Warren Field
Horkstow
North Lincolnshire

Archaeological Trial Trenching

Summary

An archaeological evaluation comprising the excavation of five trial trenches was undertaken at the proposed location of a single wind turbine and access track at Warren Field, Horkstow, North Lincolnshire. Archaeological features were identified in two trenches (T4 and T5) and consisted of one gully, four ditches and two possible post-holes. Pottery and animal bone fragments were recovered from these features. The pottery suggests the majority of the features were of 1st to 2nd-century Romano-British date, with a single ditch dated to the late 3rd century. Mollusc remains indicate open grassland, perhaps for pasture, as well as a need for seasonal drainage and the likely presence of woodland, scrub and/or hedgerows. The remaining three trenches were devoid of archaeological features or deposits.

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Report Information

Client:	ECUS Ltd
Address:	3 Blackburn Road, Sheffield, S61 2DW
Report Type:	Archaeological Trial Trenching
Location:	Warren Field, Horkstow
County:	North Lincolnshire
Grid Reference:	SE 9811 1975
Period(s) of activity represented:	Iron Age / Romano-British
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Date of fieldwork:	October 2012
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Project Management:	Mitchell Pollington BA MA
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1 Introduction

Archaeological Services WYAS was commissioned by ECUS Ltd to carry out a programme of trial trenching at Warren Field, Horkstow, North Lincolnshire. The work was undertaken in accordance with guidance contained within the National Planning Policy Framework (2012) and in line with current best practice, in advance of the determination of a planning application for the installation of a single wind turbine and access track. The fieldwork was carried out between October 1st and October 3rd 2012.

Site location and topography

Horkstow is located approximately 2.8km to the south of South Ferriby (see Fig. 1) and 21km east of Scunthorpe. The site is located to the north of the village, and to the west of the B1204 and lies at about 10m above Ordnance Datum (aOD). The proposed location of the turbine is close to the northern boundary of Warren Field, in a low lying area, with the route of the proposed access track orientated north-south across the field.

Soils, geology and land-use

The underlying bedrock comprises Ampthill Clay mudstone which is overlain by glaciolacustrine superficial deposits of sands and gravels (BGS 2012). The soils are classified in the Wallasea 1 association, characterised as deep, stone-less, non-calcareous and calcareous, clays (SSEW 1983). The proposed development site is currently used for arable cultivation.

2 Archaeological and Historical Background

It is likely that during the Prehistoric and Roman period the Humber and Ancholme river valleys comprised low-lying wetland and marsh, not ideal for occupation (May 1996). The proposed development site, however, is located upon a slight rise at the foot of the Lincolnshire Wolds chalk escarpment making it more suitable for occupation. The proposed development site is located within an extensive landscape of cropmarks that appears to form a complex of enclosures and trackways likely to represent substantial settlement remains possibly Iron Age or Roman in date.

The cropmarks located directly to the east of the proposed development site appear to include rectangular enclosures laid out in a north-south alignment, consistent with an Iron Age or Romano-British date. The cropmarks may also be associated with a Roman villa site located less than 700m to the south-east of the proposed development site (Scheduled Monument No. 63618). Finds from this villa include a large 4th-century mosaic depicting chariot racing, which was excavated by the British Museum in 1927, and a further geometric pavement 4.6m wide and at least 7m in length.

A geophysical survey of the site (Sykes and Harrison 2012) covered a 2 hectare area including the proposed turbine base and access track, but did not identify any anomalies of obvious

archaeological potential. The survey did, however, identify anomalies that were caused by recent agricultural activity, especially the comprehensive modern drainage scheme that covers the site.

3 Aims and Objectives

The aims and objectives of the archaeological trial trenching were to gather sufficient information to establish the presence/absence, character, extent, state of preservation and date of any archaeological remains within the proposed development site, and to inform further strategies should they be necessary.

The specific aims, therefore, were to:

- locate, record and characterise any surviving below ground archaeological remains;
- provide an assessment of the potential significance of any identified archaeological remains in a local, regional and (if relevant) national context;
- to produce a comprehensive site archive and report.

4 Methodology

All excavation was undertaken in accordance with IfA guidelines *Standard and Guidance for Archaeological Excavation* (2008a), and in compliance with English Heritage MoRPHE *PPN3: Archaeological Excavation* (2008). A site-specific Written Scheme of Investigation was also followed.

A total of five trenches were excavated covering an area of 250m². The trenches were positioned to evaluate apparently 'blank' areas and several cropmark features identified across the site.

The stripping of the trenches was monitored by a qualified and experienced archaeologist, and was carried out using a 360º mechanical excavator equipped with a toothless ditching bucket. Stripping took place in level spits to the top of the first archaeological horizon or undisturbed natural. A sufficient sample of all exposed archaeological features was excavated with the majority of the slots at least 1m in length.

All the archaeological features were planned and then manually excavated by hand in a stratigraphic manner. A full written, drawn and photographic record of the archaeological features was made. The excavation limits and the archaeology were surveyed using electronic survey equipment with larger scale hand drawn plans of features at 1:50. Sections were drawn at 1:10 or 1:20 where appropriate. All sections, plans and elevations include spot-heights related to Ordnance Datum in metres as correct to two decimal places and survey tie-

in information was undertaken during the course of the evaluation and was fixed in relation to nearby permanent structures and roads and to the National Grid.

All artefacts recovered were retained and removed from the site for assessment and analysis. Finds material has been stored in a controlled environment, where appropriate. All artefacts recovered have been retained, cleaned, labelled and stored as detailed in the guidelines laid out in the IfA Guidelines for Finds Work (IfA 2008b).

A soil-sampling programme was undertaken during the course of the investigation for the identification and recovery of carbonised and waterlogged remains, vertebrate remains, molluscs and small artefactual material. Soil samples of up to 40 litres were taken from the primary fill of each feature or other suitable deposits.

The site archive contains all the information gathered during the archaeological evaluation and is indexed in Appendix 1, and a concordance of contexts, finds and environmental samples is presented in Appendix 2. A copy of the Written Scheme of Investigation is provided in Appendix 3. The archive is currently held by ASWYAS but archive deposition will be arranged following the completion of the evaluation and after consultation with the recipient museum.

5 Results

Summary

A summary of the results from each trench, including trench dimensions, the archaeological features and finds identified, is presented in Table 1. Trenches devoid of archaeological features are summarised in the table below but are not described further.

Stratigraphic model

Dark brown silty sandy topsoil covered the site to an average depth of 0.55m. The subsoil within T1 and T2 was intermittent and localised, but was present across the whole of T3. Within T1-T3 the subsoil was a light yellow-brown silty sandy deposit up to an average of 0.16m in depth. Within T4 and T5 the subsoil was a clear yellow-brown sandy deposit up to an average of 0.25m in depth. Beneath the subsoil, the natural deposits encountered within T1-T3 were grey sand and chalk gravel, where as T4 and T5 contained yellow sand with localised areas of chalk gravel. Across the site, multiple field drains were identified cut into the natural deposits and backfilled with a darker soil. The majority of the field drains correspond with the drainage plans supplied by the landowner, a copy of which is held with the archive.

Table 1. Summary of trenches

Trench	Dimension (m)	Orientation	Depth (m) Average	Topsoil (m) Average	Subsoil (m) Average	Geophysical Survey	Summary of features
1 Plate 1	25m x 2m	N-S	0.42	0.30-0.40	0.00-0.12	Multiple agricultural anomalies	No archaeology
2 Plate 2	25m x 2m	E-W	0.53	0.38	0.15	Multiple agricultural anomalies	No archaeology
3 Plate 3	25m x 2m	N-S	0.60	0.40	0.20	Multiple agricultural anomalies	No archaeology, small discrete area of peat located towards northern end of trench, 0.05m deep when excavated. Natural deposit
4 Plate 4	25m x 2m	N-S	0.63	0.33	0.30	Agricultural anomaly/blank	Two ditches, one gully and two possible post-holes. Romano-British pottery, mainly body sherds but some rim sherds, recovered from all three linear features
5 Plate 7	25m x 2m	N-S	0.57	0.37	0.20	Agricultural anomaly/blank	One ditch, one gully and a modern field drain, cutting the ditch. Romano-British rim sherd recovered from ditch

Trench 4 (See Figs 2 and 3; Plates 4-6)

T4 contained three linear features and two possible post-holes. The features are described from south to north.

Ditch 106 (Fig. 3, S.1; Plate 5) was located 3.85m from the southern end of the trench and was orientated east-west. The ditch was 2.34m wide, 0.70m deep and was V-shaped in profile. A sequence of four fills were identified within the ditch, with the primary fill (105) consisting of a dark grey-black sandy silt with charcoal flecks. Twelve pottery fragments dating to the mid 1st to 2nd centuries AD, including native style coarse wares, and six animal bone fragments consisting of cattle, horse and sheep/goat were recovered from this fill. Deposit 105 was sealed by a 0.04m thick layer of yellow-grey sand (104) from which a single sherd form a samian bowl from eastern Gaul, produced between 150-230 AD, was recovered. The upper fills 103 and 102 were broadly similar, although the lower deposit (103) was slightly darker and contained less chalk fragments. The upper fill 102 produced a mixed group of domestic pottery (34 sherds) that includes samian mortarium and a greyware bowl. This group has been dated to the late 3rd century. A total of fifteen animal bone fragments of either cattle or cattle-sized animals were also recovered from deposit 102. A single piece of

imbrex roof tile recovered from deposit 102 may well belong to, or relate to, structures associated with the Roman villa located to the south-east. Along the northern side of the ditch cut, located within the trench section was a clear layer of chalk rubble (107) 0.12m thick (Plate 5), which was located slightly under deposit 102, upon the natural sand. This suggests that it may be the remnant of bank material that has not been fully removed by ploughing.

Ditch 110 (Fig. 3, S.2) was located just to the north of Ditch 106 and intersected with it. Excavation demonstrated that Ditch 110 had been cut away by Ditch 106. Ditch 110 was 0.76m wide, 0.26m deep and orientated in a north-east to south-west direction. The cut was U-shaped in profile and contained two fills. The upper fill 108 was dark grey silty sand with frequent charcoal flecks from which 35 cattle-sized bone fragments were recovered from the environmental sample (Sample No. 2). This deposit may represent a dump of occupational material in the open gully. The main fill of the ditch (109) was mid-grey silty sand with occasional small chalk fragments, 0.02-0.05m in size.

Post-holes 118 and 120 were clearly visible in plan just to the north of the intersection of Ditches 106 and 110. Both were 0.25m in diameter, although 120 was only partly exposed within the trench. Upon excavation both features were very shallow ranging between 0.03-0.07m in depth. Both would have been located under the possible bank material 107. No finds were recovered from either feature.

Ditch 116 (Fig. 3, S.3; Plate 6) was located 7.60m from the northern end of the trench and was oriented east-west. The ditch was 3.32m wide and 0.68m deep with a broad-based U-shaped profile. A sequence of five fills (111-115) were indentified within the cut. The primary fill (115) was a distinct 0.11m thick dark grey-black sandy silt from which a two animal bone fragments (cattle and horse) were recovered. The slightly organic nature of this deposit suggests it was the accumulation of occupation debris within the open ditch, while the mollusc assemblage recovered from this fill indicates open grassland with the suggestion of woodland/scrub or hedgerow in the vicinity. The remaining fills all appear to have been the product of slow gradual accumulation of the open ditch. Fill 113 contained abundant chalk gravel, seventeen sherds of pottery from a single greyware jar and four animal bone fragments from cattle, horse and pig.

Trench 5 (See Figs 2 and 4; Plates 7 and 8)

T5 contained three linear features: two are archaeological features, with the third a modern field drain.

Gully 122 (Fig. 4, S.7) was located 8.75m from the southern end of the trench and was orientated east-west. The feature had a V-shaped profile with a slightly irregular southern side. A single fill of grey-brown silty sand, with frequent chalk gravel inclusions, was recorded. No finds were recovered, but the mollusc assemblage indicates open grassland.

Ditch 128 (Fig. 4, S.8; Plate 8) was located 11m from the southern end of T5 and was oriented north-west to south-east. The ditch intersected with a later feature (124), which

contained within its centre a modern clay field drain. The infill of 124 was highly mixed backfill material which contained elements of redeposited natural and a topsoil like deposit. Ditch 128 was a V-shaped cut with a flat base and slight stepping along the southern side where chalk gravel within the natural protruded. The ditch contained three fills (125-127). The primary fill (127) was a thin layer of chalk gravel that will have formed as a result of erosion of the open ditch. Deposit 126 was a brown-grey silty sand with frequent angular chalk gravel inclusions, 0.01m to 0.05m in size, from which a single sherd dating to the mid-1st to mid-2nd century and undiagnostic burnt bone were recovered. The large mollusc assemblage associated with this fill indicates that this feature was used for drainage. The upper fill (125) was a grey-brown sandy deposit with frequent chalk inclusions. No finds were recovered from this deposit.

6 Artefact Record

Pottery by Ian Rowlandson

Introduction

The pottery has been archived using count and weight as measures according to the guidelines laid down for the minimum archive by *The Study Group for Roman Pottery* (Darling 2004) using the codes developed by the City of Lincoln Archaeological Unit- CLAU (see Darling and Precious *forthcoming*) and the fabric series under development for North Lincolnshire Museum (Rowlandson *forthcoming*). Rim equivalents (RE) have been recorded and an attempt at a 'maximum' vessel estimate has been made following Orton (1975, 31).

Condition

The ceramics presented for assessment total 65 sherds, weighing 0.875kg total RE 0.17. With the exception of the pottery from deposit 102, the majority of the sherds are fresh. The samian mortarium sherd from deposit 102 shows signs of internal use wear.

Dating

The dating summary is tabulated below. With the exception of the mixed group from deposit 102 and the single samian sherd from deposit 104, the majority of the pottery in this assemblage can be dated to the early Roman period.

Table 2. Pottery dating summary

Context	Spot Date	Comments	Sherd	Weight (g)	Total RE%
102	L3+	A mixed group including a fragment from a samian mortarium, a greyware bowl with a bead and flanged rim and a fragment from an imbrex tile.	34	566	4
104	AD150-230	A single fragment from a samian bowl form 31 from East Gaul.	1	35	0
105	M1-2	A small group including 'native tradition' coarse wares.	12	133	1
113	ROM	Fragments from a single greyware jar.	17	54	0
126	M1-M2	Fragments from a large bowl with a wedge shaped rim in a local 'native tradition' fabric.	1	87	12

Fabrics and forms

A limited range of fabrics are present including samian and an oxidised sherd. The remaining sherds are in local reduced coarse wares with the majority in the local GREY fabric group. Also present are coarse grog or shell gritted ‘transitional’ coarse wares that date to the early Roman period.

The range of forms present in this assemblage is limited. Fragments from a samian bowl and mortarium are present along with a greyware bowl with a bead and flange from deposit 102, but most of the sherds are from jars or large bowls. The only diagnostic rim fragment present is from deposit 126; a large native tradition bowl with a rounded wedge shaped rim in the SHGR fabric (cf Rigby and Stead 1976, fig.74.9).

Table 3. Form summary by fabric

Fabric	Fabric group	Fabric details	Sherd	Sherd %	Weight (g)	Weight %	Total RE %
SAMCG	Samian	Central Gaulish	1	1.54%	10	1.14%	0
SAMEG	Samian	East Gaulish	1	1.54%	35	4.00%	0
OX	Oxidised	Misc. oxidized wares	1	1.54%	1	0.11%	0
GFIN	Reduced	Miscellaneous fine grey wares	1	1.54%	3	0.34%	0
GREY	Reduced	Miscellaneous grey wares	39	60.00%	276	31.54%	5
GROG	Reduced	Grog-tempered wares	1	1.54%	14	1.60%	0
IAGR	Reduced	Native tradition/transitional grit-tempered wares	8	12.31%	173	19.77%	0
SFGR	Reduced	South Ferriby Greyware	2	3.08%	31	3.54%	0
IASH	Calcareous	Native tradition shell-tempered	2	3.08%	19	2.17%	0
SHGR	Calcareous	NE Lincs Shell and Grog fabric	8	12.31%	268	30.63%	12
IMB	Tile	Imbrex	1	1.54%	45	5.14%	0

Table 4. Form summary by type

Form	Form Type	Form Description	Sherd	Sherd %	Weight (g)	Weight %	Total RE %
31	Bowl	Samian form- see Webster 1996	1	1.54%	35	4.00%	0
BFB	Bowl	Bead and flange bowl	1	1.54%	13	1.49%	4
BNAT	Bowl-large	Native tradition bowl e.g. D&P No.700	1	1.54%	87	9.94%	12
CLSD	Closed	Form	44	67.69%	376	42.97%	0
JL	Jar	Large	3	4.62%	169	19.31%	0
JBL	Jar/Bowl	Large	1	1.54%	111	12.69%	0
M	Mortaria	Unclassified Form	1	1.54%	10	1.14%	0
-	Unknown	Form uncertain	13	20.00%	74	8.46%	1

Discussion

The pottery present suggests occupation throughout much of the Roman period on this site and there is good evidence from the Horkstow Charioteer mosaic that there was high-status activity in this parish during the 4th century AD. The fragment from an imbrex roofing tile is probably from a roof associated with the known villa complex in this parish. Unfortunately little more can be said about this assemblage, as the small quantity retrieved precludes more detailed discussion. Nevertheless, all of the pottery should be retained and deposited in the relevant museum.

7 Environmental Record

Animal bones by Jane Richardson

In total, 67 animal bone fragments were recovered, 26 during the hand excavation of features and 41 from the subsequent processing of soil samples (Table 5). The number of bone fragments falls well below the minimum reliable sample size of around 500 (with reference to a number of statistical parameters after Van der Veen and Fieller 1982, 296) and any interpretation of them should be treated with caution.

Methodology

Bones were identified to taxa wherever possible, although lower-order categories were also used (e.g. sheep/goat, cattle-sized; Table 5). As the assemblage was small, all fragments were fully recorded. Of the 67 fragments present, only eight were identified as diagnostic zones, here defined as non-reproducible parts.

For age-at-death data, epiphyseal fusion (after Silver 1969) and the eruption and wear of deciduous and permanent check teeth were considered. Bone condition, erosion and fragment size were recorded in order to assess bone preservation, while gnawing, burning and butchery marks were noted to determine bone treatment. Given the fragmented nature of the

assemblage, and its small size, no measureable bones are present. No pathological bones were noted.

Results

The assemblage is of questionable value due to its small size and fragmented nature, but it has survived in good condition with very few eroded surfaces. Butchery marks are limited to two cattle bones, a scapula and humerus, indicative of filleting and dismembering respectively. One cattle bone had been chewed and one undiagnostic bone, burnt.

Cattle, horse, pig, and sheep/goat bones are present. Age data are extremely limited due to the small size of the assemblage, but no neonatal or juvenile animals are indicated. Bones associated with meat-rich parts of the body are present for cattle, and with a butchered scapula and humerus, suggest that this animal was consumed.

Table 5. Animal bone fragments by context

Context	Sample	Cattle	Horse	Pig	Sheep-Goat	Cattle-size	Sheep-size	Undiagnostic	Total
102	-	6				9			15
105	-	1							1
105	1		1		1	3			5
108	2					35			35
109	-					4			4
113	-	1	1	1			1		4
115	-	1	1						2
126	5							1	1
Total		9	3	1	1	51	1	1	67

Environmental samples

All environmental samples taken from the site were processed in their entirety by ASWYAS using a Siraf-style water flotation system with a 300 micron sieve for the flot fraction and a 1mm sieving mesh for the residue fraction. Animal bone fragments were recovered from the residues of samples 1, 2 and 5 and are recorded above. All five samples produced large amounts of modern weeds and seeds, indicating some contamination, but three samples (3, 4 and 5) did produce quantities of land snails (see below).

Molluscs by John Carrott

Three of the ‘flots’ from pre-processed bulk sediment samples (‘GBA’/‘BS’ sensu Dobney *et al*. 1992), each representing a different context, were submitted to Palaeoecology Research Services Ltd for analysis of the mollusc assemblages present. The sediment samples were recorded as of 20+ or 40+ litres and each was processed in its entirety by ASWYAS.

Land and freshwater snails were examined and individuals identified as closely as possible, with reference to published works (chief sources: Cameron 2003; Cameron and Redfern 1976; Ellis 1969; Evans 1972; Kerney 1999; Kerney and Cameron 1979; Macan 1977). Nomenclature follows Kerney (1999).

Minimum numbers of individuals present were determined by numbers of shell apices. For the Pupillidae species present, *Pupilla muscorum* and *Lauria cylindracea*, occasional identifications of fragmentary remains could often be made from the shell mouth and here a corresponding number of apex fragments were then discounted from the total recorded under 'Pupillidae sp. (apex fragment)'; similarly for apex and non-apex fragments of *Cochlicopa* sp.

The abundance of unidentified snails and snail shell fragments was recorded semi-quantitatively on a five-point scale: '+' – few/rare (up to 3 individuals/items); '++' – some/present (4 to 20); '+++' – many/common (21-50); '++++' – very many/abundant (50 to 200); '+++++' - super-abundant, over 200 individuals/items. The same scale was used to record estimated numbers of other remains noted but not included within the analysis.

Results

In total, 1999 individual molluscs were identified (at least in part) from the 'flots' of the three samples examined; the vast majority of these were from deposit 126. The following sections present the results of the investigations of each 'flot' and full details of the mollusc assemblages are presented in Table 6.

Context 115 [primary fill of ditch 116; Trench 4], Sample 3 (40+ litres processed to 1 mm with 300 micron 'flot')

The very small 'flot' (~15 ml) was mostly of elder (*Sambucus nigra* L.) fruits (semi-quantitative abundance score +++++), with rootlet fragments and insect fragments (predominantly highly fragmented beetle sclerites common (+++); none of these remains were charred.

The modest mollusc assemblage (++++; 113 identified, or partially so, individuals) was predominantly of terrestrial taxa indicative of grassland but there was a small component of freshwater forms (see Table 6). The assemblage was rather too small for any detailed interpretation but dry, open grassland was represented by, for example, records of two *Vallonia* species and *Vertigo pygmaea* (Draparnaud), with the two *Carychium* species indicating damper more shaded conditions. Overall, the two terrestrial components of the assemblage suggested that the interior of the ditch was rather overgrown at the time of the formation of this fill – the open ground taxa reflecting conditions surrounding the ditch and the moisture/shade-loving species those within it. The remains of aquatic forms were perhaps rather too few to imply freshwater within the ditch itself and may derive from accidental inclusions within waste water discarded into the feature; the presence of the now rare species

Vertigo angustior Jeffreys contraindicates arrival in flood waters as it is "restricted to moist places which are affected neither by periodic desiccation nor by flooding. It requires open conditions quickly warmed by the sun, inhabiting short vegetation of grasses, mosses or low herbs" (Kerney 1999, 101).

Context 121 [single fill of gully 122; Trench 5], Sample 4 (20+ litres processed to 1 mm with 300 micron 'flot')

The very small 'flot' (~10 ml) was mostly rootlet fragments (+++++), with occasional 'seeds' (++; including orache/goosefoot – *Atriplex*/*Chenopodium*), a few mites (+; *Acarina* sp.) and a single charred barley (*Hordeum*) grain (there was also another piece of charred material that may have been a fragment of another grain).

The small mollusc assemblage (++++; 57 identified, or partially so, individuals) was exclusively of terrestrial taxa (see Table 6). As with deposit 115 (see above), the assemblage was too small for detailed interpretation but there were open dry grassland taxa (*Vallonia* species), together with others of moist/shaded conditions (*Carychium* species – perhaps exploiting longer grass growth within the gully) and also hints of more substantial vegetation such as woodland/scrub or hedgerow from occasional records for *Ena obscura* (Müller) and *Discus rotundatus* (Müller). Here there were no aquatic or waterside forms recorded and the gully appears to have been a dry feature.

Context 126 [secondary fill of ditch 128; Trench 5], Sample 5 (40+ litres processed to 1 mm with 300 micron 'flot')

The very small 'flot' (~30 ml) was mostly molluscs (+++++), with a little rootlet (++), small lumps of undisaggregated sediment (to 2 mm; ++), traces of indeterminate fine charcoal (to 2 mm; +) and occasional seeds of *orache*/goosefoot (+).

The large mollusc assemblage (1829 identified, or partially so, individuals) was of mixed ecological character comprising components representing open dry grassland, damp grassland/water meadow and aquatic habitats (see Table 6). Freshwater taxa were strongly represented by the abundance of *Anisus leucostoma* (Millet) (287 individuals) and *Aplexa hypnorum* (L.) (110), supported by far lesser numbers of *Lymnaea truntactula* (Müller) (2, with a further 15 records of *L. ?truncatula*) and *Pisidium* spp. bivalves (3). These species, particularly when occurring together in such numbers, strongly suggest swampy conditions within ditch 128 at the time of the formation of this fill and that it held weed-choked water and most probably dried out in the summer months. Both British *Carychium* species, *C. minimum* Müller and *C. tridentatum* (Risso), were also abundant and present in approximately equal numbers (264 and 288 individuals, respectively, with an additional 218 apex fragments which could only be identified as *Carychium* sp.). *Carychium minimum* especially is "common in wet places generally: fens and marshes, water meadows…" and is "…virtually amphibious and can survive prolonged winter flooding" (Kerney 1999, 44) and so fits well with the picture of seasonal variation of the water within ditch 128 provided by

the abundance of 'drought-resistant' freshwater forms. The remainder of the assemblage was dominated by *Vallonia costata* (Müller) (239 individuals) which is typical of short-turfed calcareous grassland and presumably reflects the prevailing vegetation surrounding the ditch as the time of formation of this deposit; there were also 20 records of *Pupilla muscorum* (L.) which suggests areas of bare ground/exposed rock. Overall, the primary function of this ditch appears to have been to provide drainage for the surrounding land and, in particular, to attempt to control winter flooding.

Discussion

The mollusc assemblages from the primary fill of ditch 116 (deposit 115) and the single fill of gully 122 (deposit 121) were too small for reliable interpretation but both suggested open grassland in the surroundings and some longer grass growth within the features themselves, with hints of woodland/scrub or hedgerow in the vicinity of the gully. There were occasional records of aquatic taxa from deposit 115 but too few to suggest freshwater within the ditch (they may have arrived in discarded waste water), whereas the complete absence of aquatic or waterside forms from deposit 121 implied that the gully was a dry feature. Neither of the features appears to have been created for drainage and they perhaps functioned more as land divisions.

The third mollusc assemblage recorded, from the secondary fill of ditch 128 (deposit 126), was much larger and provided strong evidence that the feature's primary function was to provide drainage for the surrounding land, particularly in the winter months. Interestingly, although two species of *Vallonia* were recorded from this deposit, the bias was massively in favour of *Vallonia costata* (see Table 6). Evans (1972, 153-164) regards *V. costata* as a strong pioneer species of recently cleared ground favoured by dryness and disruption of the soil surface (*Pupilla muscorum* also) whereas *V. excentrica* tends to predominate in stable-surfaced short-turfed grassland such as established sheep-grazing pasture. There is, therefore, the possibility at least that the surrounding land was relatively recently cleared at the time of the formation of this secondary fill (mid-1st to mid-2nd century AD pottery was recovered from this deposit).

All of the 'flots' reported here and the remains therein should be retained as part of the physical archive for the site.

Table 6. Mollusc remains from the submitted 'flots'. Key: Figures are counts of minimum numbers of individuals (mni) recorded; records for bivalves are numbers of valves (but here these are also mni values as no pairs of valves were noted); for remains recorded semi-quantitatively the scale employed was: '+' – few/rare, up to 3 individuals/items; '++' – some/present; 4 to 20, '+++' – many/common; 21 to 50, '++++' – very many/abundant; 51 to 200; and '+++++' – super-abundant, over 200 individuals/items.

Trench	**4**	**5**	**5**
Context number	**115**	**121**	**126**
Context type	Primary fill of ditch 116	Single fill of gully 122	Secondary fill of ditch 128
Sample number	**3**	**4**	**5**
Carychium minimum Müller	21	7	264
Carychium tridentatum (Risso)	8	13	288
Carychium sp. (apex fragment)	12	8	218
Aplexa hypnorum (L.)	-	-	110
Lymnaea truncatula (Müller)	-	-	2
Lymnaea ?*truncatula* (Müller)	1	-	15
?*Lymnaea* sp. (apex)	3	-	-
Anisus leucostoma (Millet)	-	-	287
Planorbid sp. indeterminate (apex)	5	-	44
Cochlicopa ?*lubrica* (Müller)	1	-	5
Cochlicopa ?*lubricella* (Porro)	1	1	48
Cochlicopa sp. (apices or non-apex fragments)	2	1	61
Columella sp.	-	-	1
Vertigo pygmaea (Draparnaud)	10	-	-
Vertigo ?*pygmaea* (Draparnaud)	-	-	2
Vertigo angustior Jeffreys	3	-	-
Vertigo angustior Jeffreys or *V. pusilla* Müller (sinistral)	4	-	-
Vertigo sp?p. (apices)	9	-	2
Vertiginidae sp. (apex)	9	-	-
Pupilla muscorum (L.)	1	2	20
Lauria cylindracea (da Costa)	-	1	-
Pupillidae sp. (apex fragment)	-	3	42
Vallonia costata (Müller)	3	9	239
Vallonia ?*excentrica* Sterki	5	1	5

Trench	**4**	**5**	**5**
Context number	**115**	**121**	**126**
Context type	Primary fill of ditch 116	Single fill of gully 122	Secondary fill of ditch 128
Sample number	**3**	**4**	**5**
Vallonia sp.	-	2	39
Ena obscura (Müller) (apex fragments)	-	3	-
Punctum pygmaeum (Draparnaud)	3	1	16
Discus rotundatus (Müller)	-	1	-
Vitrea crystallina (Müller)	-	-	2
Vitrea crystallina (Müller)/*V. contracta* (Westerlund)	-	1	17
?*Aegopinella* sp. (apex)	1	1	3
Trichia ?*hispida* (L.)	10	1	95
Cepaea/*Arianta* sp.	-	1	-
Cepaea ?*nemoralis* (L.)	-	-	1
Pisidium ?*personatum* Malm	-	-	1
Pisidium sp(?p).	1	-	2
Unidentified land snail shell fragments	++	++	+++++

8 Discussion and Conclusions

A trial trench evaluation carried out at the proposed site of a single wind turbine at Warren Field, Horkstow identified features consistent with Roman settlement, previously identified through cropmark evidence, but not identified by geophysical survey. It is possible that the very sandy natural deposits, which do not provide a clear magnetic contrast, rendered the archaeological features ‘invisible’ to magnetic survey.

The archaeological ditches exposed in T4 and T5 probably represent field boundaries, enclosure ditches, drainage ditches or internal divisions. The pottery recovered suggests that these features date to between the mid-1st to 2nd century AD, with the exception of Ditch 128 which also contained 3rd-century material. The mollusc assemblages indicate open grassland, perhaps for pasture, as well as a need for seasonal drainage and the likely presence of woodland, scrub and/or hedgerows.

The three trenches that were located around the turbine base were devoid of any archaeological features. Cropmark evidence suggests that archaeological features are broadly confined to the slightly higher ground to the east, and this appears to have been confirmed by the trial trenching.

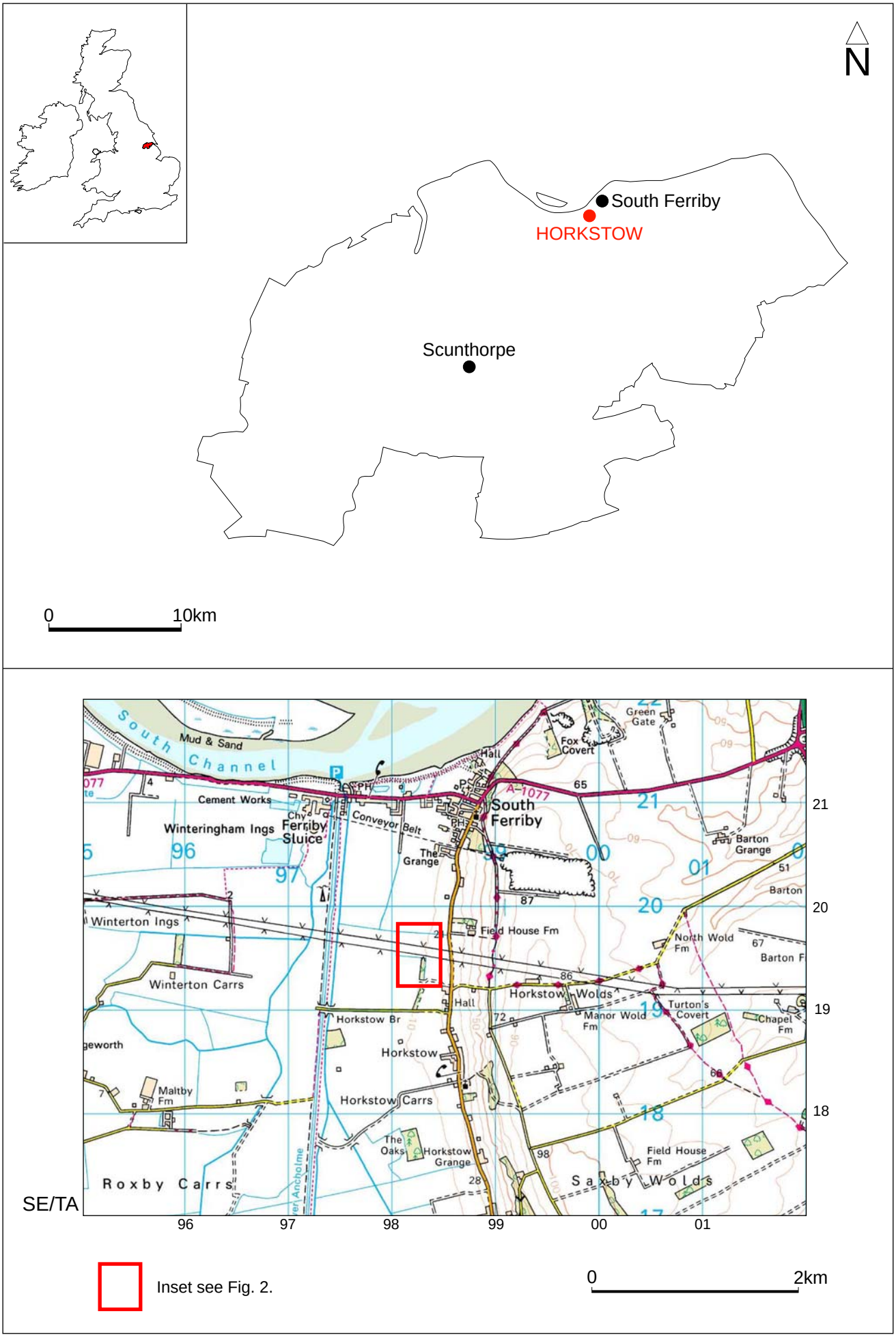

Fig. 1. Site location

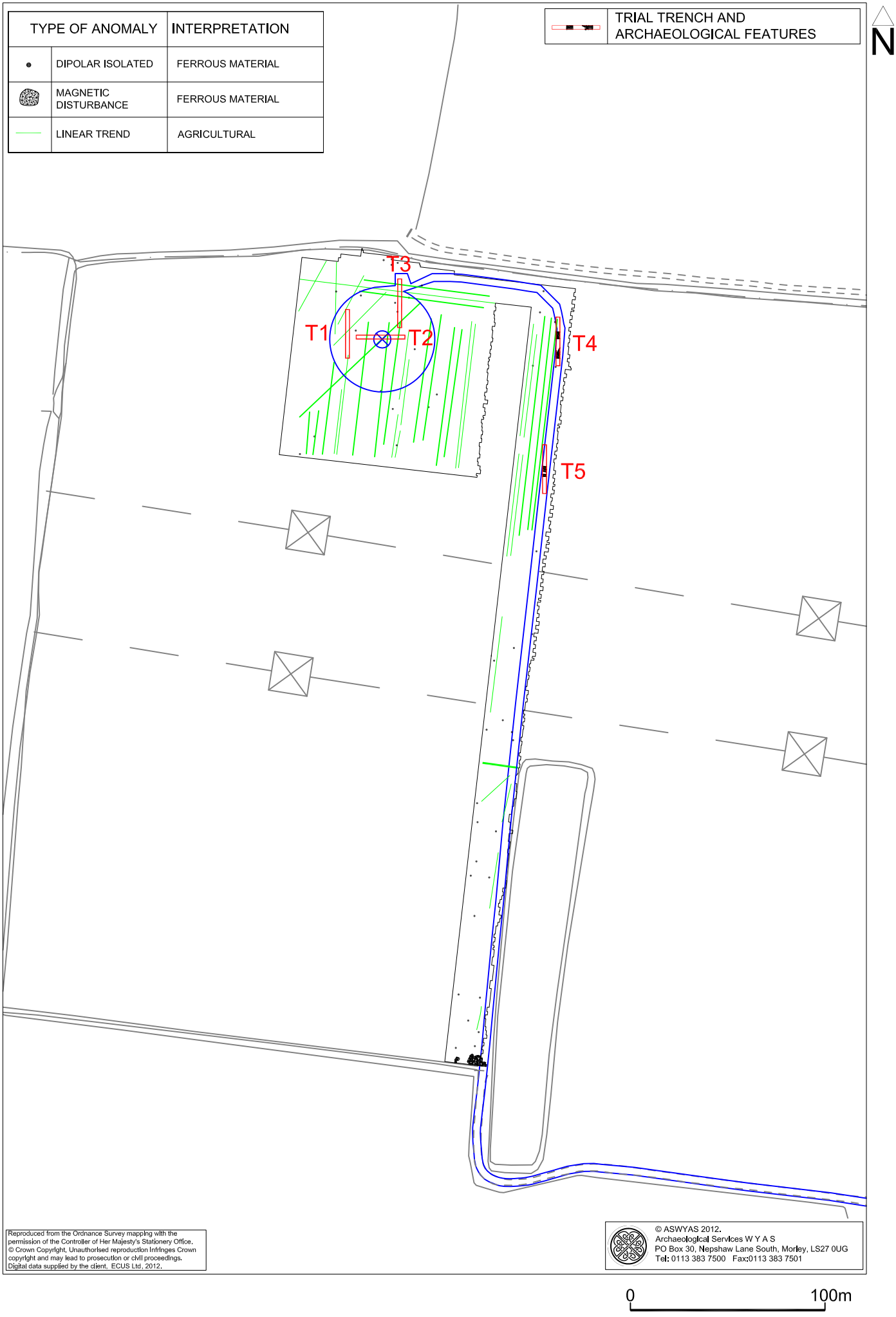

Fig. 2. Location of trial trenches and archaeological features (1:2500 @A4)

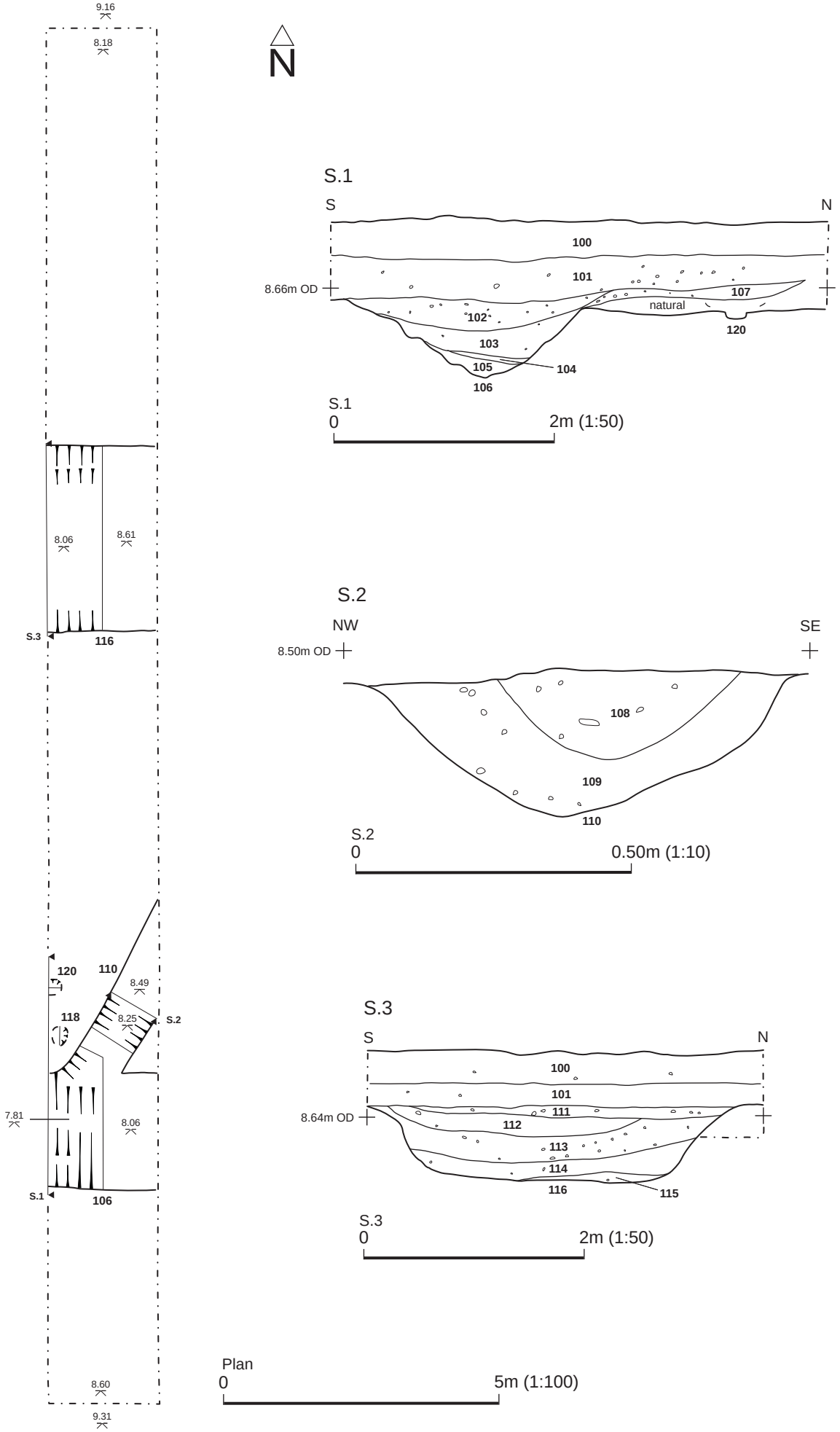

Fig. 3. Trench 4 plan and sections

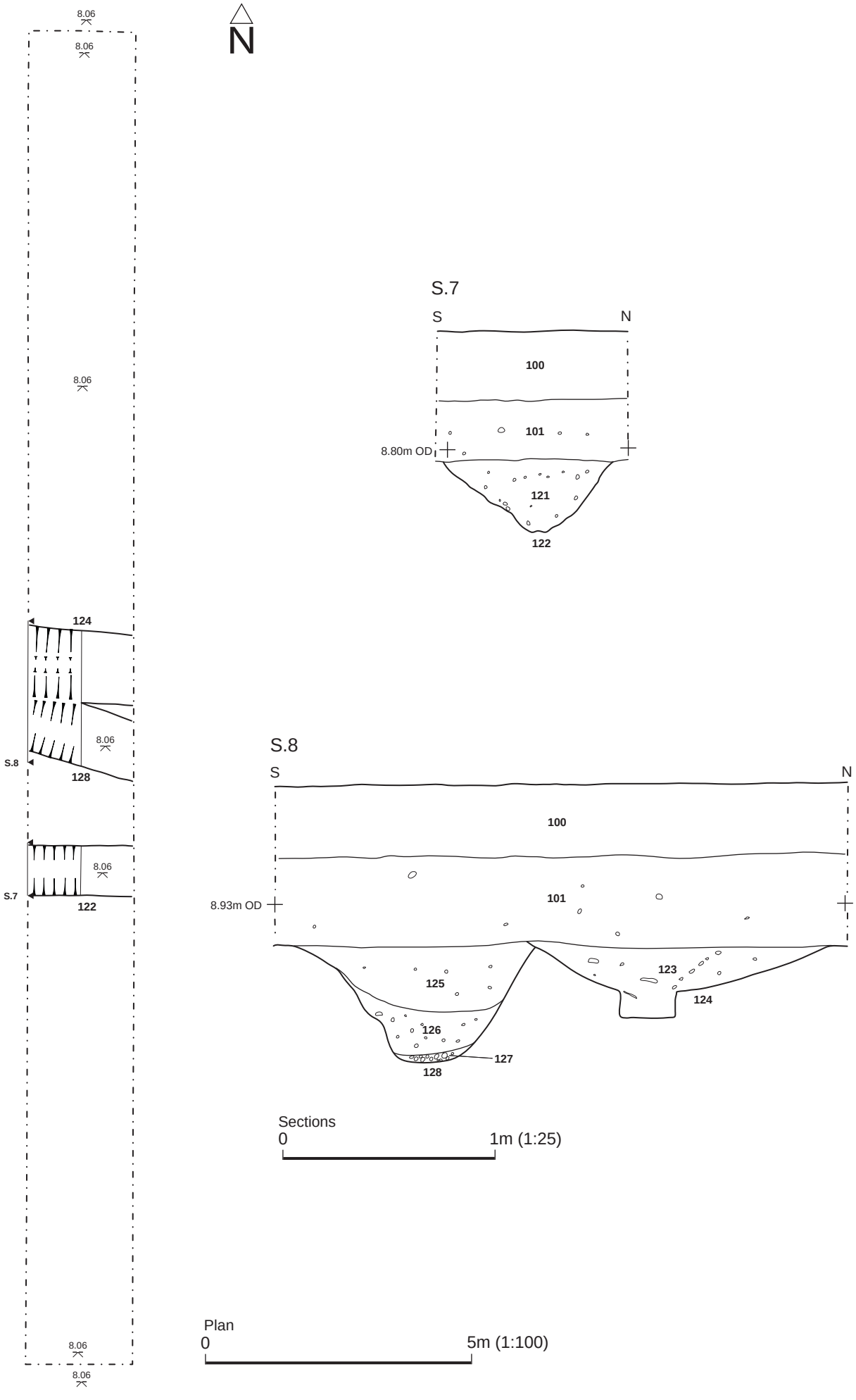

Fig. 4. Trench 5 plan and sections

Plate 1. Trench 1, looking north

Plate 2. Trench 2, looking west

Plate 3. Trench 3, looking north

Plate 4. Trench 4, looking north

Plate 5. Trench 4, showing east-facing section of Ditch 106 and possible bank material 107, looking west

Plate 6. Trench 4, showing east-facing section of Ditch 116, looking west

Plate 7. Trench 5, looking north

Plate 8. Trench 5, showing east-facing section of Ditch 128, looking north

Appendix 1: Inventory of primary archive

Phase	File/Box No	Description	Quantity
Evaluation	File no.1	Context register sheets	1
		Context sheets (nos. 100-128)	29
		Drawing register sheets	1
		Sheets of permatrace	2
		Sample register sheets	1
		Photo register sheets	1
		Digital photo register sheets	1
		Trench Sheets	5
		Drainage plans supplied by landowner	2
		Plan of water main supplied by landowner	1

Appendix 2: Concordance of contexts yielding artefacts or environmental remains

Context	Trench	Description	Artefacts and environmental samples
100	ALL	Topsoil	-
101	ALL	Subsoil	-
102	T4	Fill of ditch 106	Pottery (33); Animal bone (15), CBM (1)
103	T4	Fill of ditch 106	
104	T4	Fill of ditch 106	Pottery (1)
105	T4	Fill of ditch 106	Pottery (12); Animal bone (6); Environmental sample No. 1
106	T4	Cut of ditch	-
107	T4	Possible bank material	-
108	T4	Fill of ditch 110	Animal bone (35); Environmental sample No. 2
109	T4	Fill of ditch 110	Animal bone (4)
110	T4	Cut of ditch	-
111	T4	Fill of ditch 116	-
112	T4	Fill of ditch 116	-
113	T4	Fill of ditch 116	Pottery (17); Animal bone (4)
114	T4	Fill of ditch 116	-
115	T4	Fill of ditch 116	Animal bone (2); Environmental sample No. 3
116	T4	Cut of ditch	-
117	T4	Fill of post-hole? 118	-
118	T4	Cut of post-hole?	-
119	T4	Fill of post-hole? 120	-
120	T4	Cut of post-hole?	-
121	T5	Fill of gully 122	Environmental sample No. 4
122	T5	Cut of gully	-
123	T5	Fill of pipe trench	-
124	T5	Cut of pipe trench	-
125	T5	Fill of ditch 128	-
126	T5	Fill of ditch 128	Pottery (1); Animal bone (1); Environmental sample No. 5
127	T5	Fill of ditch 128	-
128	T5	Cut of ditch	-

Appendix 3: Written Scheme of Investigation

ARCHAEOLOGICAL SERVICES WYAS

Warren Field, Horkstow
North Lincolnshire

Archaeological Evaluation

Written Scheme of Investigation

Prepared by: Mitchell Pollington
Archaeological Services WYAS
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Nepshaw Lane South
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LS27 0UG

September 2012

REGISTERED ORGANISATION IfA

1. Introduction

1.1. This Written Scheme of Investigation (WSI) has been prepared by Archaeological Services WYAS (ASWYAS) on behalf of ECUS Environmental Consultants and details the proposed methodology for undertaking a programme of archaeological evaluation trenching at Warren Field, Horkstow, North Lincolnshire. This will be undertaken in advance of the proposed construction of a single wind turbine on the site, together with an associated access track.

1.2. The WSI has been produced to the standards laid down in English Heritage's guideline publication *Management of Research Projects in the Historic Environment (MoRPHE): Project Managers Guide* (2006) and the MoRPHE *Project Planning Note 3: Archaeological Excavation* (PPN3) (2008).

2. Location and description

2.1. Warren Field is situated on the northern side of Hall Farm, situated approximately 500m to the north of the village of Horkstow, North Lincolnshire (centred at SE 9830 1953; see Fig. 1).

2.2. The site comprises a low lying, level area of the Humberhead Levels, about 10m above Ordnance Datum, and bounded on three sides by drainage channels. It is currently in use for arable cultivation, with a small area of deciduous woodland on its south-eastern edge, and a farm track allows access to the field from Hall Farm to the south.

2.3. The evaluation will be focused on the area of the proposed wind turbine, on the northern side of the field, together with the route of the associated access track.

2.4. The evaluation will comprise the excavation of five 25m x 2m trenches positioned along the proposed access track and the site of the wind turbine base (see Fig. 2).

3. Archaeological Background

3.1. In July 2012 ASWYAS undertook a geophysical (magnetometer) survey on behalf of ECUS at Warren Field, covering a 2 hectare area including the site of the proposed turbine and the access track (Sykes and Harrison 2012). No archaeological anomalies were identified, with a number of slight linear anomalies resulting from recent agricultural activity on the site. It was concluded, on the basis of these results, that there was low archaeological potential within the proposed development site.

4. Aims and Objectives

4.1. The aims and objectives of the programme of archaeological evaluation trenching is to gather sufficient information to establish the presence/absence, character, extent, state of preservation and date of any archaeological

remains within the proposed development site, and to inform further strategies should they be necessary.

4.2. The specific aims are to:

- Locate, record and characterise any surviving below ground archaeological remains;
- provide an assessment of the potential significance of any identified archaeological remains in a local, regional and (if relevant) national context;
- to produce a comprehensive site archive and report.

5. Archaeological Methodology

5.1. A total of five evaluation trenches will be excavated across the proposed development site (Fig. 2).

5.2. All excavation will be undertaken in line with the IfA guidelines *Standard and Guidance for Archaeological Excavation* (2008a) and in compliance with the English Heritage MoRPHE *PPN3: Archaeological Excavation* (2008).

5.3. Trenches will be excavated using a mechanical excavator fitted with a wide, toothless ditching bucket.

5.4. Machining will be conducted under direct archaeological supervision down to the first significant archaeological horizon or to natural deposits, whichever is encountered first. Exposed surfaces will be thoroughly cleaned in order to assist the identification of any features. A detailed plan will be made of all archaeological features, to an appropriate scale.

5.5. Where depth of excavation is assessed to be required at a depth of greater than 1.2m, suitable stepping or shoring will be required.

5.6. A sufficient sample of the features and deposits revealed in each trench will be excavated in an archaeologically controlled and stratigraphic manner. The complete excavation of features is not regarded as necessary, but a sufficient sample should be investigated to understand the full stratigraphic sequence in the trench, down to natural deposits.

5.7. The sampling policy is as follows:

- a 100% sample will be taken of all stake-holes;
- a 50% sample will be taken of all post-holes, and of pits with a diameter of up to 1.5m;
- a minimum 25% sample will be taken of pits with a diameter of over 1.5m; but this should include a complete section across the pit to recover its full profile;
- a minimum 20% sample will be taken of all linear features, up to 5m in length; for features greater than this, a 10% sample will suffice.

5.8. A mechanical excavator may be used, as appropriate, for removing deep intrusions (e.g. modern brick and concrete floors or footings), or for putting sections through major features after partial excavation (e.g. ditches), or through deposits to check that they are of natural origin.

5.9. A full written, drawn and photographic record will be made of all material revealed during the course of the trial trenching. Plans will be completed at a scale of 1:50 or 1:20 (as appropriate), whilst section drawings should be at a scale of 1:10. A minimum 35mm format for photography is required (in monochrome and colour). All plans will be tied in with the Ordnance Survey National Grid with levels given to above Ordnance Datum (OD).

5.10. Deposits will be sampled for retrieval and assessment of the preservation conditions and potential for analysis of all biological remains. A strategy for the recovery and sampling of environmental remains from the site should be agreed with an environmental consultancy, in advance of the project as recommended in the English Heritage guidelines *Environmental Archaeology: A guide to the theory and practice of methods from sampling and recovery to post-excavation* (2002).

5.11. The sampling strategy should include a reasoned justification for selection of deposits for sampling, and should be developed in collaboration with a recognised bio-archaeologist. A copy of the strategy will be agreed with North Lincolnshire Historic Environment Record prior to commencement of work.

5.12. Soil sampling will generally be undertaken where there is clear potential for environmental analysis. Where appropriate and practicable, soil samples of up to 60 litres will be taken from excavated contexts, and larger samples will be taken of any rich carbonised deposits. Particular attention will be paid to the sampling of primary ditch fills, large discrete features (e.g. refuse pits), structural and occupational evidence, skeletal remains and any surviving buried soils. The recovery of material suitable for radiocarbon, archaeomagnetic and/or dendrochronological determinations will be sought, as appropriate. If buried soils or other deposits are encountered, column samples may be taken for micromorphological and pollen analysis. Environmental material will be stored in controlled environments and environmental and soil specialists will be consulted during the course of the work as necessary.

5.13. Disturbance of human skeletal remains will be kept to a minimum. Removal of human remains will only take place under appropriate government and environmental health regulations, and in compliance with the Burial Act 1857 and with an exhumation licence obtained from the Ministry of Justice.

5.14. A finds recovery and conservation strategy, and a policy for finds recording, will be agreed with North Lincolnshire Historic Environment Record and the recipient museum in advance of the programme of archaeological investigation commencing in line with the Society of Museum Archaeologists guidelines *Selection, Retention and Dispersal of Archaeological Collections*

(1993). All artefacts recovered will be recorded and removed from the site for appropriate storage in controlled environments. All artefacts recovered will be retained, cleaned, labelled and stored as detailed in the guidelines laid out in the IfA guidelines *Standard and Guidance for the collection, documentation, conservation and research of archaeological materials* (2008b). If required, conservation will be undertaken by approved conservators in line with the *First Aid for Finds* guidelines (Watkinson and Neal 1998). In accordance with the procedures outlined in English Heritage's MoRPHE PPN3 (2008), all iron objects, a selection of non-ferrous artefacts (including all coins), and a sample of any industrial debris relating to metallurgy should be X-radiographed before assessment.

5.15. All finds of gold and silver, and associated objects, shall be reported to HM Coroner according to the procedures relating to the Treasure Act 1996, after discussion with North Lincolnshire Historic Environment Record.

5.16. Should there be, in the professional judgement of the archaeologist on site, unexpectedly significant or complex discoveries made that warrant more detailed recording then ASWYAS will urgently contact North Lincolnshire Historic Environment Record with the relevant information to enable the matter to be resolved.

6. Reporting

6.1. A fully illustrated report will be produced, which will include the following information:

- a non–technical summary of the results of the work;
- a summary of the project's background;
- the site location;
- an account of the method;
- the results of the excavation, including phasing and interpretation of the site sequence and spot–dating of artefacts, if recovered;
- an assessment of the stratigraphic and other written, drawn and photographic records;
- a catalogue of the archaeological material recovered from the excavation;
- excavation plans;
- a summary of the contents of the project archive and its location;
- a full bibliography.

6.2. Plans will be at an appropriate scale showing areas excavated and any identified archaeological features/deposits. Trench and feature plans will include OD spot heights for all principal strata and any features. Section

drawings will include OD heights and will be cross-referenced to an appropriate plan.

6.3. All artefacts and environmental material will be analysed by qualified and experienced specialists who can document and demonstrate levels of professional competence and technical expertise, and have access to comparable materials. Artefact analysis will include the production of a descriptive catalogue of finds. Finds critical for dating and interpretation will be illustrated separately.

6.4. Copies of the report will be submitted to the client and North Lincolnshire Historic Environment Record. A copy of the report will also be sent to the English Heritage Regional Science Advisor for the east of England. Submission of the report will be subject to any contractual requirements on confidentiality.

7. Archive

7.1. Prior to commencement of any fieldwork ASWYAS will contact the relevant museum archaeological curator in writing to determine the museum's requirements for the deposition of an excavation archive. ASWYAS will endeavour to obtain consent of the landowner, in writing, for the deposition of finds.

7.2. The site archive will contain all the data collected during the geophysical survey and excavation stages, including all digital and paper records, finds and environmental samples. It will be quantified, ordered, indexed and internally consistent. Adequate resources will be provided during fieldwork to ensure that all records are checked and internally consistent. Archive consolidation will be undertaken immediately following the conclusion of fieldwork and will include the following work:

- the site record will be checked, cross–referenced and indexed as necessary;
- all retained finds will be cleaned, conserved, marked and packaged in accordance with the requirements of the recipient museum;
- all retained finds will be assessed and recorded using pro forma recording sheets, by suitably qualified and experienced staff. Initial artefact dating will be integrated within the site matrix;
- all retained environmental samples will be processed by suitably experienced and qualified staff and recorded using pro forma recording sheets.

7.3. The archive will be assembled in line with the recommendations provided in English Heritage's MoRPHE *Project Planning Note 3: Archaeological Excavation* (PPN3). In addition to the site records, artefacts, ecofacts and other sample residues, the archive shall contain:

- site matrices where appropriate;
- a summary report synthesising the context record;

- a summary of the artefact record;
- a summary of the environment record.

7.4. The integrity of the primary field record will be preserved. Security copies will be maintained where appropriate.

7.5. Provision will be made for the deposition of the archive, artefacts and environmental material, subject to the permission of the relevant landowner (and if no further archaeological work is to be initiated), in the appropriate recipient museum. Employing the 'Transfer of Archives' form, the museum will be advised of the timetable of the proposed investigation prior to excavation commencing. The archive will be prepared in accordance with the *Guidelines for the preparation of Excavation Archives for long–term storage* (United Kingdom Institute for Conservation, 1990) and *Standards in the museum care of archaeological collections* (Museums and Galleries Commission 1994). Provision will be made for the stable storage of paper records and their long–term storage.

7.6. Following completion and submission of the report, and deposition of the archive, ASWYAS will make their work accessible to the wider research community by submitting digital data and copies of the report on line to OASIS.

8. Copyright, Confidentiality and Publicity

8.1. Unless the client commissioning the project wishes to state otherwise, the copyright of any written, graphic or photographic record and reports will rest with the originating body (ASWYAS).

8.2. The circumstances under which the report or records can be used by other parties will be identified at the commencement of the project, as will the proposals for the distribution of the report. ASWYAS will respect any requirements regarding confidentiality, but will endeavour to emphasise the company's professional obligation to make the results of archaeological work known to the wider archaeological community within a reasonable time.

9. Health and Safety

9.1. All work will conform to the ASWYAS Health and Safety Policy (a copy of which can be supplied if requested), which makes particular reference to the FAME (Federation of Archaeological Managers and Employers) Health and Safety Manual and will be carried out according to the relevant Health and Safety Legislation. This includes, in particular, the following regulations:

- Health and Safety at Work 1974
- Construction (Design and Management) Regulations 2007
- The Management of Health and Safety at Work Regulations 1999
- Personal Protective Equipment at Work Regulations 1992

- Provision and Use of Work Equipment Regulations 1998
- Manual Handling Operations Regulations 1992
- Workplace (Health, Safety and Welfare) Regulations 1992

9.2. In addition each project undergoes a 'Risk Assessment' which sets project specific Health and Safety requirements to which all members of staff are made aware of prior to on–site work commencing.

9.3. Health and Safety will take priority over archaeological matters. Necessary precautions will be taken with regard to protecting ASWYAS staff and the public. The locations of any underground services and overhead power lines will be identified in at the outset of the project and detailed in the Risk Assessment.

9.4. The main site contractor should be aware of the requirements of archaeologists working on site and make provision in their own risk assessment in accordance with the Health and Safety at Work Regulations. Where archaeological work is carried out at the same time as the work of other contractors, regard will also be taken of any reasonable additional constraints that these contractors may impose.

10. Insurance

10.1. ASWYAS is covered by the insurance and indemnities of the City of Wakefield Metropolitan District Council. Insurance has been effected with: Zurich Municipal, PO Box 568, 1st Floor, 1 East Parade, Leeds, LS1 2UA (policy number QLA-03R896 0013). Any further enquiries should be directed to: City of Wakefield Metropolitan District Council, Corporate Services, Financial Services (Insurance, Room 403), County Hall, Bond Street, Wakefield WF1 2QW.

11. Quality

11.1. ASWYAS is an accredited ISO 9001:2008 organisation and a Registered Archaeological Organisation with the Institute for Archaeologists, operating to nationally agreed guidelines, processes and procedures. These are set within a framework that endeavours to carry out the required work and submit the final report in a manner that meets with our client’s specific needs, providing quality assurance throughout the project and for the end product. These guidelines, processes and procedures are contained within a Quality Manual and all staff work in accordance with this manual.

12. Monitoring

12.1. The North Lincolnshire Historic Environment Record will be responsible for monitoring the project and will be afforded the opportunity to inspect the site and all records at any stage of the work.

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