect cuticle	1
ostracods	1
snails	1

Context 1220 (floor of crewyard or building, 13th century), Sample 15/T2

Anthemis cotula (ch achene cluster)	1
Anthemis cotula (ch)	1
Atriplex sp(p).	1 ?modern
Avena sp(p).	1
Carex sp(p). (ch)	1
Cerealía indet.	1
Eleocharis palustris sl	1
Gramineae/Cerealía (ch c/n)	1
Gramineae/Cerealía (ch culm fgts)	2
Hordeum sp(p).	1
Leguminosae (ch cot)	1 small types
Polygonum aviculare agg. (ch)	1
Sparganium sp(p). (ch)	1
Stellaria sp(p).	1 ?modern
Triticum aestivo-compactum	1
charred organic material	1 mx 5 mm
root/rhizome fgts (ch)	1 mx 10 mm

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Context 1107 (pit fill, mid 3rd-4th century), Sample 6/T2

Atriplex sp(p).	1 ?modern
Cecilioides acicula	2
Cerealía indet.	1 a single fgt
Fumaria sp(p).	1 ?modern
charcoal	1 mx 3 mm
snails	1

Context 1111 (pit fill mid 3rd-4th century), Sample 10/T2

Aethusa cynapium	1 a single
modern fragment	
Atriplex sp(p).	1 ?modern
cf. Calluna vulgaris (ch rt-tw fgts)	1 mx 3 mm
Cecilioides acicula	2
Fumaria sp(p).	1 modern
Fumaria sp(p). (ch)	1
Hordeum sp(p). (inc hulled)	1
Plantago cf. media (ch)	1 single spec

Triticum aestivo-compactum	1
Triticum cf. spelta	1
Triticum spelta (glb)	1
Triticum spelta (spklt forks)	1
bone fgts	1 mx 5 mm
charred ?tuber	1 mx 10 mm
root/rhizome fgts (ch)	1 mx 5 mm
snails	1

Context 1167 (dark material at feet of inhumation, mid 3rd-4th century), Sample 13/T2

Atriplex sp(p).	1 ?modern
Cecilioides acicula	1
Cerealía indet.	1 a single spec
Fumaria sp(p).	1 modern
charcoal	1 mx 5 mm
coal	1 mx 5 mm
root/rootlet fgts (modern)	1
snails	1

Context 1216 (fill in ?latrine, Anglo-Saxon), Sample 16/T2

Alnus/Corylus (charcoal)	1 mx 15 mm
Atriplex sp(p).	1 ?modern
Cecilioides acicula	1
Cerealía indet.	1 a single
fragment	
Chenopodium album	1 ?modern
Fumaria sp(p).	1 modern
Malus sylvestris (min)	1
amphibian bone	1
bone fgts	1 mx 3 mm
charcoal	1 mx 15 mm
coal	1 mx 2 mm
mineralised material	1 mx 2 mm
snails	1

Sample 17/T2

Agrostemma githago (min)	1
Cecilioides acicula	1
cf. Pomoideae (charcoal)	1 mx 15 mm
Salix/Populus sp(p). (charcoal)	1 mx 10 mm
charcoal	1 mx 15 mm
fish bone	1 mx 3 mm
mineralised material	1 mx 2 mm
snails	1

Context 1242 (deposit associated with oven, Anglo-Saxon), Sample 22/T2

Avena sp(p). (inc spr)	1
Cecilioides acicula	1
Cerealía indet. (cole)	1
Chenopodium album	1 ?modern
Fumaria sp(p). (sf)	1 modern
Leguminosae (ch cot)	1 small types

bud-scales	1 modern
coal	1 mx 5 mm
snails	1

Silene alba (ch)	1
bone fgts	1 mx 3 mm
coal	1 mx 3 mm
snails	1

***Context 1244 (deposit associated with oven, Anglo-Saxon), Sample 23/BS**

Atriplex sp(p). (ch)	1
Avena sp(p).	1
Carex sp(p).	1
Cecilioides acicula	1
Fumaria sp(p).	1 ?modern
Hordeum sp(p).	1
Ranunculus flammula (ch)	1
cf. Secale cereale	1
Triticum sp(p).	1
Vicia sp(p).	1 mx 2 mm
snails	1

Context 1276 (deposit associated with oven, Anglo-Saxon), Sample 25/T2

Avena sp(p).	1
Brassica sp./Sinapis arvensis (ch cot)	1
Cecilioides acicula	2
Cerealia indet. (cole)	1
coal	1 mx 3 mm
snails	1

Context 1245 (deposit associated with oven, Anglo-Saxon), Sample 24/T2

Anthemis cotula (ch)	1
Avena sp(p). (inc spr)	2
Bilderdykia convolvulus (ch)	1
Brassica sp(p). (ch)	1 fgts only
Cecilioides acicula	1
Cerealia indet.	2 fgts only
Cerealia indet. (cole)	1
Chenopodium album (ch)	1
Hordeum sp(p).	1
Lapsana communis (ch)	1
Leguminosae	1 small types
Matricaria maritima/perforata (ch)	1
Plantago major (ch)	1
Polygonum persicaria (ch)	1
Triticum aestivo-compactum	1
Vicia sp(p).	2 small types
coal	1 mx 5 mm
snails	1

Context 1246 (deposit associated with oven, Anglo-Saxon), Sample 26/T2

?burnt soil	1 mx 2 mm
Avena sp(p).	1 a single
fragment	
Cecilioides acicula	1
coal	1 mx 2 mm
snails	1

Context 1271 (deposit associated with oven, Anglo-Saxon), Sample 27/T2

Avena sp(p).	1 fgts only
Brassica sp./Sinapis arvensis (ch cot)	1
Cecilioides acicula	1
Cerealia indet.	1
Fumaria sp(p).	1 modern

Table 3. Land snails recovered from washovers on sediment samples from two sites along the Transco West Hull reinforcement gas pipeline, East Riding of Yorkshire (OSA02EX02 and OSA02EX08). Key: CN = context number; SN = sample number; V/Wt = volume/weight of processed sediment; w = volume of washover (ml); U = quantity of unidentified snails/snail shell fragments; f = few (up to 3 individuals); s = some (4 to 20); m = many (21 to 50); v = very many (more than 50). Assessment samples in plain face, main phase samples in bold.

Site	CN	SN	type	V/ Wt	w	<i>Planorbis leucostoma</i> Millet	<i>Planorbis</i> sp. indet.	<i>Carychium ?tridentatum</i> (Risso)	<i>Succineid</i> sp. indet.	<i>Cochlicopa ?lubrica</i> (Müller)	<i>Verrugo pygmaea</i> (Draparnaud)	<i>Pupilla muscorum</i> (L.)	<i>Vallonia ?costata</i> (Müller)	<i>Vallonia (?)excentrica</i> Sterki	<i>Discus rotundatus</i> (Müller)	<i>Oxychilus ?cellarius</i> (Müller)	<i>Cecilioides acicula</i> (Müller)	<i>?Clausilia bidentata</i> (Ström)	<i>Clausilia</i> sp. indet.	<i>Trichia (?)hispidata</i> (L.)	<i>Arianta/Cepaea</i> sp.	U	
OSA02EX02	1139	5	BS	25 l	20	m			s	s				s									
	1156	11	BS	25 l	50																	f	
	1199	8	T2	23.1 kg	<10						1			1								s	
	1209	12	T2	4.6 kg	15		s																
OSA02EX08	1020	1	BS	25 l	30			m		s			s	m	f	s	m		1	m	f	m	
	1071	2	BS	25 l	20							1		s			v			s	1	m	
	1077	9	BS	25 l	~3					1		1					m			2		m	
	1107	6	T2	12.5 kg	1-2							11		6	1		v			3		m	
	1111	10	T2	10.6 kg	45			2			4	1		12	3		v			5		m	
	1167	13	T2	7.5 kg	~3									3			v			8		m	
	1173	8	BS	15 l	15							8					v					s	
	1214	20	BS	8 l	<1												f						
	1216	16	BS	25 l	70													m					f
		16	T2	5.2 kg	20													v					
		17	T2	0.65 kg	20													s					
		18	T	1.7 kg	10													m					
	1220	19	BS	8 l	10												s					1	
	1242	22	T2	10.6 kg	15						1			2			v					s	
	1244	23	BS	15 l	30												m					f	
	1245	24	T2	2 kg	30						1			3			m			1		s	
	1246	26	T2	4.3 kg	~1									2			s						
1271	27	T2	13.5 kg	~3			6						1			m	1		1				
1276	25	T2	1.1 kg	~3												v							

Table 4. Fish remains recovered from sediment samples from the Transco West Hull gas reinforcement pipeline, East Riding of Yorkshire, site OSA02EX08, Context 1216.

Species		No. of fragments
<i>Clupea harengus</i> L.	herring	2
<i>Osmerus eperlanus</i> (L.)	smelt	7
<i>Anguilla anguilla</i> (L.)	eel	42
	three-spined	
<i>Gasterosteus aculeatus</i> L.	stickleback	19
Gadidae	cod family	17
cf. Gadidae	?cod family	1
<i>Merlangius merlangus</i> (L.)	whiting	2
cf. <i>Merlangius merlangus</i> (L.)	?whiting	2
Pleuronectidae	flatfish	16
cf. Pleuronectidae	?flatfish	2
Fish indeterminate		39
Total		149

Appendix 1

Reports on investigation of bronze axes recovered from the Transco West Hull gas reinforcement pipeline interventions.

First Group (March 2001, originally reported as Hall, A. 2001. Notes on the examination of sediment from the sockets of five bronze axes collected along the course of the Transco West Hull Gas Pipeline. *Reports from the EAU, York 2001/19*, 2 pp.)

Materials and methods

Five socketed bronze axes collected from superficial deposits during survey by Onsite Archaeology in advance of a pipeline to the north and west of Kingston-upon-Hull were submitted for examination of the sediment contained within the sockets. In all cases there was a more or less coherent plug of dry clay silt or silty clay which was readily removed with a little gentle prodding with the pointed end of a wooden paintbrush handle. Any further sediment was gently extracted by brushing the walls of the socket. A brief examination of the material was then made under the binocular microscope. The sediment samples were weighed and left to soak overnight in tap water. Each was then disaggregated gently in warm water and sieved to 300 microns. The residue remaining was checked in water under the binocular microscope and notes made concerning inclusions, biological or non-biological.

Results

Notes on the observations are presented in the table below. None of the material appeared to be ancient, though in two cases (SFs 2 and 4) there was some very decayed organic material which may represent traces of wood or packing (though it was not present in a layer lining the interior of the socket but was mixed with the main fill). In view of the context of these finds, it seems very likely that all the sediment found its way into the sockets in recent times.

There is probably little more that can usefully be done to pursue the nature of the minute quantities of amorphous organic matter in axes 2 and 4, but the disaggregated sediments will be dried and retained in case they are required.

Axe	Weight of dry sediment (g)	Notes
SF2	13.3	traces of modern rootlets visible in dry sediment before washing; a few fragments of copper alloy corrosion visible after disaggregation, also some fragments with a brownish colour (and thus probably an organic content); addition of dilute acid led to disaggregation of this material, releasing some ?amorphous organic material and abundant tiny spicules which seemed to be amorphous rather than crystalline
SF3	18.6	some modern rootlets amongst sediment which looks as if it has been loosely but forcibly packed in; traces of ?cinder and charcoal (to 5 mm in maximum dimension) and stones (to 10 mm) in residue
SF4	10.0	a few modern woody and herbaceous root fragments and some modern insect material, plus a small fragment of charcoal (to 2 mm) visible in dry sediment; some brownish material amongst clasts remaining after disaggregation may include amorphous organic material, as indicated by examination of a subsample disaggregated in dilute acid on a glass slide
SF5	36.9	stones (to 15 mm) amongst sediment examined dry before washing, along with modern rootlets and modern straw culm; whole plug appears packed in loosely (as if soil was forced into cavity); on disaggregation there were traces of coal (to 2 mm, ?from drift) and charred and partly-charred modern cereal straw
SF 9	14	modern straw visible, together with some modern rootlets; traces of ?cinders and ?burnt soil (to 3 mm) on disaggregation

Second Group (August 2003, reported *in litt.*)

A series of bronze axeheads (and one spear) from a site (in Field 35) on the Transco Pipeline were submitted by OnSite Archaeology to check for the presence of plant remains. In all but one case (where there was no socket), sediment in the form of dried, indurated clay was removed from the sockets and soaked in water for a few days. Subsequently, this was washed onto a 0.3 mm sieve and the residue checked for plant remains and other components. In no case were any ancient remains recovered and most samples contained some 'flaky' clasts of clay that presumably represents inwash of clay sediment into the sockets, indicating that they had not become quickly filled with sediment at the time of their original burial. Most samples contained some flecks of coal, presumably present in the local drift sediment, and (not surprisingly) all contained some fragments of blue copper corrosion. The weights of sediment from the objects were as follows: SF 1—4g; SF 2—27g; SF 3—28g; SF 5—27g; SF 6—26 g; SF 9—26g.

Appendix 2

Notes on samples collected during interventions in Fields 49 and 51.

Field 49

Context 2000 [peat deposit]

Sample 2/T (2 kg sieved to 300 microns with washover)

There was a very small washover of a few ml of organic detritus, mainly very decayed caddis larva cases with moderate numbers of duckweed (*Lemna*) seeds, together indicative of clean standing or gently flowing water. There was also some undisaggregated peaty sediment and traces of decayed wood and some charcoal (both to 5 mm in maximum dimension). The moderate-sized to large residue of about 450 ml consisted of roughly equal volumes of clean quartz sand (with traces of flint gravel to 5 mm) and clasts of peaty sediment which seem most likely to have been redeposited into the sand.

Context 5001 [peaty accumulation]

Sample 5/T (2 kg sieved to 300 microns with washover)

The small washover of about 10-15 ml comprised peaty debris, mainly in the <1mm fraction: there were some modern root fragments and seeds, a trace of decayed wood and charcoal (to 5 mm), and decayed caddis larva cases. The moderate-sized to large residue of about 325 ml consisted of roughly equal volumes of clean quartz sand and clasts of peaty sediment which seem most likely to have been redeposited into the sand; there were traces of chalk (to 10 mm) and flint gravel (to 5 mm).

Context 5006 [pit fill]

Sample 7/T (2 kg sieved to 300 microns with washover)

The very small washover of a few ml in volume consisted of modern roots and a few weed seeds, with a little wood and charcoal (to 5 mm); the small to moderate-sized residue was of clean quartz sand and flint gravel (to 20 mm).

Field 51

Context 2003 [post-hole fill]

Sample 1/T (3 kg sieved to 300 microns with washover)

There was a tiny washover of a few ml of modern roots with traces of insect cuticle and fine (<2 mm) charcoal; the moderate-sized residue of about 500 ml was of clean quartz sand and gravel (to 35mm, including flint to 25 mm).

Comments

The two 'peaty' samples were to be very similar and probably represent the same deposit. They appear to be peat reworked into a fluvial sand and probably do not warrant further examination. The other two samples were effectively barren of identifiable ancient remains.

These deposits do not appear likely to yield useful palaeoenvironmental information from their content of plant and invertebrate remains, though the presence of (presumably reworked) organics in Contexts 2000 and 5001 may be of significance in the overall post-glacial history of the area if placed in a proper stratigraphic context.

Appendix 3

Summary of the assessment results for other sites on the Transco West Hull gas reinforcement pipeline for which no further analysis of the biological remains was undertaken.

OSA02EX04: The site was situated in the River Hull Valley on the edge of the western flood plain (centred on NGR TA 04805 35835). Aerial photography revealed that the site was located within a multi-phase archaeological landscape and approximately 1.5 km north of an Iron Age settlement excavated at Wanlass. All of the encountered deposits were provisionally dated as Iron Age/Romano-British. NB: the radiocarbon date for Context 1101 was obtained post-assessment.

Context 1028 [fill of linear boundary ditch]

Sample 2/BS (25 litres processed to 1 mm with 300 micron washover; approximately 5 litres of unprocessed sediment remain)

Moist, light to mid grey-brown, stiff and slightly sticky (working plastic), clay, with some stones (2 to 20 mm) present.

The tiny washover was void of biological remains as was the residue (of only 0.20 kg) which was composed of stones (2 to 20 mm).

Context 1032 [fill of gully butt end]

Sample 6/BS (25 litres processed to 1 mm with 300 micron washover; approximately 5 litres of unprocessed sediment remain)

Moist, light to mid grey-brown, stiff to crumbly (working plastic), very slightly sandy clay, with some stones (2 to 60 mm) present.

The tiny washover was of a few sand grains.

The very small residue (0.18 kg) was of stones (2 to 30 mm) and a little sand.

OSA02EX05: The site was situated within an extensive multi-period (primarily Bronze Age and Iron Age) archaeological landscape (centred on NGR SE 98716 32141). All of the encountered deposits were provisionally dated as late prehistoric.

Context 1003 [fill of linear gully]

Sample 2/T (1 kg processed to 300 microns with washover; approximately 3 litres of unprocessed sediment remain)

Just moist, light grey-brown, crumbly to unconsolidated (working sticky then plastic when wetted), slightly sandy clay. Stones (mostly chalk, 2 to 60 mm) and modern rootlets were present in the sample.

The very small washover (of a few ml) consisted of a few modern roots, modern weed seeds, and traces fine charcoal (to 2 mm). At east one modern earthworm egg capsule was also noted.

Context 1079 [fill of a built hearth]

Sample 13/BS (20 litres processed to 1 mm with 300 micron washover; approximately 10 litres of unprocessed sediment remain)

Waterlogged, mid grey-brown, unconsolidated to slightly sticky (working more or less soft), slightly sandy clay, with some stones (2 to 60 mm) present.

The very small washover was mostly of small (to 8 mm) fragments of charcoal and modern rootlets. Two charred seeds and a single unidentified land snail fragment were also noted.

The large (4.25 kg) residue was of stones (2 to 80 mm) and a little sand, with a few fragments of very rotted charcoal (to 12 mm).

Context 1101 [fill of a shallow square pit 1102 situated within a U-shaped enclosure]

Cattle bone (approximately 518 g), from a partially articulated skeleton, from this deposit was submitted for radiometric dating. The 2-sigma calibrated date returned was AD 1640 to 1680 and AD 1730 to 1810 and AD 1930 to 1950 (lab number: Beta – 192254).

Context 1012 [pit fill]

Sample 5/T (1 kg processed to 300 microns with washover; approximately 3 litres of unprocessed sediment remain)

Just moist, mottled light brown and light to mid grey-brown, crumbly to unconsolidated (working sticky then plastic when wetted), ?slightly sandy clay, with some stones (2 to 6 mm) and a trace of modern rootlets.

There was a small washover comprising a few ml of modern roots and some charcoal (to 10 mm), amongst which were a few fragments of charred hazel (*Corylus avellana* L.) nutshell and a very few poorly preserved

cereal grains (barley and wheat) and traces of charred weed seeds.

OSA02EX07: The site was situated within an extensive multi-period (primarily Bronze Age and Iron Age) archaeological landscape centred on Howe Hill (NGR SE 98100 31382) on the Yorkshire Wolds Tops. All of the encountered deposits were provisionally dated as late prehistoric.

Context 1060 [pit fill]

Sample 15/BS (8 litres processed to 1 mm with 300 micron washover; approximately 2 litres of unprocessed sediment remain)

Just moist, light to mid grey-brown, crumbly (working more or less plastic), clay with abundant chalk and flint fragments (2 to 60+ mm).

There was no washover from this sample and the very small residue (0.26 kg) was wholly of chalk and flint fragments (2 to 40 mm).

Context 1066 [fill of linear ditch]

Sample 13/BS (8 litres processed to 1 mm with 300 micron washover; approximately 2 litres of unprocessed sediment remain)

Dry, light grey-brown, crumbly to unconsolidated (working sticky when wetted), slightly sandy clay silt, with abundant fragments of chalk and flint (2 to 60 mm).

The tiny washover was mostly of sand grains and small (to 2 mm) lumps of undisaggregated sediment, with a few modern rootlets, fragments of modern cereal stalk, and a single seed (uncharred and presumably also modern). There were also some fragments of snail shell and a few more intact snails. The latter were mostly *Cecilioides acicula* (Müller), a burrowing species and almost certainly intrusive to the deposit, but there was also a single *Pupilla muscorum* (L.), and a fragments of an unidentified clausilid.

The modest residue (1.23 kg) was of chalk and flint (2 to 60 mm) and a little sand.

OSA02WB23: The site was centred on NGR SE 95076 28293. Two samples, from a ?fire pit (in Field 35) and a buried peat horizon (in Field 65), were submitted for an evaluation of their bioarchaeological potential. The encountered deposits could only be dated very broadly to between the late prehistoric and post-medieval periods.

Field 35

Context 1010 [fill of ?fire pit]

Sample 1/T (1 kg sieved to 300 microns with washover; approximately 3 litres of unprocessed sediment remain)

Just moist, mottled light to mid grey-brown, crumbly to unconsolidated (working soft and somewhat plastic), silty clay to clay silt. Stones (2 to 6 mm), fine charcoal (and larger charcoal fragments to 8 mm), and traces of modern rootlets were present.

The moderately large washover of about 50 cm³ was of rather 'silted' charcoal (to 25 mm) including some which was oak (*Quercus*).

The very small residue (0.07 kg) was of small stones (to 8 mm).

Field 65

Context 1004 [buried peat horizon]

Sample 1/T (1 kg sieved to 300 microns with paraffin flotation; approximately 25 litres of unprocessed sediment remain)

The sediment of this sample ranged (across 3 separate tubs) from a moist to wet, fairly well-humified peat with abundant fine and coarse woody/herbaceous detritus and some large (to 30 mm across) pieces of woody ?root, to a moist, varicoloured (from light yellow-brown through shades of grey-brown and grey to mid to dark grey), sticky (working soft), clay silt with abundant organic detritus (as of the first described component). (The processed subsample was taken from the most organically rich tub.)

The very small flots of fine plant detritus contained a few scraps of invertebrate material of which the only identifiable specimen was an elytron of an *Ochthebius* water beetle.

The large residue of about 300 cm³ was a mixture of woody and herbaceous detritus most of the woody part of which appeared to be of alder (and consistent with the formation of this deposit in alder carr), though there were some immature fruits of lime (*Tilia*) indicating the presence of woodland on drier soils nearby. Other woody taxa represented were oak and ?hazel (bud-scales). The only herbaceous taxon identified was gipsywort (*Lycopus europaeus* L.) a species likely to have grown in alder carr; the absence of other herbs perhaps indicates a dense canopy, though such woody

detritus peats of this kind are notable for having low concentrations of fruits and seeds, perhaps a function of the swamping effects of a high input of woody debris. This peat deposit, consisting of wood, bark and other debris, was clearly from an alder carr and adjacent

woodland. The material would be suitable for dating by either AMS (of contained fossils), or standard radiometric dating of a whole-sediment subsample; AMS dating of contained fossils being the preferred option.

OSA01WB33: This site at Elloughton, East Riding of Yorkshire was centred on NGR SE 95076 28293. The site was situated at the bottom of the southern scarp slope (spring line) of the Yorkshire Wolds within an extensive late Iron Age/Romano-British landscape. Washovers and residues from six pre-processed bulk sediment samples from fills of cut features and a corn drier (all provisionally of Iron Age/Romano-British date), were submitted for an evaluation of their bioarchaeological potential.

Context 1002 [tertiary fill of curvi-linear ditch]

Sample 1/BS (8 litres processed to 1 mm with 300 micron washover; approximately 2 litres of unprocessed sediment remain)

Moist, light to mid grey-brown, crumbly to unconsolidated (working plastic), slightly silty clay.

The small washover was principally composed of a fairly diverse suite of snails (and there were some additional individuals of some of the larger taxa in the residue). Most of the taxa present were either characteristic of a dry, calcareous environment with little vegetative cover (e.g. *Vallonia* spp.; *Pupilla muscorum*), or catholic. There were also a few species indicative of rather damper conditions; these included the *Carychium* spp. and *Clausilia ?bidentata*. In addition, two individuals (and a further 6 in the residue) of the dwarf pond snail *Lymnaea truncatula* were present indicating standing, though probably non-permanent, water—this species resists drought by remaining inactive in mud. *L. truncatula* has some potential economic significance in that it is the intermediate host of the liver fluke *Fasciola hepatica* which is a parasite of cattle and sheep, and which will also infect humans.

Context 1011 [posthole fill]

Sample 2/BS (8 litres processed to 1 mm with 300 micron washover; approximately 2 litres of unprocessed sediment remain)

Moist, light to mid grey-brown, crumbly (working plastic), very slightly silty clay with some modern rootlets.

The washover was of a small land snail assemblage including a few individuals of *Vallonia ?excentrica* and *Trichia ?hispidata*, and some *Cecilioides acicula*. The residue gave further individuals of *T. ?hispidata* and a single *Cepaea/Arianta* sp.

This deposit also produced a very small assemblage of vertebrate remains. The bone was rather battered in appearance; several fragments were burnt and all were less than 25 mm in maximum dimension. Only one (an

amphibian vertebra) of the 21 fragments could be identified.

Context 1039 [fill of curvi-linear ditch]

Sample 4/BS (25 litres processed to 1 mm with 300 micron washover; approximately 5 litres of unprocessed sediment remain)

Moist, mid grey-brown, stiff (working plastic), clay with fragments of chalk (2 to 60 mm) and snails present.

The washover was of a small land snail assemblage dominated by *Discus rotundatus* (at least 44 individuals). There were also indicators of dry exposed places (e.g. *Vallonia* spp. and *Pupilla muscorum*) but the predominance of *D. rotundatus*, together with some other taxa preferring damper/more shaded habitats (*Clausilia bidentata*), suggests at least some denser cover or ground litter—perhaps from vegetation growing within the ditch, or from an adjacent hedge.

A very fragmented and rather poorly preserved assemblage of bone was recovered from this deposit. In many cases, the surface of the bone had completely eroded away or showed a very battered appearance. Many fragments were less than 25 mm in maximum dimension and extensive damage from fresh breakage was noted. The bulk of the identified remains were of dog, all representing the same individual. Fragments representing the head (mandibles and maxilla), limbs (scapula, tibia, metapodials, calcaneum, carpals/tarsals and phalanges) and body (vertebrae and ribs) were recorded. No knife or chop marks were observed. A number of caprovid fragments were also noted. These were mainly cranium fragments, several extremely eroded shaft and phalanx fragments and a scapula. None of the fragments recovered from this deposit were measurable.

Context 1048 [fill of corn drier]

Sample 17/BS (15 litres processed to 1 mm with 300 micron washover; approximately 5 litres of unprocessed sediment remain)

Moist, light to mid yellow-brown, crumbly to unconsolidated (working soft and somewhat plastic) silty clay with abundant chalk fragments (2 to 60+ mm).

There was a small washover of about 20 cm³ of charred cereal grain and snails, the latter mainly *Cecilioides acicula* (probably intrusive) with small numbers of a few other taxa (including *Vallonia ?excentrica*, *Cochlicopa ?lubrica*, and *Trichia ?hispida*).

The grains appeared to consist mainly of hexaploid wheat with a little ?spelt (*Triticum* cf. *spelta* L.) chaff and two specimens where pairs of ?spelt grain were still associated in their compound spikelet. There were also a few grains of oats (*Avena*) and barley (*Hordeum*). Many grains were present as fragments and most of the charred material bore some mineral sediment on its outer surfaces. Some of the ?spelt grains gave evidence for germination, with coleoptiles emerging. There were a few uncharred weed seeds which seem likely to be of recent origin.

Context 1060 [basal fill of pit]

Sample 8/BS (15 litres processed to 1 mm with 300 micron washover; approximately 5 litres of unprocessed sediment remain)

Moist, light to mid grey-brown, crumbly to unconsolidated (working soft and somewhat plastic) silty clay with abundant chalk fragments (2 to 60+ mm).

No washover was obtained from this sample.

Context 1119 [primary fill of corn drier]

Sample 15/BS (40 litres processed to 1 mm with 300 micron washover; approximately 10 litres of unprocessed sediment remain)

Almost dry, mid to dark grey-brown, crumbly to unconsolidated, silty clay with some lumps of indurated light brown clay (to 30 mm). Chalk fragments (2 to 60+ mm) were abundant, and charcoal and charred grain were present, in the sample.

The washover consisted of about 275 cm³ of charcoal (to 30 mm in maximum dimension) and charred grains, with abundant *Cecilioides acicula* and some other snails (including *Trichia ?hispida*, *Aegopinella ?nitidula* and *Pupilla muscorum*). As in the sample from Context 1048, there were some spelt spikelets with both grains

still associated, together with quantities of spelt glumes and spikelet forks – the material clearly represents partly-threshed grain (unless all of the glume-less grains had fallen from their hulls during processing). Again, most of the material was rather ‘silted’ and many of the grains were slightly damaged, though on the whole preservation was rather good. Amongst the abundant wheat grains were a few hulled grains of barley and both wheat and barley often gave evidence of germination with coleoptiles running to about one-third or one-half the length of the caryopsis (and some grains were shrivelled as might be expected where germination had begun prior to charring). The few charred weed seeds were all from the larger-seeded cornfield types, and there were again a few uncharred seeds which were probably modern.

Context 1125 [grave fill containing skeleton 1126]

Sample 21/P (microfossil ‘squash’ only; approximately 10 litres of unprocessed sediment remain)

Dry, light to mid grey-brown, crumbly to unconsolidated, slightly silty clay with abundant chalk fragments (2 to 60 mm).

The microfossil ‘squash’ was wholly inorganic; in particular, no eggs of intestinal parasitic nematodes were seen.

Discussion

The two samples yielding plant remains gave evidence consistent with the archaeological interpretation of the contexts as being fills of a corn drier. The presence of spelt wheat at this period is not surprising, though the possibility that another kind of hulled wheat (emmer, *T. dicoccon* Schrank) was present should not be discounted without undertaking some measurement of the chaff (the material from Context 1119 is eminently suitable for this).

Overall, the snail assemblages were typical of an area of short-turfed, calcareous grassland, with variations in the level of cover—from generally very exposed through to moderately well-shaded and damp in, and/or near to, the ditches—and very similar to those recorded from other nearby sites (e.g. Melton, Carrott *et al.* 1999; Carrott 2002). The assemblage from Context 1002 (Sample 1) reflected these conditions but also indicated an area with, at least temporary, standing water within the ditch.