

DRX011 - 006

# **WHITE ROSE CCS FACILITY, DRAX, NORTH YORKSHIRE**

## **Report on Archaeological Evaluation**

Draft v3

**Client: ERM on behalf of Capture Power Ltd**

## DRX011 – 006 summary sheet

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## *Summary*

*Headland Archaeology (UK) Ltd was commissioned by ERM, on behalf of Capture Power Ltd, to undertake an archaeological trial trench evaluation in connection with the proposed White Rose Carbon Capture and Storage (WRCCS) Facility on land adjacent to Drax Power Station, North Yorkshire (NGR: site centre SE 665 280).*

*A total of 27 trenches were excavated to characterise the archaeological and palaeoenvironmental potential of the site. The most significant result was the discovery of an extensive area of probable Roman activity in the south half of field H, where ditch remains and associated pottery were recovered.*

*These features are likely to derive from Roman settlement and/or field systems, adding to the dataset of sites reflecting Roman expansion throughout the Humber wetlands. Although it cannot be fully characterised at this stage, the identification of linear ditches and pits cut into the underlying subsoil with associated pottery is typical of such sites. Upstanding masonry or other structural remains are highly unlikely given the historic cultivation regime.*

*Further investigation may reveal a wider pattern of rectilinear enclosures, structural foundation trenches and pits. Along with associated finds and environmental assemblages, the results would allow analysis of the character, scale and economy of the site and how it compares to others in the region. Further evidence of both domestic and industrial activity may be derived if hearths and kilns survive; however geophysical survey previously undertaken does not indicate the presence of such features. Excavations at Adlingfleet (~10km east) identified pit and ditch remains subsequently attributed to a Roman settlement extending to at least 12 Ha for which evidence of both domestic and industrial activity was found.*

*In addition, the work further supported the likelihood of a medieval fish pond and moat associated with Drax Priory in Field J, enhancing our understanding of this nationally significant, scheduled site.*

*An auger survey undertaken as part of the work revealed a substantial deposit of organic-rich material and peat preserved within the confines of the former channel of the Carr Dike. This material has the potential to produce a significant palaeoenvironmental data-set to further enhance an understanding of the human and environmental activities across the site.*

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## INTRODUCTION

### **Project background**

ERM, on behalf of Capture Power Ltd, commissioned Headland Archaeology (UK) Ltd to undertake an archaeological trial trench evaluation in connection with the proposed White Rose Carbon Capture and Storage (WRCCS) Facility on land adjacent to Drax Power Station, North Yorkshire (NGR: site centre SE 665 280).

Drax Power Station is located on the floodplain, c.1.3 km from the S side of the River Ouse, and some 500 m S of the scheduled remains of Drax Augustinian Priory. The WRCCS Facility will be built on farmland between the existing Drax Power Station and the scheduled area.

The project has been divided into two stages:

- A) an initial 'site raising' to enable the construction of an earthworks platform for the new facility to the N of the current power station; and
- B) the main construction phase

The proposed boundaries and programmes of these two phases of work are different, and the archaeological evaluation and mitigation strategy was designed to cover both phases of work. The evaluation was carried out in accordance with a Written Scheme of Investigation (WSI) prepared by Headland Archaeology based on a Project Design prepared by Charles Le Quesne at ERM.

The fieldwork took place from the 8<sup>th</sup> to the 23<sup>rd</sup> June 2015.

### **Geology, topography and current land use**

The combined application areas (Illus 1) occupy a low-lying situation in the floodplain of the River Ouse, below 6m AOD. The underlying geology, as mapped by the British Geological Survey, comprises late Pleistocene clay deposits that are referred to as the '25 Foot Drift'. There are slight but significant variations in topography within the predominantly flat landscape. In particular, the remains of the scheduled Drax Priory occupy a slight rise immediately to the N of the area up to 7m aOD; and there is a pronounced dip (1.6 – 1.7m minimum aOD) immediately to the SE of the Carr Dike, an artificial drainage channel.

The combined application areas are currently divided into fields which have been labelled F-J on Illus 1 (following on from fields labelled during previous fieldwork). Field F is located immediately to the south of the scheduled area of Drax Priory. It is an arable field with a waist high crop of barley at the time of the evaluation. Field G is located between field F and New Road along the east side of the power station. A public footpath cuts across the field which comprises rough grassland. Fields H and I are arable fields with a waist high crop of barley located to the east of New Road and to the south of Pear Tree Avenue. Field J is also planted with barley. It is located on the west side of the scheduled area of Drax Priory.

## ARCHAEOLOGICAL BACKGROUND

### **Previous work**

Previous work by Northern Archaeological Associates (NAA) (1998) was carried out on behalf of National Power plc, to inform proposals for development in the vicinity. The NAA project was focused on the priory, with the aim of defining its extent and the character of the surviving remains. The work comprised analysis of historic maps and aerial photographs, topographic and earthwork survey, geophysical survey (gradiometer survey, with resistivity survey covering a smaller area), field walking of ploughed fields adjacent to the Scheduled Area, and excavation of two small trial trenches.

NAA later produced a desk-based assessment (2006) which synthesised the results of the earlier fieldwork and added further detail from historical sources.

The desk-based assessment prepared by Headland Archaeology (Breslin et al 2009) drew on both these earlier reports, with the addition of a palaeoenvironmental assessment.

Several phases of field work were carried out by Headland in 2009 comprising geophysical survey (Harrison 2009), field-walking (Dalland & Franklin 2009) and trial-trench evaluations (Masser 2009a; Masser 2009b; Masser & Lancaster 2009). This work took place in Fields A to E to the E of the area for the current evaluation.

A third geophysical survey was undertaken in 2012/13 covering the NE half of field F as well as Fields G, H, I and J.

### **Roman activity**

Field walking carried out by NAA between the scheduled area and the lagoon to the NW retrieved 19 sherds of Roman pottery (NAA 1998, Figs 14 and 15), with a notable concentration roughly in the centre of the Field J. A trial trench was excavated by NAA in the vicinity of this concentration (NAA 1998, Fig 2), across a recently removed field boundary that is still visible as a slight hollow in the surface of the field (Illus 2). Eight sherds of Roman pottery were recovered from the ditch associated with this field boundary. The sequence of cuts and deposits within the ditch are ambiguous and it is not clear which can be assigned to the Roman period. In addition to the concentration in Field J, a single Roman sherd was retrieved from the N edge of field F.

The three phases of trial trenching carried out previously by Headland found no evidence for the Roman activity identified by the NAA study, and no diagnostic finds of Roman date were found in the field walking covering Fields C and D carried out in 2009 (Dalland and Franklin 2009). Therefore, prior to the current fieldwork, the main evidence of Roman activity was focussed in Field J.

### **Medieval and post-medieval activity**

The extent of features associated with the priory still remains unknown. While it is recognised that the activities of the priory would have extended out into the surrounding landscape, the boundary of the priory precincts were presumably clearly defined. Nineteenth century descriptions refer to a moat around the site which is shown on the 1907 Ordnance Survey map (NAA 1998, Figure 5). If the moat relates to the priory rather than the post-dissolution Drax Abbey Farm, and formed the boundary of its precincts, the remains of the priory are probably largely limited to the scheduled area.

Field walking carried out by NAA (1998, 15-16, Figs 14 and 15) and Headland (Dalland and Franklin 2009) is also relevant to the question of the extent of activity associated with the priory. Eleven sherds of medieval pottery were retrieved from NAA's field walking Area E, a 100 x 40m block to the north of the Carr Dike and south of the track between Fields C and D. A further 18 medieval sherds were picked up in NAA's Area B, to the west of the scheduled area. NAA Area 'D', to the south of the scheduled area and east of the Carr Dike, produced no medieval material at all. The distributions of finds are sparse, considering the intensive field walking methodology employed, and may indicate nothing more than manuring of the fields surrounding the priory.

Trenches excavated in Fields C and D in May 2009 were located as close as possible to the boundary of the scheduled area, in part to test the possibility that medieval features related to the priory extended outside the scheduled area. However, no evidence of medieval activity was found.

From at least the mid-17<sup>th</sup> century the area to the south-west of Drax Abbey Farm appears to have been artificially drained and divided into fields, on the evidence of an estate plan dated 1657 (NAA 2006, Fig. 5). The Carr Dike is shown on this plan, following a different course further to the south. This appears to be the same course shown on the 1st edition Ordnance Survey map. By 1907, the 'dog-leg' in the Carr Dike at this point had been cut off by its present course, and further changes were made in the 1940s when the angle to the west of Drax Abbey Farm was replaced by a cutting further to the north-west (NAA 1998, Fig. 2). Three linear features plotted from aerial photos by NAA (1998, Fig. 8) extend into Fields C and D. One of these has been identified as a field drain; the remaining two correspond to field boundaries shown on 19th century maps (NAA 1998, 5, figs 3 and 4). These field boundaries are likely to post-date the establishment of Drax Abbey Farm and there is no reason to think either of them is related to the priory.

## AIMS AND OBJECTIVES

The objective of the trial trench evaluation was to test a number of previously identified geophysical and soil-mark anomalies and, for the seemingly 'blank' areas of the development site, to clarify the archaeological and palaeoenvironmental potential of the below-ground deposits. In particular, to determine their presence or absence and to ascertain their quality, nature, extent, depth, date and character. In accordance with NPPF (2012, paragraph 128), this programme of work will ascertain the significance of the remains, sufficient to understand the potential impact of the development on their significance and inform any subsequent mitigation strategy.

The layout of some 12 of the evaluation trenches was designed to target features based on previous DBAs and the results from the 2012/13 geophysical survey. The remaining eight trenches were located to randomly test 'blank' areas. A further two trenches were located along the line of proposed auger surveys. During the fieldwork a further five trenches were excavated. Four of these were located in the south end of Field H with the objective of establishing the extent of features in this area. The fifth trench was cut across the line of a ditch labelled 'moat' on the 1907 OS map.

A previous evaluation undertaken by Masser and Lancaster (2009) identified deposits of peat in Field E, west of the mapped drain. Evaluation trenching and gouge auger survey in this area allowed the extent of the peat to be assessed. Such deposits have the potential to hold significant palaeoenvironmental evidence, specifically through the survival of pollen grains. The pollen signal may show evidence of human activity in the area, although the type of environment in which the peat accumulated, a carr fen, is not an ideal context for accumulating such information.

The use of trenching also allowed the evaluation of archaeology in the overlying silts and aimed to identify previous alignments of the Carr Dike, although it is clear from historical maps that it has extended around the north, north-west and west sides of Field F since at least 1657 (NAA 2006, Fig. 5). In addition, evidence for episodes of flooding or warping in this area were sought.

## METHODOLOGY

### **Fieldwork**

Topsoil was stripped from the agreed trial trenches by mechanical excavation to expose any archaeological remains. Mechanical excavation was undertaken using a tracked 360° mechanical excavator fitted with a toothless ditching bucket, operating under the direct and continuous supervision of an experienced archaeologist. Mechanical excavation ceased when the first archaeologically significant horizon was encountered, or when the absence of any such horizon was adequately demonstrated. Excavated spoil was deposited parallel to and set back from the edge of the trench.

On removal of the topsoil, the trench was inspected for archaeological features. All areas containing significant features were manually cleaned and all identified features were recorded. Sondages were excavated through alluvial sequences to identify any buried archaeological / palaeoenvironmental deposits. All other features were sample excavated. This involved excavation of 50% of discrete features and 10% of linear features. No features were wholly excavated.

Due to the cluster of features exposed in the southern half of Field H, four extra trenches (Trenches 23-26) were excavated to evaluate the extent of features in this area. Features exposed in these trenches were surveyed, but not excavated.

Two trenches, 21 and 22, aligned roughly north-west, south-east across the western part of Field F and with a total length of 300m, were excavated with auger survey points at regular intervals. A sample from the most suitable peat profile was taken using a Russian corer and all recording of peat was undertaken by a geoarchaeologist.

The sampled peat core was described, with sub-samples at the base and top of the core taken for radiocarbon-dating, thus providing a chronological framework for peat formation. Pollen slides were also prepared and assessed.

An overall plan of all visible features was prepared by instrument survey. The survey data and hand-drawn plans were accurately tied in to the Ordnance Survey National Grid and Ordnance Datum using dGPS.

### **Recording**

All recording followed CifA Standards and Guidance for conducting archaeological evaluations. All contexts, small finds and environmental samples were given unique numbers. Recording was undertaken on pro forma record cards and photographs were taken with a digital camera.

### **Samples and artefacts**

Artefacts were retrieved and recorded in accordance with English Heritage (2001; 2007; 2010; 2012) and CifA (2008b) standards and guidance.



Finds were recorded by context. The artefacts retrieved were cleaned, packaged and stored in accordance with First Aid for Finds (Watkinson & Neal 1998).

Palaeoenvironmental sampling was undertaken in accordance with relevant English Heritage (2011) standards and guidance. All securely stratified deposits were sampled for retrieval and analysis of biological remains.

The samples have been processed and assessed. The results and recommendations for any further work is included in this report.

## RESULTS

### **Field F (Illus 2)**

A total of seven trenches were excavated in this field (Trench 06-10, 21, 22). Trenches 21 and 22 were primarily cut to facilitate palaeoenvironmental auguring.

Trenches 09 and 10 targeted the line of a drain depicted on the 1657 estate map that had also been recorded during the geophysical survey (Feature J). The feature was revealed to be a ditch that was 2.8m wide by 1.5m deep in Trench 10 [021] and 4.6m wide by 1m deep in Trench 10 [023]. The fills of the ditch were similar in both locations; finely laminated bands of yellow brown sand and mid brown sandy clay with a thick clay band in the middle. The location of the ditch closely mirrored that of Feature J, a curving line similar in position and shape to that of the ditch depicted on the 17<sup>th</sup> century estate map. The geophysical survey only covered the eastern half of Field F while the estate map shows the ditch terminating in the Carr dyke to the south-west. The ditch was also exposed near the centre of Trench 21 [025]. At this location it was only 1.7m wide by 0.4m deep. It was filled with finely laminated bands of sand and sandy clay that closely resembles the fill of the ditch exposed in Trenches 09 and 10.

Although the profile of the ditch is different in the three trenches, the fill is very similar and its location corresponds with the mapped feature and geophysics feature. The level of the base of the ditch in the three locations shows that it is almost horizontal between Trench 09 and 10 at 1.14m aOD but drops to 1.05m aOD in Trench 21; indicating that the ditch drained towards the south-west.

Trenches 07/08 at the north end of the field targeted a geophysics signal described as disturbances possibly caused by magnetic debris in the form of brick or tile (Feature H). No features or finds were identified in these trenches. The prospective Trench 06 was also void of features.

### **Field G (Illus 2)**

Two trenches (11 and 12) were excavated in this field. They targeted the line of the old road depicted on the 17<sup>th</sup> century estate map and still shown on the 1<sup>st</sup> edition OS map from 1853. The line of the road was also picked up by the geophysical survey (Feature K). This feature was exposed in both trenches in the form of a 4m to 5m wide strip of stone and brick rubble lying on top of the natural clay and aligned north to south.

### **Field H (Illus 3)**

This field is located to the east of New Road. It extends some 830m north to south and is just over 140m wide (Illus 1). A pipeline supplying the Drax Power Station runs along the east side of the field before crossing it towards the north-east corner of the power station. A high voltage power line runs north-west across the south-western part of the field.

A total of five trenches were originally laid out in this field. Trenches 13 and 14 were located in the north half of the field, to the north of the pipe line. Trenches 15 to 17 were located in the south half of the field. Trench 16 targeted a short linear feature (M) recorded during the geophysical survey.

Trenches 13, 14 and 17 contained no archaeological features. Trenches 15 and 16 (some 40m and 120m to the south of the pipe line) exposed 12 features, half of which contained artefacts consisting mainly of potsherds. Only one of the features was fully uncovered within the trench (Pit [011] in Trench 16).

Three features in the north half of Trench 16 (Cuts [013], [015] and [017]) appear to be connected due to their shape and position (Illus 3 and 5). All three features had similar homogenous grey sandy fill. Features [013] and [015] are elongated parallel cuts extending 0.5m into the trench from the western edge. Feature [017] extends 0.8m into the trench from the opposite side. It is in line with Feature [015] on the opposite side with a 0.6m wide gap between the two features. It is possible that the features represent ditch terminals and that the gap may indicate the entrance of a possible ditched enclosure.

The remaining eight features are ditches cutting across the width of the trenches. The four ditches in Trench 16 are on an east-west alignment, 0.8m to 1.3m wide and from 0.25m to 0.4m deep, all with similar grey sandy fills.

The four ditches exposed in Trench 15 are 0.8m to 2m wide and from 0.2m to 0.65m deep. Ditches [029] and [041] are on a similar east-west alignment as the ditches in Trench 16. Ditch [037] is the only one that is on a north, south alignment and cuts diagonally across the middle of Trench 15. In addition to the orientation it also has a different cross section from the other ditches. The upper part of the ditch is cut through sand and has gently sloping sides, with a steep sided slot cut into clay along the middle of the ditch base (Illus 6).

Given the high density of features uncovered in these two trenches, four additional trenches (Trench 23-26) were excavated to the north and south in an attempt to estimate the extent of the archaeological remains in the area. Trench 26 was located across a possible feature recorded during the geophysical survey while the other three trenches were located to evaluate the extent of features to the north, south and south-west of Trenches 15 and 16.

No features were found in Trench 26, however the three other trenches exposed nine features all with similar fill to those excavated in Trenches 15 and 16 (Illus 4).

Trench 23 was located some 45m to the north-east of Trench 15. An L-shaped linear feature 0.4m to 0.8m wide and extending across the width of the trench was exposed in the eastern half. The shape of the feature suggest that it may be the north-east corner of a rectangular structure. A further two features were recorded to the west in this trench; a small oval feature 0.4m by 0.7m and a possible ditch 1.3m wide.

Trench 24 was located some 42m to the south of Trench 15. Three linear features on a general east-west alignment were exposed in the north half of the trench. The features were 0.7m to 1m wide and on a similar alignment to those exposed in Trench 16 some 55m to the east.

Trench 25 was located some 60m to the south of Trench 16. It was aligned roughly east-west and contained two linear features 0.7m to 1m wide, located towards opposite ends of the trench. The features were approximately parallel and aligned north-east, south-west.

### **Field I**

Field I is located on the south side of Pear Tree Avenue and represents the easternmost extent of the proposed development boundary. Three prospective trenches were excavated in this field (Trenches 18-20). The removal of 0.4m deep topsoil exposed finely laminated yellow brown sand and mid brown sandy clay. This deposit is very similar to warp deposits seen in this region. Sondages cut into this deposit showed that the deposit was between 0.2m and 0.8m thick overlying blueish grey clay.

The eastern edge of a palaeochannel was exposed in the western half of Trench 19. The channel contained peat with preserved pieces of alder. The trench was extended 6m towards the north-west without reaching the other side of the channel.

None of the trenches in this field contained archaeological features.

### **Field J (Illus 4)**

The field is located immediately to the west of the scheduled area of Drax Priory. Six trenches (1-5 and 27) were excavated to target features recorded previously.

Trench 1 was excavated at the north edge of the field, targeting a geophysics signal described as disturbances possibly caused by magnetic debris in the form of brick or tile (Feature G). Apart from tile drains no significant archaeological features were exposed.

Trenches 2 and 3 targeted an oval soil mark seen on 1986 aerial photographs (NAA 1998, Plates 1-2, feature c). Trench 2a was located along the north half and Trench 2b along the south half of the soil mark, with Trench 3 cutting across the middle of the feature (Illus 4). This trench was subsequently deepened in order to determine the depth and lateral extent of the feature (Illus 7). The shallow topsoil and deeper subsoil (50) consisted of dense, compact, grey brown clay. The subsoil also contained large, undressed, limestone cobbles and boulders.

Below the subsoil was a shallow deposit (56) less than 0.05m deep of open textured material which appeared to consist of degraded organics and was interpreted as a possible palaeosol. Underlying this was a deposit of dense, compact brown clay with grey lenses and iron staining (53) cut by field drains [57] and [58]. This was underlain by a layer of smooth clays and organic material (54). The organics were exceptionally well preserved, visible plant macrofossils included leaves from deciduous trees including oak and bog myrtle and abundant seeds. Insect remains were also visible with species of open water environment such as *Agabus* spp. and a female specimen of the predacious diving beetle.

Deposit (54) sealed the remains of wooden planking that may represent the lining of the pond feature. Subsequent cleaning of the samples also exposed in situ nails (Illus 15). Beneath this the basement deposit (55) consisted of blue grey clays, probably of early Holocene alluvial and intertidal provenance.

The three trenches exposed the edges of the feature on all four sides and established the top of the cut at approximately 0.5m depth below current ground surface. It had dimensions of 58.5m length, 10.5m width and 1.5m depth. This extent corresponds to the feature showing on the 1986 aerial photographs.

A sub-rectangular feature [044] was exposed near the N end of Trench 2a (Illus 8); beneath topsoil of 0.3m depth. It was aligned ENE-WSW and 1m wide by 0.2m deep. The feature extended 2m into the trench at an angle. It had near right angle corners to the south-west, steep sides and a flat undulating base, possibly caused by tool marks from cutting into compact clay. The feature was cut through sand down to underlying grey clay. It extended beyond the trench towards the NE. The cut contained a basal fill of crumbly black charred organic material, sealed by a deposit of compact orange brown sand and blue clay.

Trench 4 was targeting the E-W part of the linear feature (M) recorded during the geophysical survey. The feature coincided with a linear cut containing two ceramic field drains cut across the middle of the trench.

Trench 5 was targeting the main part of Feature M aligned NW-SE (Illus 2). This part of the feature coincides with a boundary ditch depicted on the 1972 OS map. The feature was identified as an 8.5m wide ditch [035] aligned NW-SE cutting across the middle of the trench. The ditch was filled with brown compact clay. A live drain was located towards the base of the feature flooding the trench and preventing a full excavation of the feature.

A second ditch [031] also aligned NW-SE cut across the trench 3m to the NE. This ditch was 2.4m wide by 0.8m deep with stepped sides and a flat base (Illus 9). It was filled with grey clay containing a fragment of tile and grey pot.

A possibly sub-rectangular feature [033], 1.8m wide and 0.4m deep, was exposed at the NE end of the trench. It had vertical sides with a flat base (Illus 10). The feature extended 1.2m into the trench from the SE edge. It was filled with blue grey compact sandy clay that contained occasional charcoal flecks and fire cracked stone.

Trench 27 was targeting a feature labelled 'Moat' on the 1907 OS map. The feature was located at the E end of the trench where a 5m wide ditch [048] aligned NNE-SSW was exposed. The trench was filled with orange brown compact clay.

## FINDS ASSESSMENT

By Julie Franklin, Ian Rowlandson

The finds assemblage included 50 sherds (778g) of pottery, 90 sherds (6.1kg) of ceramic building material, with further small fragments of glass, industrial waste and chipped stone. The finds generally appeared to be of Romano-British date, though it is possible that some of the less diagnostic pieces may relate to the medieval priory or to later agricultural use of the land. The pottery assemblage included some large sherds and a near complete drinking cup. A summary of the finds is given in the table below. A complete catalogue of all the finds is given at the end.

Tr	Pottery (PH)	Pottery (PH)	Pottery (Rom)	Pottery (Rom)	CBM	CBM	Glass	Ind Waste	Lithics	Stone	Datin g
-	Count	Wgt	Count	Wgt	Count	Wgt	Count	Wgt	Count	Count	-
02A	13	14g			6	5,790g					Medi?
05			2	35g	1	80g					Rom, Medi?
15	2	38g	6	130g			1		1		Rom

16			27	561g	80	233g	1	<0.5g		1	Rom
21					3	44g					Rom/ Medi?
<b>Total</b>	<b>15</b>	<b>52g</b>	<b>35</b>	<b>726g</b>	<b>90</b>	<b>6,147g</b>	<b>2</b>	<b>&lt;0.5g</b>	<b>1</b>		

Table 1 – Summary of finds assemblage, quantified by trench

### Pottery

The pottery numbered 50 sherds (778g) ranging from the 1<sup>st</sup> century AD to the end of the 4<sup>th</sup> century AD. Sherds from three contexts may have been in use prior to the Roman conquest of this part of Britain. A handmade coarse quartz and sandstone gritted body sherd (034) and two Iron Age tradition grog-gritted sherds including a jar or large bowl with a rounded wedge shaped rim (038) and a further body sherd (047). Similar grog-gritted Iron Age tradition type vessels are known to have been produced in the Trent Valley and northern Lincolnshire amongst other places during the peri-Conquest period and into the 2<sup>nd</sup> century AD.

A single sherd of Central Gaulish samian was retrieved (008) but the majority of sherds were grey wares with most similar to samples of the Holme-on-Spalding Moor area products; the notable examples were a narrow necked jar (030) and a large basal fragment from a drinking vessel, possibly a bi-conical form (010). The grey wares present could mostly be dated to the 3<sup>rd</sup> to 4<sup>th</sup> century AD with a few vessels that might be of 2<sup>nd</sup> century date (005, 018). The Huntcliff ware sherds, a key indicator of activity in the late 4<sup>th</sup> to early 5<sup>th</sup> century AD, were also noteworthy. Fresh fragments from a large bowl with a Huntcliff rim were retrieved from ditch [004] (005) suggesting this late occupation as in the vicinity. A single scrap of shell-gritted pottery retrieved from ditch [006] (008) could not be securely attributed a date.

### Ceramic Building Material

The ceramic building material associated with the main focus of Roman activity in Trench 16 is all of amorphous fired clay, possibly the remains of wattle and daub structures. These are particularly concentrated (221g) in ditch [006] (007).

Other finds include four pieces (124g) of roof tile (Trenches 05 and 21). These may be of Roman, medieval or post-medieval date. Six sherds of brick (5.790kg) were also recovered from the top of the fill (050/053) of a possible fish pond in Trench 02A. These are relatively broad and flat and may be consistent with a medieval date and thus may relate to a structure associated with the priory.

### Other Finds

The only other finds are two small fragments of glass, a fragment of possible industrial waste, a possible stone pounder and one flint. The glass sherds are both colourless but too small (<0.5g) to be diagnostic of date or function and small enough that they may easily be intrusive. One was associated with Roman pottery in ditch [004] (005), the other was isolated in ditch [041] (042).

A tiny fragment of vitrified material may relate to industry in the area. It is associated with a sherd of probable Roman pottery in pit [011] (012), Trench 16, but again is so small (<0.5g) that it cannot be definitely related to any processes undertaken on site. The stone pounder is burnt and its identification tentative, it was recovered from ditch [006]. A single piece of flint from ditch [028] (043), Trench 15, does appear to be worked but is small, broken and burnt and cannot provide any useful dating evidence.

### Discussion

The finds indicate Roman occupation on site, and the distribution of the finds suggests the focus of this settlement was in the vicinity of Trench 16. The size of the sherds found in this trench implies they might have been little disturbed since original deposition in ditches [004] and [009]. Roman pottery was found during previous fieldwork to the north-east of field C (NAA 1998, 15-16). The

range of pottery suggests some domestic activity on the site throughout the Roman period. The majority of the pottery present was probably manufactured locally with the exception of the samian, the native tradition wares and one grey ware sherd that were brought from further afield. Medieval roof tiles, similar to those in Trenches 05 and 21, have been found during previous fieldwork on the site in Fields C and D (Dalland & Franklin 2009, 4-6; Franklin 2009, 9). Their overall distribution suggests association with the priory. The lack of medieval pottery is perhaps surprising given the proximity of a known medieval site, though medieval pottery was found during previous work (ibid).

The pottery from this site should be retained and deposited in the relevant museum. In the event of further work on this site the pottery from these investigations should be considered in any final report. No illustration of the vessels would be necessary as vessels have been paralleled to examples in existing publications.

## ENVIRONMENTAL ASSESSMENT

by Laura Bailey and Tim Holden

### Introduction

Seventeen samples, ranging in volume from 2 to 40 litres, and hand collected animal bone retrieved during archaeological works at Drax Power Station, Selby, North Yorkshire, were received for palaeoenvironmental assessment. The site was located in the vicinity of Drax priory, a Scheduled Ancient Monument. The site comprised several features including ditches and field boundaries. The samples were taken from pit and ditch fills. The aims of the assessment were to assess the presence, preservation and abundance of any environmental remains in the samples and to characterize the assemblage as far as possible.

### Methodology

Bulk samples were subjected to flotation and wet sieving in a Siraf-style flotation machine. The floating debris (the flot) was collected in a 250 µm sieve and, once dry, scanned using a binocular microscope. Any material remaining in the flotation tank (retent) was wet-sieved through a 1mm mesh and air-dried. All samples were scanned using a stereomicroscope at magnifications of x10 and up to x100. Identifications, where provided, were confirmed using modern reference material and seed atlases including Cappers et al. (2006).

### Results

Results of the assessment are presented in Appendix 2.2 Tables 1 (Retent samples) and 2 (Flot samples). Material suitable for AMS (Accelerated Mass Spectrometry) radiocarbon dating is shown in the tables.

#### Wood charcoal

Wood charcoal was present in varying quantities in all samples. It was generally abraded, with the exception of that recovered from the fill (047) of pit [044], where a large amount of well-preserved charcoal was recovered. Several twig fragments including possible heather (*Calluna* sp.) were present. The majority of samples contained charcoal of a suitable size for AMS dating.

#### Cereal grain

A small number of cereal grains were present in five contexts. Three types of grain, possible wheat, possible oat and hulled barley were identified.

Heavily abraded cereal grains tentatively identified as wheat (c.f. *Triticum* sp.) were present in the fills (007) and (008) of ditch [006], which contained Roman pottery. A single poorly preserved oat grain (c.f. *Avena* sp.) grain was also recovered from deposit (008). A heavily abraded hulled barley (*Hordeum vulgare*) grain was present in the fill (010) of ditch [009], which also contained Roman Pottery.

Indeterminate cereal grains were recovered from the fill (005) of ditch [004] and the fill (034) of Pit [033].

#### Other charred plant remains

A small number of knotgrass (*Polygonum* sp.), chickweed (*Stellaria media*), fat hen (*Chenopodium* sp.), brome grass (*Bromus* sp.) and sedge (*Carex* sp.) 'seeds' were identified. Knotgrass, chickweed and fat hen are typically found in disturbed and cultivated ground. Sedges typically grow in wet and damp ground.

A quantity of compact organic material containing well-preserved buds, seed heads and stem fragments was present in the fill (047) of pit [044]. It seems likely that this material was charred peat. The feature also contained several fragments of coarseware pottery of possible Iron Age date.

#### Bone

A heavily abraded cow molar was hand collected from the fill (030) of ditch [029]. Fragments of abraded cattle distal metacarpal were also hand collected from the lower fill (040) of ditch [038]. Burnt bone was present in five contexts (Table 2). Small fragments of burnt bone were hand collected from deposits (040) and (007). Heavily fragmented, small mammal ribs were present deposit (040).

#### Shell

A small fragment of terrestrial snail shell was recovered from a sample (210) from the lowest fill of the possible Abbey moat. The shell was heavily fragmented and therefore not possible to identify to species level.

#### Other finds

Finds including pottery will be discussed as the subject of a separate finds report.

#### Conclusion

The environmental assemblage offers some insight into site economy. The presence of cereal grain, albeit in small quantities, suggests that it was being used on, or close to the site. However, the small number present and their poor condition suggests that they were probably not directly related to the features from which they were recovered.

The weeds seeds recovered undoubtedly reflect the local flora. Fat hen, knotgrass and chickweed are typically found in disturbed and cultivated ground. It is therefore likely that they were growing in the site, or incidentally collected with crops or fuel wood.

The organic material recovered from the fill (047) of pit [044] was extremely well-preserved and thought to represent burnt peat. While it would be possible to characterise this further and offer opinion on its source, it is very unlikely that the peat will be contemporary with activity on the site so it will be of limited value in putting the site into its environmental context. Material suitable for radiocarbon dating was recovered from a number of features to refine dating of features.

# AUGER SURVEY: GEOARCHAEOLOGICAL AND PALAEOENVIRONMENTAL ASSESSMENT

by Emma Tetlow

*An auger survey was undertaken in Field F, Trenches 21 and 22 to determine the route of a former palaeochannel of the now heavily channelized Carr Dike. The survey consisted of twenty-two auger points across the two trenches. The aim of the survey was to record the presence or absence of peat deposits across the DA, and to investigate the cultural and palaeoenvironmental potential of these peats.*

*Peaty deposits and humic silts and clays were recorded in both trenches. The depth varied spatially across the site, the peat found in boreholes 3 and 4 in Trench 21 both exceeded 2.5m, peat from boreholes in Trench 22 were slightly less extensive. The organic-rich material contained well-preserved wood, plant remains and insects.*

## **Background**

Areas of peat were identified during trial-trenching in 2009 (Masser & Lancaster 2009). The purpose of the evaluation in Field F was to characterise the extent and nature of the peat in the field to the S of the Carr Dike, E of the mapped drain (Illus 3) which, itself, preserves the course of an earlier alignment of the Carr Dike.

The underlying geology, as mapped by the British Geological Survey: (<http://www.bgs.ac.uk>), comprises late Pleistocene clay deposits that are referred to as the '25 foot drift'. There are slight but significant variations in topography within this predominantly flat landscape. In particular, there is a pronounced dip (>1.6 – 1.7m OD) immediately to the SE of the channelized Carr Dike (Illus 11), an artificial drainage channel which crosses the area.

Deposits of peat were revealed in Field E, W of the mapped drain, during the course of evaluation work which was undertaken in 2009 to inform the Environmental Statement for the proposed biomass plant at Drax. Such deposits may have potential for holding significant palaeoenvironmental evidence, specifically through the survival of pollen. If pollen is present, the pollen signal may show evidence of human activity in the area.

## **Fieldwork methodology**

A programme of evaluation trenching and gouge auger survey was implemented to allow the extent of the peat to be assessed. The use of trenching facilitated archaeological evaluation of the overlying silts and provided further evidence for previous alignments of the Carr Dike, although it is clear from historical maps that it has extended around the N, NW and W sides of Field F since at least 1657 (Breslin *et al* 2009). Evidence for episodes of flooding or warping, were not thought to be present in this area.

Two trenches, aligned roughly NW-SE across the western part of Field F and with a total length of 300m, were excavated, with auger survey points at 25m intervals. The resolution was increased to 10m across areas thought to have once been occupied by a channel of the Carr Dike (Illus 3). Where necessary, sondages were excavated to allow better access to the peat for recording and augering. A sample from the most suitable peat profile was taken using a Russian auger and recording was undertaken by a geoarchaeologist (Illus 3).

Assessment of the material recovered from this borehole will also facilitate the collection of samples to help inform the mitigation strategy. The core will be described; material will be recovered from the top and the bottom of the core for radiocarbon-dating; a sample of the basal silt layer overlying the



peat will also be taken for OSL dating, thus providing a chronological framework for peat formation and alluvial deposition. Samples will be recovered for pollen analysis from suitable depths.

### **Results of the auger survey**

The DA is on the floodplain of the River Ouse and is bisected by a number of other, significant man-made drains which drain into the Carr Dike and subsequently the Ouse itself. The area is underlain by the unconsolidated Pleistocene "25 ft Drift" characteristic of the Humberhead Levels and Vale of York wetlands (Gaunt 1981). The deposit consists of Pleistocene sands and clays associated with Lake Humber, the provenance of some of the sand is thought to be Aeolian (Gaunt 1981).

For ease of discussion the area will be divided into two (1) Trench 21 and (2) Trench 22 Detailed descriptions of auger cores are provided in Appendix 2.1 with auger points and unit thickness illustrated in Illus 12 and 13.

#### **Trench 21**

Trench 21 was 200m in length and orientated NNW-SSE, the NNW extreme of the trench was located on a topographic rise which appeared to be associated with the small plateau once occupied by the Augustinian Priory. This terrace dipped to the SSE by  $>15^\circ$ . Boreholes were recovered at the top (0m, BH1) of the terrace and at the base (24m, BH2), this was believed to be the interface between the former wetland/terrestrial zones. The borehole resolution was then increased to 10m across what was interpreted as the course of the former channel (34-94m, BH3-9). The resolution was coarsened to 25m (94-194m, BH10-13) as the topography rose once again. Auger penetration varied across the site and was affected by both the density and compact nature of the sedimentology, the presence of wood and waterlogging.

The stratigraphy of BH1 reflected its elevated position on a former terrace. It consisted of sands and gravels, overlain by blue grey clay, a warp deposit and finally topsoil. The wetland/terrestrial interface is clearly reflected by the presence of organic rich material in BH2. Across the area thought to have been occupied by the channel, the stratigraphy becomes more complex with peat and organic rich deposits of varying depths present across BH3-8. The most substantial deposits were encountered in BH 3 and 4, however the total depth of the organic-rich material was not established due to lack of recovery associated with waterlogging at 3.88m+. The organic material contained well preserved wood and other identifiable organic remains including reeds and sedges. Laminated sand and clay deposits, characteristic of warping, were also found across BH3-9 with an exceptionally deep deposit in BH3.

The sedimentology of the remaining boreholes (BH9-13) also reflect their terrace position. They consisted of a tripartite sequence of blue grey clay (the dense nature of this unit precluded any further auger penetration), sealed by dense brown clay – possibly warp, nonetheless the sand content is limited- which was capped by a sandy, open textured topsoil. The notable exception to this is BH11 which contained a further deposit of peaty organics, including a substantial deposit of wood, which also precluded any further auger penetration.

#### **Trench 22**

Trench 22 was 100m in length and orientated north-west, south-east. The northwest extreme of the trench was located within the confines of the visible depression thought to have been formed by the palaeochannel. The borehole resolution was at 10m intervals across what was believed to be the course of the former channel (0-40m, BH1-5), as the topography rose once again, the resolution was coarsened to 25m (40-100m, BH6-8). The depth of auger penetration varied across the site as a direct result of localised factors.

The stratigraphy encountered in the boreholes (BH1-3) which traversed the former channel was more complex than that associated with the former terrace. Peat and organics were found in all three with the greatest depth recorded in BH2 (although waterlogging precluded establishing a definitive depth for the deposit). The organic material contained well preserved wood and other identifiable organic remains including reeds and sedges. The presence of a possible palaeosol was also recorded across BH1-4 and laminated sediments, interpreted as warp, in BH2-4.

The sedimentology of BH 5-8 largely consisted of varying clay deposits; the dense, compact nature of the material rendering borehole drilling problematic.

## **Discussion**

Geomorphological walkover survey and geoarchaeological coring of the DA demonstrates that it comprises landsurfaces and landforms of varying age.

The clays encountered in the boreholes from the former "Terraces" (Trench 21 BH1, 9-13; Trench 22 BH5-8) are likely to be associated with the Pleistocene deposits of the "25 foot drift".

The original age of the palaeochannel at present is ambiguous but it is fairly likely that this feature developed relatively rapidly after the demise of Lake Humber at the end of the Pleistocene. Relatively stable, lower sea-levels allowed the incision of newly formed river channels during the early Holocene, in some cases to depths of -20m OD (Gaunt *et al.* 1971). Later sea-level rise, from the early Mesolithic onwards lead to the development of wetlands on the floodplain of the River Ouse, c. 7100BP, with maximum development reached c. 2050BP (Van de Noort and Ellis 1999).

The evolution of the peat deposit at Drax is likely to be a result of channel change, this meander may have been cut-off relatively early in the development of this floodplain. If this is the case, a similar analogy may be found in the floodplain of the River Torne, approximately 10km the S (Mansell *et al.* 2014). Peats from a palaeochannel of the River Torne contain environmental evidence spanning five millennia with organic deposition commencing 10,200–9910 cal BP and ceasing 4360–4160 cal BP. The hydrology of the Torne floodplain appears to have been controlled by a number of factors including water table fluctuations and changes in channel pattern/flow, which may both be linked to sea-level fluctuations (Mansell *et al.* 2014). It is likely that similar factors were at work in this area. The peat found within the former channel is exceptionally well preserved, large fragments of wood which appear to consist of both larger and smaller branches, the remains of reeds and sedges were also preserved. At present, it would appear that for much of its development, the vegetation within the channel consisted of a carr woodland.

The alluvium overlying the peats within the former palaeochannels is likely to be associated with a number of factors, both natural and anthropogenic. During the later prehistoric period, this is thought to be a result of rising water tables and soil erosion (Mansell *et al.* 2014), more recently the effects of mining in the Yorkshire Dales is considered to have played a role (Hudson Edwards *et al.* 1999a, 1999b).

Two further units stand out from this suite, the warp deposit which was found in both Trench 21 and 22 and the potential palaeosol found in Trench 22. In Trench 22, the palaeosol underlies the warp which suggests medieval agricultural activity may have been associated with the Augustinian Priory. A palaeosol has also been found at similar depths in a vertical extension to Trench 3 in Field J. This deposit appears to post-date activity associated with the Augustinian Priory as overlies what is thought to be deposits from a contemporary fishpond. The warp deposit appears to consist of the more advanced flood-warping which produces the characteristic laminae, and generally occurred in

the late 18<sup>th</sup> Century (Gaunt 1994). This clearly discounts the theory that this area was not subject to warping.

### Conclusions

A substantial deposit of organic-rich material and peat has been found preserved within the confines of the former channel of the Carr Dike. Comparison with a similar site indicates that this material has the potential to produce a significant palaeoenvironmental data-set for this area, possibly from the early Holocene onwards. Therefore, these organic deposits within the DA have the potential to be informative on a number of levels, including early Holocene vegetation change, later change associated with early farming practice, and to provide a background to the existing Romano-British and medieval archaeology. It should be stressed that these organic-rich areas have the potential to preserve a variety of archaeological remains within the peats, particularly at the wetland/dryland edge.

## POLLEN ASSESSMENT

by James Blaikie and Richard Tipping, Biological & Environmental Sciences, School of Natural Sciences, University of Stirling UK FK9 4LA

### Materials and methods

Fifteen samples of organic-rich sediment from 1.2 to nearly 5.0m depth in Borehole 14 were subjected to standard chemical treatment (Moore, Webb & Collinson 1991) to remove extraneous organic matter and fine mineral matter. The residues were stained with safranin and spread on microscope slides, cover-slips emplaced and these sealed with nail varnish. Slides were counted on a Leica stereo-microscope at magnifications x400 until 100 pollen grains from plants that probably grew away from the peat itself (total land pollen: tlp). Microscopic charcoal was recorded in four size categories.

### Results

The results are plotted in Illus 14. The sediments proved to be richly polleniferous and the pollen is well preserved. There is great potential to reconstruct the land use history around this palaeochannel from further analyses. Though based on low counts, the results indicate that the sediments are of later Holocene age, after the loss from regional vegetation of elm (*Ulmus*) at around 6300 cal BP (Parker et al 2002). This interpretation has been subsequently confirmed by radiocarbon dating of the sequence to between 3704-3531 and 792-516 cal BC (Table 1). The dominant trees were those suited to wetter soils, *Betula* (birch) and *Alnus* (alder). *Alnus* increases its extent, density or flowering over time. The tall shrub, *Salix* (willow), would grow with these trees, possibly being ousted above 2.5m depth by *Alnus*. *Pinus* (Scots pine) pollen is common, probably growing on drier but still nutrient-poor peat away from the palaeochannel, perhaps with *Empetrum* (crowberry), a heather that flourishes beneath *Pinus* on drier peat surfaces. *Quercus* (oak) represents the only surviving tree from dry soils, with *Corylus* (hazel).

The wetland tree and shrub community may have acted as a screen, preventing pollen from dryland sources to fall onto the peat. The Poaceae (grasses) are present but not common, though many of the associated herbs (*Aster* type, Lactuceae, Caryophyllaceae, Chenopodiaceae and *Rumex*) thriving in open and disturbed habitats such as ploughed fields. There is no pollen from cereals, however. Microscopic charcoal is common below 2.5m depth, in all size categories, suggesting that fires were frequent or large close to and distant from the palaeochannel.

Regional correlations are unwise from such low pollen counts, but it appears that the palaeochannel represents an expanded stratigraphy of the final, post-4000 cal BP pollen assemblage zone recorded

from a former course of the River Torne (Mansell et al 2014). This would be extremely valuable because the sediments at Borehole 14 might then allow very detailed resolution of land use changes from the early Bronze Age onward, the period of settled agriculture.

Sample	Depth (m)	Lab code	Material	Radiocarbon Age BP	Calibrated Age range 2σ
222	1.04	SUERC-61916 (GU38543)	Peat	2504 ± 36	792-516 calBC
223	4.93	SUERC-61917 (GU38544)	Peat	4610 ± 36	3517-3136 cal BC
224	4.14	SUERC-61918 (GU38545)	Peat	4187 ± 36	2891-2637 cal BC
225	4.34	SUERC-61919 (GU38546)	Peat	4845 ± 36	3704-3531 cal BC

Table 1 – Radiocarbon dates from Borehole 14

## DISCUSSION

The evaluation successfully met the project’s key objectives to test previously identified geophysical and soil-mark anomalies and clarify the archaeological and palaeoenvironmental potential of seemingly blank areas within the site.

### Field J

Based on previous work, Field J had been considered as the area with the highest archaeological potential. In addition to a possible fish pond and moat associated with the Drax Priory, previous fieldwork had recorded Roman activity in the area.

#### *Abbey Fishpond*

The evaluation confirmed that the soilmark tentatively identified as a fish pond reflects the location of an elongated basin. It is not depicted on any maps; suggesting that it pre-dates the 17th century. However, the material used to in-fill at least the upper part of the feature was modern, indicating that it has been open until fairly recently. The outline of the feature is still visible on the ground and can be seen on LIDAR data as a shallow hollow (Illus 11).

The trenches established that the extent and shape corresponds closely to the feature seen on the 1986 aerial photographs. Efforts to stabilise this area using local limestone, due to continued waterlogging, were apparent in the upper unit, as was later in-filling, probably a result of enhanced sedimentation since the 16th century (see Geoarchaeological and Palaeoenvironmental Assessment above).

An organic layer, likely to represent the bottom of the pond, was found 1.5m below the modern land surface. This deposit was rich in exceptionally well preserved organics which were readily identifiable. In a monastic setting, this feature may have been used as a fish or retting pond. Further analysis of the environmental evidence would facilitate defining its function. For example had the pond been used for retting, an abundance of flax-seed would be expected.

Assessment of the insect and waterlogged plant remains in samples taken from the basal layer (54) may indicate the potential of the proxy evidence to provide comment on the questions outlined above.

#### *Abbey Moat*

Trench 27 exposed the cut of what could be the moat around the west side of Drax Abbey. The line of the ditch can still be seen as shallow depression on the ground and LIDAR data shows it curving round to the east and possibly merging into the old line of the Carr dike (Illus 11). This may suggest that the old line of the dike curving around the south and east side of the Abbey runs along the line of the old moat.

#### *Roman remains*

A trench located in the southern half of Field J during previous work by NAA (1998) had revealed a boundary ditch infilled during the last quarter of the 20th century. Eight sherds of Roman pottery were recovered; assumed to be associated although the sequence of cuts and deposits within the ditch were ambiguous.

During the current evaluation, Trench 5 was aligned across the same modern boundary ditch but some 50m to the south-east. As in the previous NAA Trench A, pottery of likely Roman origin was found but in this case within a ditch [032] separate to and undisturbed by the modern boundary. The alignment of the Roman ditch is almost parallel with the modern boundary and it is possible that the two merge at the point of the previous NAA trench.

A second possible Roman feature was exposed at the N end of Trench 2a. It was a sub-rectangular pit [44] filled with compact well-preserved organic material, possibly charred peat. The fill contained a sherd of hand-made coarseware of late prehistoric or early Romano-British date.

#### **Field F**

The curving ditch recorded in Field F has been identified as the ditch depicted on the 17<sup>th</sup> century estate map. During the fieldwork the field was covered in waist high crop which made it difficult to see subtle variations in the topography. However by superimposing the line of the feature on to 0.1m Lidar data of the area it becomes clear that the ditch follows the edge of the floodplain along the Carr dyke (Illus 11).

The auger survey undertaken along Trenches 21 and 22 in Field F located a palaeochannel partly filled with peat in the western half of the field. The width of the channel corresponds to a topographical feature visible on Lidar data running north-east, south-west across the field; allowing its location to be extrapolated beyond the confines of the trenches (Illus 11). A 4m deep borehole was cut through the sediments of the deepest parts of the channel. The sediment column covers a period of some 3000 years from 2nd half of the 4th to the second half of the 1st millennium cal BC. A low count pollen evaluation of the core shows that the sediments could provide information about land use changes in the area during this period.

#### **Field H**

The most significant result of this fieldwork was the discovery of an extensive area of probable Roman activity in the southern half of Field H. The features are located on an area of slightly elevated ground (3.5m to 4.5m aOD) which is some 2m higher than the ground to the north. The subsoil in this area is sandy in contrast to the compact clays further to the north; making it more attractive for settlement. The majority of the features were linear with only one pit recorded. No post-holes were exposed. Lack of features in the two trenches to the south (Trenches 17 and 26) may indicate the southern limit. Extra evaluation trenches excavated towards the end of the fieldwork indicate that the site extends at least 210m north to south and over 80 m east to west. Considering the alignment of the features uncovered, it is most likely that the area extends from beyond the fence to the east and possibly up to the New Road beyond the high voltage power line to the west.

These features are likely to derive from Roman settlement and/or field systems, adding to the dataset of sites reflecting Roman expansion throughout the Humber wetlands. Further investigation may reveal a wider pattern of rectilinear enclosures, structural foundation trenches and pits.

## REFERENCES

Advisory Panel on the Archaeology of Burials in England (APABE) 2013

Archaeological Data Service/Digital Antiquity 2011 Guides to Good Practice,  
<http://guides.archaeologydataservice.ac.uk/>

Bartlett, A. 2013. White Rose CCS Facility Drax, North Yorkshire: archaeological geophysical surveys 2012 – 2013. Headland Archaeology unpublished client report.

Breslin, L, S Lancaster and C Lowe. 2009. Drax Power Station, Selby, North Yorkshire: Desk-based assessment (archaeology base-line and palaeoenvironmental appraisal). Headland Archaeology, unpublished client report.

Brickley M & McKinley J 2004 Guidelines to the standards for recording human remains (IfA Paper No 7).

Creighton, J 1999 'The Burse House pottery', in Halkon, P and Millett, M 1999 Rural Settlement and Industry: studies in the Iron Age and Roman Archaeology of Lowland East Yorkshire. Yorkshire Archaeological Report no. 4. Yorkshire Archaeological Society, Roman Antiquities Section and East Riding Archaeological Society

Dalland, M and Franklin, J 2009 Ouse Renewable Energy Plant: Drax, near Selby, North Yorkshire. Fieldwalking in Fields C and D. Headland Archaeology unpublished client report

English Heritage 1998 Dendrochronology: Guidelines on producing and interpreting dendrochronological dates. <http://www.helm.org.uk/guidance-library/dendrochronology-guidelines/>

English Heritage 2001 Centre for Archaeology Guidelines: Archaeometallurgy <http://www.english-heritage.org.uk/publications/archaeometallurgy/>

English Heritage 2004 Human Bones from archaeological sites: Guidelines for producing assessment documents and analytical reports. Centre for Archaeology Guidelines. <http://www.helm.org.uk/guidance-library/human-bones-from-archaeological-sites/>

English Heritage, 2005. Guidance for best practice for treatment of human remains from Christian burial grounds in England (Church Archaeology Human Remains Working Group Report 2005).

English Heritage 2006a The Management of Research Projects in the Historic Environment: The MoRPHE Project Managers' Guide <http://www.english-heritage.org.uk/publications/morphe-project-managers-guide/>

English Heritage 2006b Archaeomagnetic Dating: Guidelines on producing and interpreting archaeomagnetic dates. <http://www.helm.org.uk/guidance-library/1682224/>

- English Heritage 2006c Guidelines on the X-radiography of archaeological metalwork  
<http://www.english-heritage.org.uk/publications/x-radiography-of-archaeological-metalwork/>
- English Heritage 2008a Luminescence Dating: Guidelines on using luminescence dating in archaeology. <http://www.helm.org.uk/guidance-library/luminescence-dating/>
- English Heritage 2008b Investigative Conservation: <http://www.english-heritage.org.uk/publications/investigative-conservation/>
- English Heritage, 2010 Waterlogged Wood: Guidelines on the Recording, Sampling, Conservation and Curation of Waterlogged Wood (3rd edition) <http://www.helm.org.uk/guidance-library/waterlogged-wood/>
- English Heritage, 2011 Environmental Archaeology a guide to the theory and practice of methods, from sampling and recovery to post-excavation, 2nd Edition  
<http://www.helm.org.uk/guidance-library/environmental-archaeology-2nd/>
- English Heritage 2012 Waterlogged Organic Artefacts. Guidance on their Recovery, Analysis and Conservation <http://www.helm.org.uk/guidance-library/waterlogged-organic-artefacts/>
- English Heritage 2013 Science and the dead: A Guideline for the Destructive Sampling of Archaeological Human Remains for Scientific Analysis.  
<http://www.englishheritage.org.uk/content/publications/publicationsNew/guidelines-standards/science-and-dead/science-and-dead.pdf>
- Franklin, J 2009 'Finds Assessment' in Masser, P Ouse Renewable Energy Plant: Drax, Near Selby, North Yorkshire. Archaeological Evaluation (Trial trenches in Fields C and D). Unpublished report by Headland Archaeology for Drax Power Ltd, Nov 2009, 9
- Gaunt, G. D. 1981. Quaternary History of the Southern Part of the Vale of York in Neale, J. and Flenley, J. (eds) *The Quaternary in Britain*. Oxford: Pergamon Press pp 82-97
- Gaunt, G. D. 1994. The geology of the country around Goole, Doncaster and the Isle of Axholme. *Memoir of the British Geological Survey* Sheets 79 and 88 (England and Wales). London: HMSO
- Gaunt, G. D. Jarvis, R. A. and Matthews, B. 1971. The late Weichsalian sequence in the Vale of York. *Proceedings of the Yorkshire Geological Society* 38, 281-284
- Harrison, S 2009. Ouse Renewable Energy Plant: Drax, near Selby, North Yorkshire. Fluxgate Gradiometer Survey (Fields C and D). Headland Archaeology, unpublished client report.
- Hudson Edwards, K., Macklin, M. G. and Taylor, M. P. 1999. 2000 years of sediment-borne heavy metal storage in the Yorkshire Ouse Basin, N. E. England, UK. *Hydrological Processes* 13, 1081-1102
- Hudson Edwards, K., Macklin, M. G., Finlayson, R. and Passmore, D. G. 1999b Medieval lead pollution in the River Ouse at York, England. *Journal of Archaeological Science* 26, 809-813
- Institute for Archaeologists, 2008a Standard and Guidance for archaeological field evaluation (revised October 2008).

- Institute for Archaeologists, 2008b Standard and Guidance for the Collection, Documentation, Conservation and Research of Archaeological Materials  
<http://www.archaeologists.net/sites/default/files/node-files/IfASG-Finds.pdf>
- Institute for Archaeologists, 2009 Standard and Guidance for the creation, compilation, transfer and deposition of archaeological archives <http://www.archaeologists.net/sites/default/files/node-files/IfASG-Archaeological-Archives.pdf>
- Mansell, L. J., Whitehouse, N., Gearey, B., Barratt, P. and Roe, H. M. 2014. Holocene floodplain palaeoecology of the Humberhead Levels; implications for regional wetland development. *Quaternary International*. 341, 91-109
- Masser, P. 2009a. Ouse Renewable Energy Plant: Drax, near Selby, North Yorkshire. Archaeological Evaluation (Trial Trenches in Fields A and B). Headland Archaeology unpublished client report.
- Masser, P. 2009b. Ouse Renewable Energy Plant: Drax, near Selby, North Yorkshire. Archaeological Evaluation (Trial Trenches in Fields C and D). Headland Archaeology unpublished client report.
- Masser, P and S Lancaster. 2009. Ouse Renewable Energy Plant: Drax, near Selby, North Yorkshire. Archaeological Evaluation. Headland Archaeology unpublished client report.
- Monaghan, J 1997 Roman Pottery from York, *The Archaeology of York The Pottery 16/8*, Council for British Archaeology, York
- Moore, P.D., Webb, J.A. & Collinson, M.E. 1991. *Pollen Analysis*. Oxford: Blackwell. 2nd. Ed.
- NAA: Northern Archaeological Associates. 1998. Drax Abbey Farm, North Yorkshire: archaeological evaluation for North Yorkshire Council. Unpublished client report (NAA 98/7).
- Northern Archaeological Associates 2006 Drax Power Station, near Selby, North Yorkshire: archaeological desk-based assessment. Unpublished client report (NAA 06/116).
- Parker, A.G. et al 2002. A review of the mid-Holocene elm decline in the British Isles. *Progress in Physical Geography* 26, 1-45.
- Rigby, V & Stead, I M 1976 Coarse pottery, in Stead, I M *Excavations at Winterton Roman Villa and other Roman sites in North Lincolnshire, 1958-1967*, 136-190
- Robinson, D.E. (2008) Guidelines for the Curation of Waterlogged Macroscopic Plant and Invertebrate Remains. Swindon: English Heritage. <https://www.english-heritage.org.uk/publications/curation-of-waterlogged-macroscopic-plant-and-invertebrate-remains/waterloggedremains.pdf>
- Rowlandson, I M forthcoming A Fabric Series for Late Iron Age and Roman Pottery in North Lincolnshire, unpublished research report for North Lincolnshire Museum
- Rowlandson, I M 2010 A report on the Prehistoric and Roman pottery from an archaeological excavation at Hensall Quarry (Site code HEN10, SE 5880 2250), Unpublished developer funded report for ASWYAS



Van de Noort, R. and Ellis (eds) 1999. *Wetland Heritage of the Vale of York: An Archaeological Survey*. Hull: Humber Wetlands Project University of Hull.

Watkinson D & Neal, V 1998. *First aid for finds*, (Third Edition 1998).

Appendix 1.1: Trench Register

Trench No.	Field	Alignment	Dimensions	Topsoil Depth (m)	Details
01	J	E-W	23 x 8m	0.3m	Brown silty clay topsoil, 0.3m deep over orange brown alluvial silty sand. One field drain aligned N-S cuts across the middle of the trench.
02a	J	NE-SW	28 x 1.9m	0.3m	Mid brown sandy clay topsoil 0.3m deep over dark brown clay. The N edge of the proposed fish pond was exposed towards the N end of the trench. A sub-rectangular pit [044] was partly exposed at the N of the fish pond.
02b	J	NE-SW	31 x 1.9m	0.3m	Mid brown sandy clay topsoil 0.3m deep over dark brown clay. The S edge of the proposed fish pond was exposed towards the S end of the trench.
03	J	SE-NW	25 x 1.9m		Mid brown sandy clay topsoil 0.3m deep over dark brown clay. The full width of the proposed fish pond was exposed in the trench. A sondage slot was cut across the W edge of the pond exposing a full section of the deposits within the pond (Dwg. 03).
04	J	N-S	41 x 1.9m	0.4m	Mid brown sandy clay topsoil over mottled compact yellow clay. One 2.7m wide linear cut containing two ceramic field drains cut across the middle of the trench in line with geophysics feature. Three field drains on a NE-SW and NW-SE alignment exposed in N half of trench. One field drain on a NE-SW alignment was exposed in the S half of the trench.
05	J	NE-SW	38 x 1.9m	0.4m	Mid brown sandy clay topsoil over mottled compact yellow clay. A 8.5m wide ditch [035] aligned NW-SE cut across the middle of the trench. The ditch coincides with the line of a drain depicted on the 1907 OS map and also picked up by the geophysics survey. A second ditch [032] also aligned NW-SE was located some 3m to the NE of [035]. This ditch was 2.4m wide and was filled with grey clay containing a fragment of tile and grey pot. A sub-rectangular pit [033] was exposed at the N end of the trench.
06	F	NNE-SSW	41 x 1.9m	0.3m	Mid brown sandy clay topsoil over compact light brown clay rich alluvium. No archaeological features exposed.
07	F	E-W	38 x 1.9m	0.3m	Mid brown sandy clay topsoil over compact light brown clay rich alluvium. No archaeological features exposed.
08	F	E-W	26 x 7m	0.3m	Mid brown sandy clay topsoil over compact light brown clay rich alluvium. No archaeological features exposed.
09	F	NNE-SSW	41 x 1.9m	0.25m	Mid brown sandy clay topsoil over compact light brown clay and silt alluvium. A 4.6m wide ditch [023] aligned WNW-ESE cut across the S half of the trench. The ditch coincides with the line of a drain depicted on the 1657 estate map and was also picked up by the geophysics survey.
10	F	NNE-SSW	41 x 1.9m	0.25m	Mid brown sandy clay topsoil over compact light brown clay and silt alluvium. A 2.8m wide ditch [021] aligned WNW-ESE cut across the S half of the trench. This is the same ditch as ditch [023] exposed in Trench 09 some 55m to the W.
11	G	ESE-WNW	39 x 1.9m	0.4m	Dark brown sandy clay topsoil with some coke/slag, CBM and other debris over compact light brown and dark grey clay and silt alluvium. A strip of mixed rubble deposit some 5m wide and aligned NNE-SSW cut across the middle of the trench. This deposit coincides with the line of the old road leading up to the farm from the S depicted on the 1st edition OS map from 1853. The line of this road was also picked up by the geophysics survey.
12	G	ESE-WNW	24 x 1.9m	0.4m	Dark grey brown sandy clay topsoil over compact light brown and dark grey clay and silt alluvium. A strip of mixed rubble deposit 4.2m wide and aligned NNE-SSW cut across the middle of the trench. This is remains of the same road that was exposed in Trench 11 some 45m to the NNE.
13	H	NE-SW	39 x 1.9m	0.35m	Grey brown silty clay topsoil. Grey clay subsoil at the N end, 0.1m thick clay overlying peat at the S end of the trench. No archaeological features exposed.
14	H	NNW-SSE	40 x 1.9m	0.35m	Brown silty clay crumbly topsoil over orange brown clay. No archaeological features exposed.
15	H	NNE-SSW	41 x 1.9m	0.4m	Mid brown sandy loam topsoil over mid orange brown mottled sand with manganese flecks. Four ditches were exposed in the trench ([028], [029], [037], [041]). Two of these contained pot sherds.
16	H	NNE-SSW	41 x 1.9m	0.4m	Mid brown sandy loam topsoil over mid orange brown mottled sand with manganese flecks. Eight features including four ditches were exposed in the trench ([004], [006], [009], [011], [013], [015], [017], [019]). The fills of all four ditches contained pot sherds. Trench [006] coincides with a linear feature (M) recorded during the geophysics survey.
17	H	ENE-WSW	41 x 1.9m	0.35m	Mid brown sandy loam topsoil over mid orange brown mottled sand with manganese flecks and occasional NE-SW plough marks. The sub-soil at the far NNE end changes to mid orange brown sandy clay. One filed drain was exposed towards the NNE end of the trench. No archaeological features exposed.
18	I	NE-SW	40 x 1.9m	0.4m	Grey brown silty clay topsoil overlying laminated yellow brown silty sand and brown clay. A sondage was cut into the trench at the SW end exposing a sequence of: 0-0.4 m - Topsoil, 0.4-0.6m - Laminated yellow brown sand and mid brown sandy clay (warp or flood deposit?), 0.6-0.75m - Blueish grey clay with yellow laminations, 0.75-0.75m - Band of peat, 0.85-1.2m+ - Blueish grey clay. Two field drains were exposed in the NE half of the trench.
19	I	NW-SE	46 x 1.9m	0.4m	Grey brown silty clay topsoil overlying laminated yellow brown silty sand and brown clay. The E side of a possible paleo channel aligned N-S was exposed in the NW half of the trench. The channel contained peat with preserved pieces of alder. The trench was extended 6m towards the NW without reaching the other side of the channel. Two field drains were exposed in the trench.

20	I	NE-SW	30 x 1.9m	0.4m	Dark brown silty clay topsoil overlying laminated yellow brown silty sand and brown clay. A sondage was cut into the trench at the NE end exposing a sequence of: 0-0.4 m - Topsoil, 0.4-1.2m - Laminated yellow brown sand and mid brown sandy clay (warp or flood deposit?), 1.2m+ - Blueish grey clay. Two field drains were exposed in the NE half of the trench.
21	F	NW-SE	198 x 1.9m	0.3-0.5m	Dark brown silty clay topsoil. The subsoil at the NW end comprised orange yellow and dark grey clay. A deposit of laminated yellow sand and brown silt (warp or flooding deposits) covered most of the NW half of the trench overlying peaty deposits. The subsoil in the SE half of the trench comprised mottled brown silty sand. A 1.7m wide ditch [025] aligned WSW-ENE cut across the middle of the trench. This is the same ditch as ditches [023] and [021] exposed in Trench 09 and 10 some 110m and 165m to the E.
22	F	WNW-ESE	101 x 1.9m	0.3-0.6m	Dark brown silty clay topsoil. Several field drains exposed along the trench. Peat visible at 34m from NW end.
23	H	WNW-ESE	27 x 1.9m	0.4m	Mid brown sandy loam topsoil over mid orange brown mottled sand with manganese flecks. Three possible archaeological features were exposed in the trench. None of these were excavated.
24	H	NNE-SSW	33 x 1.9m	0.4m	Mid brown sandy loam topsoil over mid orange brown sand and bluish grey clay. Four possible archaeological features were exposed in the trench. None of these were excavated.
25	H	WNW-ESE	35 x 1.9m	0.4m	Mid brown sandy loam topsoil over mid orange brown mottled sand with manganese flecks. Two parallel linear archaeological features were exposed in the trench. None of these were excavated.
26	H	NE-SW	14 x 1.9m	0.4m	Mid brown sandy loam topsoil over bluish grey clay. No archaeological features were exposed in the trench.
27	J	WNW-ESE	11 x 1.9m	0.35	Mid brown sandy clay topsoil over compact grey brown silty clay. A 5m wide ditch [048] aligned NNE-SSW cut across the E end of the trench. The ditch coincides with the line of a drain depicted on the 1907 OS map labelled moat.

## Appendix 1.2: Context Register

Context no	Area	Description
001	T01-27	Topsoil. Brown to grey brown silty clay. 0.25m to 0.5m deep.
002	T20	Finely laminated yellow brown sand and mid brown sandy clay up to 0.8m thick. Warp or possibly flooding deposit.
003	T20	Grey blue clay. Alluvial deposit
004	T16	Cut of ditch aligned E-W, 1.3m wide by 0.36m deep. Stepped S side, sloping N side, rounded base. Heavy bioturbation on edges. C29 Ditch extends beyond the trench on both sides.
005	T16	Fill of ditch [004]. Mid grey homogenous sand with rare charcoal flecks. Contained 4 pot sherds.
006	T16	Cut of ditch aligned E-W, 1.3m wide by 0.4m deep. Sloping, slightly stepped sides, flat base. Ditch extends beyond the trench on both sides. The ditch coincides with a linear feature recoded during the geophysics survey.
007	T16	Upper fill in ditch [006]. Dark grey sandy loam with some clay lumps. Darker than underlying fill (027). Appears to have been deposited after partial infilling of ditch. Contained a hammer stone, burnt daub and burnt bone.
008	T16	Basal fill in ditch [006]. Dark grey brown sandy loam with occasional charcoal flecks. Extends only to the middle of the ditch from the N side. Contained 3 pot sherds.
009	T16	Cut of ditch aligned E-W, 0.8m wide at E edge of trench, narrowing to 0.3 m wide a W edge. 0.25m deep. Sloping sides, flat base. C33 Ditch extends beyond the trench on both sides.
010	T16	Fill of ditch [009]. Mid grey homogenous sand with occasional manganese flecks. Contained large piece of pot with
011	T16	Cut of ovoid pit aligned NE to SW, 1.05m by 0.8m by 0.2m deep. Sloping sides, rounded base. Diffuse edges due to
012	T16	Fill of pit [012]. Mid grey homogenous fine silty sand with occasional manganese flecks. Similar to fill (010) in ditch
013	T16	Cut of elongated feature aligned E-W, 0.5m wide and 0.15m deep. Extends 0.55m into the trench from the W edge. Sloping sides with a flat base. Bioturbation at the edges. Possibly the E terminus of a small ditch.
014	T16	Fill of cut [012]. Mid grey homogenous fine silty sand with occasional manganese flecks. Similar to fill of nearby
015	T16	Cut of elongated feature aligned E-W, 0.5m wide and 0.1m deep. Extends 0.5m into the trench from the W edge. Sloping sides with a flat base. The cut is located immediately to the N of cut [013]. Possibly a sub-circular pit or the E terminus of a small ditch. Appears to be associated with cut [013] to the S.
016	T16	Fill of cut [015]. Mid grey homogenous fine silty sand. C40. No finds.
017	T16	Cut of elongated feature aligned E-W, 0.5m wide and 0.1m deep. Extends 0.8m into the trench from the E edge. Sloping sides with a flat base. Possibly the W terminus of a small ditch. The cut is in line and on the same alignment as the two cuts at the other side of the trench [013] and [015]. The gap between [017] and [015] might represent the entrance into
018	T16	Fill of cut [017]. Mid grey homogenous silty sand with occasional manganese flecks. Similar to fill of nearby features. No

Context no	Area	Description
019	T16	Cut of ditch aligned E-W, 1m wide by 0.25m deep. Vertical sides, flat base. Cut through sand down to clay at base. Ditch extends beyond the trench on both sides but the base rises up towards the E edge of the trench, possibly indicating that the terminal lies just beyond the trench edge. Small scoops cut into the clay base may be tool marks from the
020	T16	Fill of cut [019]. Mid grey homogenous silty sand with occasional manganese flecks. Similar to fill of nearby features.
021	T10	Cut of ditch aligned ESE-WNW, 2.8m wide by 1.5m deep. Sloping sides, rounded base. Ditch extends beyond the trench on both sides. The ditch coincides with the line of a drain depicted on the 1657 estate map and was also picked up by
022	T10	Fill of ditch [021]. Largely finely laminated bands of yellow brown sand and mid brown sandy clay, with occasional 0.1m thick clay bands. The basal part of the fill comprises blue grey clay, 0.2m deep, with black organic inclusions.
023	T09	Cut of ditch aligned ESE-WNW, 4.6m wide by 1m deep. Sloping sides, rounded base. Ditch extends beyond the trench on both sides. This ditch is the same as [021] recorded in Trench 10 some 55m to the E.
024	T09	Fill of ditch [023]. Largely finely laminated bands of yellow brown sand and mid brown sandy clay with a 0.1 to 0.2m thick clay band in the middle.
025	T21	Cut of ditch aligned ENE-WSW, 1.7m wide by 0.4m deep. Vertical sides, flat base. Ditch extends beyond the trench on both sides. This ditch is the same as [023] and [021] recorded in Trenches 09 and 10 some 115m and 165m to the ENE. It lies on the projected line of the feature recorded during the geophysics survey
026	T21	Fill of ditch [025]. Largely finely laminated bands of yellow brown sand and mid brown sandy clay with clayey patches. Well preserved laminations at the base of the cut, more mottled and diffuse at the top.
027	T16	Middle fill in ditch [006]. Mottled mid grey silty sand. Lighter than the fills above and below and more sandy. No finds.
028	T15	Cut of ditch aligned SE-NW, 0.8m wide by 0.2m deep. Sloping sides, rounded base. The S side of the feature is cut by a modern field drain. The ditch extends beyond the trench on both sides.
029	T15	Cut of ditch aligned E-W, 2m wide by 0.3m deep. Sloping sides, flat irregular base. Cut through sand and into clay at the base. Small scoops in the clay base may be tool marks. The ditch extends beyond the trench on both sides.
030	T15	Fill of ditch [029]. Dark grey loamy sand with clayey inclusions. The fill contained 5 potsherds, animal bones and fire-
031	T05	Cut of ditch aligned NW-SE, 2.4m wide by 0.8m deep. Stepped sides, flat base. The ditch extends beyond the trench on
032	T05	Fill of ditch [031]. Mid blueish grey compact sandy clay. The fill contained 1 decorated body herd and a tile fragment.
033	T05	Cut of sub-rectangular(?) feature ,1.8m wide and 0.4m deep. Extends 1.2m into the trench from the SE edge. Vertical sides with a flat base. Extends beyond the edge of the trench towards SE.
034	T05	Fill of cut [033]. Mid blue grey compact sandy clay. Contains occasional charcoal flecks and rare fire cracked stones.
035	T05	Cut of ditch aligned NNW-SSE, 8.5m wide by over 1.2m deep. Sloping sides. An active field drain was cut into the middle of the ditch was broken, flooding the trench. The base of the feature was therefore not exposed. Ditch extends beyond the trench on both sides. It coincides with the line of a drain depicted on the 1907 OS map and also picked up by the
036	T05	Fill of ditch [035]. Mid brown compact clay.

Context no	Area	Description
037	T15	Cut of ditch aligned N-S, 1.2m wide by 0.65m deep. Upper part of ditch is cut through sand and has gently sloping sides, with a steep sided slot cut into clay in the middle. Flat base. The ditch extends beyond the trench on both sides.
038	T15	Upper fill in ditch [037]. Mid grey loamy sand. Similar to fill of nearby features. Contained two potsherds and fire
039	T15	Middle fill in ditch [037]. Mottled orange grey clayey sand. Mixed fill with redeposited natural clay. Banked up against W
040	T15	Basal fill in ditch [037]. Mid orange brown loamy sand. Banked up against E side of cut. Contained occasional fire cracked stones and animal bones.
041	T15	Cut of ditch aligned E-W, 1m wide by 0.35m deep. The cut is asymmetric with a sloping S side and a steeper N side. Rounded base. Cut through sand down to clay at base. The ditch extends beyond the trench on both sides.
042	T15	Fill of cut [041]. Contained irregular areas of white, mid grey and orange sand - possibly reflecting post-depositional chemical processes rather than the original deposition of fill. No finds.
043	T15	Fill of cut [028]. Mid grey loamy sand. No finds.
044	T2a	Sub-rectangular cut aligned ENE-WSW, 1m wide by 0.2m deep. The feature extends 2m at an angle into the trench. It has near right angle corners to the SW, steep sides and a flat undulating base, possibly caused by tool marks from cutting into compact clay. The feature is cut through sand down to underlying grey clay. It extends beyond the trench
045	T2a	Upper fill in cut [044]. Compact mix of orange brown sand and blue clay. Contains some gravel and degraded fragments
046	T2a	Middle fill in cut [044]. Mixture of blue grey clay and black carbonised organic material. Interface between top and basal
047	T2a	Basal fill of cut [044]. Crumbly black charred organic material.
048	T27	Cut of ditch aligned NNE-SSW, 5m wide and over 0.8m deep. The ditch coincides with the line of a drain depicted on the 1907 OS map labelled moat and may be part of a moat relating to the Drax priory.
049	T27	Fill of ditch [048]. Mid orange brown compact clay.
050	T3	Topsoil/Subsoil - Dense, compact clay rich, subsoil with large limestone clasts up to 0.5m deep.
051	T3	Fill of field drain [057]. Mix of topsoil and subsoil.
052	T3	Fill of field drain [058]. Redeposited material. Cut by [057].
053	T3	Fill of fishpond/retting pit - compact brown clay with buff and blue grey lenses, up to 0.9m deep. Some evidence of root
054	T3	Organic rich fill, probably related to organic activity at the base of the pond, up to 0.2m deep. Rich in waterlogged plant remains and insects. Below (053).
055	T3	Natural blue/grey alluvial clay.
056	T3	Thin band of open textured, dark brown organic rich soil between topsoil (050) and fill (053).
057	T3	Cut of field drain, 0.85m wide by 0.65m deep. Cut into (053), cuts (052).
058	T3	Cut of field drain, 0.4m wide by 0.5m deep. Cut into (053), cut by [057].

## Appendix 1.3: Photographic Register

Picture no.	Digital file name	Facing	Description
001	DRXO-06-001.JPG	SE	Trench 20. W-facing section of sondage slot at S end of trench
002	DRXO-06-002.JPG	SE	Trench 20. W-facing section of sondage slot at S end of trench
003	DRXO-06-003.JPG	SW	Trench 20. Sondage slot at S end of trench
004	DRXO-06-004.JPG	SW	Trench 20
005	DRXO-06-005.JPG	NW	Trench 20. Laminated warp deposit in SE-facing section at N
006	DRXO-06-006.JPG	NNE	Trench 19. S-facing section of sondage into paleo-channel in W half of trench
007	DRXO-06-007.JPG	NNE	Trench 19. S-facing section of sondage into paleo-channel in W half of trench
008	DRXO-06-008.JPG	WNW	Trench 19
009	DRXO-06-009.JPG	WNW	Trench 19. E edge of paleochannel
010	DRXO-06-010.JPG	NE	Trench 19. Repaired field drain
011	DRXO-06-011.JPG	SE	Trench 20. Repaired field drain
012	DRXO-06-012.JPG	SE	Trench 18. NW-facing section of sondage slot at SW end of trench
013	DRXO-06-013.JPG	NE	Trench 18
014	DRXO-06-014.JPG	SE	Trench 18. NW-facing section of sondage slot in NE half of trench
015	DRXO-06-015.JPG	ENE	Trench 17
016	DRXO-06-016.JPG	WSW	Trench 17
017	DRXO-06-017.JPG	NNE	Trench 16. Linear cut [009] during excavation. Pot partly exposed in upper fill (010)
018	DRXO-06-018.JPG	E	Trench 16. Linear cut [009] during excavation. Pot partly exposed in upper fill (010)
019	DRXO-06-019.JPG	SSW	Trench 16
020	DRXO-06-020.JPG	SSW	Trench 16. Linear cuts [004 and [006] in S half of trench
021	DRXO-06-021.JPG	W	Trench 16. Slot cut through linear cut [004]
022	DRXO-06-022.JPG	W	Trench 16. E-facing section across linear cut [004]
023	DRXO-06-023.JPG	E	Trench 16. W-facing section across linear cut [004]
024	DRXO-06-024.JPG	N	Trench 16. Slot cut through linear cut [006]
025	DRXO-06-025.JPG	E	Trench 16. W-facing section across linear cut [006]
026	DRXO-06-026.JPG	W	Trench 16. E-facing section across linear cut [006]
027	DRXO-06-027.JPG	W	Trench 16. Slot cut through linear cut [006]
028	DRXO-06-028.JPG	ESE	Trench 12
029	DRXO-06-029.JPG	ESE	Trench 12. Remnants of road exposed in E half of trench
030	DRXO-06-030.JPG	NNE	Trench 13
031	DRXO-06-031.JPG	WNW	Trench 14
032	DRXO-06-032.JPG	SE	Trench 22. NW end
033	DRXO-06-033.JPG	NW	Trench 22. SE end
034	DRXO-06-034.JPG	NNE	Trench 06. S end

035	DRXO-06-035.JPG	SSW	Trench 06. N end
036	DRXO-06-036.JPG	E	Trench 08. From W
037	DRXO-06-037.JPG	W	Trench 08. From E
038	DRXO-06-038.JPG	W	Trench 07. From E
039	DRXO-06-039.JPG	E	Trench 07. From W
040	DRXO-06-040.JPG	NNE	Trench 09. From S
041	DRXO-06-041.JPG	SSW	Trench 09. From N
042	DRXO-06-042.JPG	SSW	Trench 10. From N
043	DRXO-06-043.JPG	NNE	Trench 10. From S
044	DRXO-06-044.JPG	WNW	Trench 11. From E
045	DRXO-06-045.JPG	ESE	Trench 11. From W
046	DRXO-06-046.JPG	NNW	Trench 10. E-facing section across ditch [021]
047	DRXO-06-047.JPG	WNW	Trench 10. E-facing section across ditch [021], S edge, detail
048	DRXO-06-048.JPG	WNW	Trench 10. E-facing section across ditch [021], S edge, detail
049	DRXO-06-049.JPG	WNW	Trench 10. E-facing section across ditch [021], middle, detail
050	DRXO-06-050.JPG	WNW	Trench 10. E-facing section across ditch [021], middle, detail
051	DRXO-06-051.JPG	WNW	Trench 10. E-facing section across ditch [021], N edge, detail
052	DRXO-06-052.JPG	WNW	Trench 10. E-facing section across ditch [021], N edge, detail
053	DRXO-06-053.JPG	SW	Trench 10. E-facing section across ditch [021]
054	DRXO-06-054.JPG	SE	Trench 09. W-facing section across ditch [023]
055	DRXO-06-055.JPG	ESE	Trench 09. E-facing section across ditch [023], N edge, detail
056	DRXO-06-056.JPG	ESE	Trench 09. E-facing section across ditch [023], N half, detail
057	DRXO-06-057.JPG	ESE	Trench 09. E-facing section across ditch [023], middle, detail
058	DRXO-06-058.JPG	ESE	Trench 09. E-facing section across ditch [023], S half, detail
059	DRXO-06-059.JPG	ESE	Trench 09. E-facing section across ditch [023], S edge, detail
060	DRXO-06-060.JPG	NE	Trench 09. W-facing section across ditch [023]
061	DRXO-06-061.JPG	NNE	Trench 16. Linear cut [009]. General view.
062	DRXO-06-062.JPG	W	Trench 16. Linear cut [009]. General view.
063	DRXO-06-063.JPG	W	Trench 16. E-facing section across linear cut [009]
064	DRXO-06-064.JPG	E	Trench 16. W-facing section across linear cut [009]
065	DRXO-06-065.JPG	N	Trench 16. General view of features [013], [015], [017]
066	DRXO-06-066.JPG	WNW	Trench 16. Post-ex shot of cuts [013] and [015]
067	DRXO-06-067.JPG	NNE	Trench 16. S-facing section across cut [013]
068	DRXO-06-068.JPG	SSW	Trench 16. N-facing section across cut [015]
069	DRXO-06-069.JPG	NNE	Trench 16. S-facing section across cut [017]
070	DRXO-06-070.JPG	ESE	Trench 16. Post-ex shot of cut [017]
071	DRXO-06-071.JPG	NW	Trench 21. SE end



072	DRXO-06-072.JPG	SE	Trench 21. NW end
073	DRXO-06-073.JPG	SW	Trench 21. NE-facing section across ditch [025]
074	DRXO-06-074.JPG	S	Trench 21. NE-facing section across ditch [025]
075	DRXO-06-075.JPG	NNE	Trench 16. Linear cut [019]. General view.
076	DRXO-06-076.JPG	WNW	Trench 16. Linear cut [019]. General view.
077	DRXO-06-077.JPG	ESE	Trench 16. W-facing section across cut [019]
078	DRXO-06-078.JPG	WNW	Trench 16. E-facing section across cut [019]
079	DRXO-06-079.JPG	ESE	Trench 16. Cut [019], detail showing tool marks in clay at base of cut
080	DRXO-06-080.JPG	NNE	Trench 15. Pre-ex shot of linear features [028], [029]
081	DRXO-06-081.JPG	NW	Trench 15. Pre-ex shot of linear feature [028]
082	DRXO-06-082.JPG	W	Trench 15. Pre-ex shot of linear feature [029]
083	DRXO-06-083.JPG	SSW	Trench 15. Pre-ex shot of linear feature [029]
084	DRXO-06-084.JPG	SSW	Trench 15. Slot cut through linear feature [029]
085	DRXO-06-085.JPG	W	Trench 15. E-facing section across linear feature [029]
086	DRXO-06-086.JPG	NNE	Trench 15. Slot cut through linear feature [029]
087	DRXO-06-087.JPG	ESE	Trench 15. W-facing section across linear feature [029]
088	DRXO-06-088.JPG	ESE	Trench 15. W-facing section across linear feature [029]
089	DRXO-06-089.JPG	NW	Trench 15. Slot cut through linear feature [028]
090	DRXO-06-090.JPG	SW	Trench 15. Slot cut through linear feature [028]
091	DRXO-06-091.JPG	SE	Trench 15. NW-facing section across linear feature [028]
092	DRXO-06-092.JPG	NNW	Trench 15. Pre-ex shot of linear feature [037]
093	DRXO-06-093.JPG	SSE	Trench 15. Pre-ex shot of linear feature [037]
094	DRXO-06-094.JPG	WSW	Trench 05. From ENE
095	DRXO-06-095.JPG	N	Trench 04. From S
096	DRXO-06-096.JPG	SSE	Trench 27. From W
097	DRXO-06-097.JPG	SE	Trench 27. W end of N-facing section across ditch
098	DRXO-06-098.JPG	S	Trench 27. W end of N-facing section across ditch
099	DRXO-06-099.JPG	WNW	Trench 03. From E
100	DRXO-06-100.JPG	SE	Trench 05. NW-facing section across ditch [031]
101	DRXO-06-101.JPG	SE	Trench 05. NW-facing section across ditch [031], E side
102	DRXO-06-102.JPG	SE	Trench 05. NW-facing section across ditch [031]
103	DRXO-06-103.JPG	SE	Trench 05. NW-facing section across pit [033]
104	DRXO-06-104.JPG	SE	Trench 05. Pit [033]
105	DRXO-06-105.JPG	SW	Trench 05. NW-facing section across ditch [035]
106	DRXO-06-106.JPG	SE	Trench 05. NW-facing section across ditch [035], E side, detail
107	DRXO-06-107.JPG	SE	Trench 05. NW-facing section across ditch [035], E side
108	DRXO-06-108.JPG	SE	Trench 05. NW-facing section across ditch [035], W of Pic111
109	DRXO-06-109.JPG	SE	Trench 05. NW-facing section across ditch [035], W of Pic112
110	DRXO-06-110.JPG	SE	Trench 05. NW-facing section across ditch [035], W of Pic113

111	DRXO-06-111.JPG	SE	Trench 05. NW-facing section across ditch [035], W of Pic114
112	DRXO-06-112.JPG	SE	Trench 05. NW-facing section across ditch [035], W of Pic115
113	DRXO-06-113.JPG	SE	Trench 05. NW-facing section across ditch [035], W side, detail
114	DRXO-06-114.JPG	NNW	Trench 15. S-facing section across linear feature [037]
115	DRXO-06-115.JPG	NNW	Trench 15. S-facing section across linear feature [037]
116	DRXO-06-116.JPG	WSW	Trench 15. Slot cut across linear feature [037]
117	DRXO-06-117.JPG	NNW	Trench 15. Slot cut across linear feature [037]
118	DRXO-06-118.JPG	SSE	Trench 15. Slot cut across linear feature [037]
119	DRXO-06-119.JPG	E	Trench 01. From W
120	DRXO-06-120.JPG	W	Trench 01. From E
121	DRXO-06-121.JPG	SW	Trench 02a. Pit [044] pre-ex
122	DRXO-06-122.JPG	NE	Trench 02a. Pit [044] pre-ex
123	DRXO-06-123.JPG	SW	Trench 02a. N edge of possible fish pond.
124	DRXO-06-124.JPG	SW	Trench 02a. Organic deposit within pond.
125	DRXO-06-125.JPG	ESE	Trench 03. W side of pond
126	DRXO-06-126.JPG	ESE	Trench 03. Middle part of pond
127	DRXO-06-127.JPG	WNW	Trench 03. E side of pond
128	DRXO-06-128.JPG	NNE	Trench 02b, N half of trench
129	DRXO-06-129.JPG	NNE	Trench 02b, S half of trench
130	DRXO-06-130.JPG	NE	Trench 02a. Slot cut through pit [044]
131	DRXO-06-131.JPG	NE	Trench 02a. Slot cut through pit [044]
132	DRXO-06-132.JPG	SW	Trench 02a. Slot cut through pit [044]
133	DRXO-06-133.JPG	SW	Trench 02a. Slot cut through pit [044]
134	DRXO-06-134.JPG	NNE	Trench 02a. Pit [044] post-ex
135	DRXO-06-135.JPG	NE	Trench 02a. SW-facing section across pit [044]
136	DRXO-06-136.JPG	W	Trench 15. Slot cut across linear feature [041]
137	DRXO-06-137.JPG	W	Trench 15. E-facing section across linear feature [041]
138	DRXO-06-138.JPG	E	Trench 15. Slot cut across linear feature [041]
139	DRXO-06-139.JPG	E	Trench 15. W-facing section across linear feature [041]
140	DRXO-06-140.JPG	N	Trench 15. Slot cut across linear feature [041]

#### Appendix 1.4: Drawing Register

Drawing	Paper scale		Description
	Plan	Section	
01		1:10	Trench 16. E-facing section across ditch [004]
02		1:10	Trench 16. E-facing section across ditch [006]
03		1:20	Trench 3. N-facing section of trench wall

Appendix 1.5: Sample Register

Sample No.	Context No.	Sample type	Volume	% of context	Qty	Description	Notes	Process
200	005	F	40	Not fully exposed	4 bkts	Trench 16. Fill of ditch [004]	Pot	v
201	012	F	10	25%	1 bkt	Trench 16. Fill of pit [011]		v
202		S			2 items	Trench 21. OSL sample + control sample from deposit above peat		
203	010	F	10	Not fully exposed	1 bkt	Trench 16. Fill of ditch [009]	Pot	v
204	014	F	10	Not fully exposed	1 bkt	Trench 16. Fill of cut [013]		v
205	016	F	10	Not fully exposed	1 bkt	Trench 16. Fill of cut [015]		v
206	018	F	10	Not fully exposed	1 bkt	Trench 16. Fill of cut [017]		v
207	020	F	10	Not fully exposed	1 bkt	Trench 16. Fill of ditch [019]		v
208	007	F	10	Not fully exposed	1 bkt	Trench 16. Upper fill of ditch [006]	Burnt bone, daub, hammerstone	v
209	008	F	10	Not fully exposed	1 bkt	Trench 16. Lower fill of ditch [006]	Pot	v
210	049	S	<1 L		1 bag	Trench 27. Snail fragments from lower fill of possible abby moat		
211	034	F	10	Not fully exposed	1 bkt	Trench 05. Fill of pit [033]		v
212	032	F	10	Not fully exposed	1 bkt	Trench 05. Fill of ditch [033]	Pot	v
213	043	F	10	Not fully exposed	1 bkt	Trench 15. Fill of ditch [028]		v
214	030	F	10	Not fully exposed	1 bkt	Trench 15. Fill of ditch [029]	Pot	v
215	038	F	10	Not fully exposed	1 bkt	Trench 15. Upper fill of ditch [037]	Pot	v
216	040	F	10	Not fully exposed	1 bkt	Trench 15. Lower fill of ditch [037]	Bone	v
217	042	F	10	Not fully exposed	1 bkt	Trench 15. Fill of ditch [041]		v
218	020	F	10	Not fully exposed	1 bkt	Trench 16. Fill of ditch [019]	Pot	v
219	047	S	3 L	Not fully exposed	1 bkt	Trench 02a. Basal fill of pit [044]		
220	054	Bulk	10	Not fully exposed	1 bkt	Trench 3. Fish pond Top (with ET)	Waterlogged/paraffin float	
221	054	Bulk	10	Not fully exposed	1 bkt	Trench 3. Fish pond bottom (with ET)	Waterlogged/paraffin float	

APPENDIX 2.1: Auger register

Trench 21

Borhole no.	Distance (from NW edge of trench)	Depth (m)	Description	Comments	Key (Illus 12)
1	0m	0-0.38	Dense, compact grey brown, clay-rich subsoil		A
		0.38-0.65	Dense, grey brown clay with orange mottling, lenses of sand	Warp	B
		0.65-1.47	Dense compact blue, grey clay.		C
		1.47+	Sand/gravel?		D
2	24m	0-0.36	Open textured brown topsoil, rich in clay and sand.	Borehole offset due to the proximity of the dryland edge	E
		0.36-0.94	Dense, compact grey brown, clay-rich subsoil		F
		0.94-0.97	Homogeneous dark grey clay	Flood event?	G
		0.97-1.07	Organic rich material, possibly well hummified peat.		H
		1.07+	Sand/gravel?		D
3	34m	0-0.3	Open textured brown topsoil, rich in clay and sand.		E
		0.3-0.63	Fine grained, open textured sand.	Warp	B
		0.63-0.74	Yellow brown, clay rich sand	Warp	B
		0.74-0.81	Dense, grey brown clay with orange mottling, lenses of sand	Warp	B
		0.81-3.4	Peat with well preserved wood and other organics		I
		3.4-3.57	Homogeneous dark grey clay	Flood event?	G
		3.57-3.83	Wood peat		J
		3.83-3.9	Fine grained, open textured sand.		K
3.9+	Blue grey clay		L		
4	44m	0-0.3m	Dense, compact grey brown, clay-rich subsoil		A
		0.3-0.59	Yellow brown, clay rich sand	Warp	B
		0.59-0.76	Compact brown clay with lenses of grey clay.		F
		0.76-1.11	Open textured grey clay.		M
		1.11-3.88+	Peat with well preserved wood and other organics.	Recovery after 3.88m lost due to waterlogging.	I
5	54m	0-0.34	Dense, compact grey brown, clay-rich subsoil		A
		0.34-0.44	Yellow brown, clay rich sand	Warp	B
		0.44-0.75	Compact grey clay		C
		0.75-0.8	Open textured, purple brown organic material	Palaeosol?	M
		0.8-1.6	Peat with well preserved wood and other organics.		I
		1.6+	Peaty clay with wood	Recovery after 1.66m poor due to waterlogging.	N
6	64m	0-0.3m	Dense, compact grey brown, clay-rich subsoil	Edge of terrace	A
		0.3-0.79	Yellow brown, clay rich sand	Warp	B
		0.79-0.93	Peat with well preserved wood and other organics.		I
		0.93+	Blue grey clay		L
7	74m	0-0.42	Dense, compact grey brown, clay-rich subsoil		A
		0.42-0.49	Yellow brown, clay rich sand	Warp	B
		0.49-0.67	Compact brown clay with lenses of grey clay.		F
		0.67-0.89	Compact grey clay		C
		0.89-1.08	Peaty clay with wood		N
		1.08+	Sand/gravel?		D

Borhole no.	Distance (from NW edge of trench)	Depth (m)	Description	Comments	Key (Illus 12)
8	84m	0-0.42m	Dense, compact grey brown, clay-rich subsoil		A
		0.17-0.41	Yellow brown, clay rich sand	Warp	B
		0.41-0.57	Compact brown clay with lenses of grey clay.		F
		0.57-0.67	Compact grey clay		C
		0.67-0.72	Peaty clay with wood		N
		0.72-1.37	Wood peat.		I
		1.37-1.75	Peaty clay with wood		N
9	94m	0-0.18	Open textured brown topsoil, rich in clay and sand.		E
		0.18-0.2	Yellow brown, clay rich sand	Warp	B
		0.2+	Sand/gravel?	Material too compact for further penetration.	D
10	119m	0.18-2	Open textured brown topsoil, rich in clay and sand.		E
		0.18-0.92	Compact brown clay with lenses of grey clay.		F
		0.92+	Compact grey clay		C
11	144m	0-0.37	Dense, compact grey brown, clay-rich subsoil	Material too compact for further penetration.	A
		0.37-0.4	Grey/white medium sand.		O
		0.4-0.94	Compact brown clay with lenses of grey clay.		F
		0.94+	Peaty clay with wood		N
12	169m	0-0.18	Open textured brown topsoil, rich in clay and sand.	Material too compact for further penetration.	A
		0.18-0.92	Compact brown clay with lenses of grey clay.		F
		0.96+	Blue grey clay		L
13	194m	0-0.18	Open textured brown topsoil, rich in clay and sand.	Material too compact for further penetration.	A
		0.18-0.92	Compact brown clay with lenses of grey clay.		F
		1.03+	Blue grey clay.		L

Trench 22

Borhole no.	Distance (from NW edge of trench)	Depth (m)	Description	Comments	Key (Illus 13)
1	0m	0-0.23m	Dense, compact grey brown, clay-rich subsoil		a
		0.23-0.25m	Open textured, purple brown organic material	Palaeosol?	b
		0.25-0.92	Compact blue grey clay.		c
		0.92-1.03	Peaty clay with wood		d
		1.03-1.05	Homogeneous lense of blue grey clay	Flood deposit?	e
		1.05-1.49	Peat with well preserved wood and other organics		f
		1.49-1.52	Substantial chunk of wood - pos. oak.		g
		1.52-1.8	Compact blue grey clay.		c
2	10m	0-0.23	Dense, compact grey brown, clay-rich subsoil		a
		0.23-0.47	Open textured, purple brown organic material	Palaeosol?	b
		0.47-3.65	Peat with well preserved wood and other organics		f
		3.65+	Capture precluded due to waterlogging		
3	20m	0-0.4m	Fine grained, open textured sand.	Warp	h
		0.4-0.22	Compact blue grey clay.		c
		0.22-0.27	Open textured, purple brown organic material	Palaeosol?	b
		0.27-1.5	Wood peat.		i
		1.5-2	Peat with well preserved wood and other organics		f
		2-2.24	Blue grey medium to coarse sand, becoming finer with depth.		k
		2.24+	Compact blue grey clay.		c
4	30m	0-0.17	Compact blue grey clay.		m
		0.17-0.32	Fine grained, open textured sand.	Warp	h
		0.32-0.75	Open textured, purple brown organic material	Palaeosol?	b
		.75-0.8	Grey coarse sand		b
		.75-0.79	Blue grey medium to coarse sand, becoming finer with depth.		k
		0.8+	Compact blue grey clay.		c
5	40m	0-0.14	Dense, compact buff clay with patches of blue/grey clay.		m
		0.14-0.29	Blue/grey-white sand with clay.		o
		0.29-0.93	Compact blue grey clay.		c
		0.93+	No further penetration		
6	65m	0-0.6	Dense, compact buff clay with patches of blue/grey clay.		m
		0.6+	No further penetration		
7	90m	0-0.3	Dense, grey brown clay with orange mottling, lenses of sand		p
		0.3-0.9	Compact blue grey clay.		c
		0.9+	No further penetration		
8	100m	0-0.7	Dense, compact buff clay with patches of blue/grey clay.		m
		0.7+	No further penetration		

## Appendix 2.2: Retent & Flot tables

Table 1: Retents

Context Number	Sample Number	Feature	Sample Vol (l)	Ceramic		Lithics	Glass	Fe slag	Burnt bone	Unburnt bone	Charred plant	Charcoal		Material available for AMS Dating	Cinders	Comments
				Pottery	Daub				Mammal	Mammal		Quantity	Max Size (mm)			
5	200	Trench 16: Fill of ditch [004]	40	++	+		+	+				+++	12	Yes		
12	201	Trench 16: Fill of pit [011]	10	+				+	+			+++	9		+	
10	203	Trench 16: Fill of ditch [009]	10	+	+				+		+	++	13	Yes		Hulled barley
14	204	Trench 16: Fill of cut [013]	10	+								+++	12	Yes		
16	205	Trench 16: Fill of cut [015]	10									++	9			
18	206	Trench 16: Fill of cut [017]	10	+	+							++++	16	Yes		
7	208	Trench 16: Upper fill of ditch [006]	10		++++				+			+++	15	Yes		
8	209	Trench 16: Lower fill of cut [006]	10	+						++		++	11	Yes	++	
34	211	Trench 05: Fill of pit [033]	10	+					+		+	++	11	Yes		Indeterminate cereal grain
32	212	Trench 05: Fill of ditch [033]	10							+		+	6			
43	213	Trench 15: Fill of ditch [028]	10	+		+						+	10	Yes		
30	214	Trench 15: Fill of ditch [029]	10									++	11	Yes		
38	215	Trench 15: Upper fill of ditch [037]	10									++	9			
40	216	Trench 15: Lower fill of ditch [038]	10							+		++	11	Yes		
42	217	Trench 15: Fill of ditch [041]	10				+					++	10	Yes		
20	218	Trench 16: Fill of ditch [019]	10	+	+							++++	17	Yes		
47	219	Trench 02a: Basal fill of pit [044]	2	+	++					++		+++	17	Yes		Sub-sample processed

**Key:** + = rare (0-5), ++ = occasional (6-15), +++ = common (15-50) and ++++ = abundant (>50)  
**NB** charcoal over 1cm is suitable for identification and AMS dating



**Table 2: Flotation Sample Results**

Context Number	Sample Number	Feature	Total flot Vol (ml)	Wheat	Oat	Cereal indet.	Other Charred plant remains	Charcoal Quantity	Charcoal Max size (mm)	Material available for AMS	Comments
5	200	Trench 16: Fill of ditch [004]	5			+		+	5	No	Cereal grain heavily abraded
12	201	Trench 16: Fill of pit [011]	5				<i>Chenopodium</i> sp.	+	5	No	
10	203	Trench 16: Fill of ditch [009]	5							No	Archaeologically sterile
14	204	Trench 16: Fill of cut [013]	5							No	Beetle fragments
16	205	Trench 16: Fill of cut [015]	5							No	Archaeologically sterile
18	206	Trench 16: Fill of cut [017]	5				<i>Stellaria media</i> +, <i>Chenopodium</i> sp.	+	5	No	
7	208	Trench 16: Upper fill of ditch [006]	10	+			<i>Chenopodium</i> sp., <i>Stellaria media</i> +, <i>Bromus</i> sp.	+	5	No	1 wheat grain
8	209	Trench 16: Lower fill of cut [006]	1	+	+		<i>Carex</i> sp. <i>Polygonum</i> sp.	+	5	No	1 wheat and 1 possible oat grain
34	211	Trench 05: Fill of pit [033]	10			+	<i>Chenopodium</i> sp.	+	5	No	Cereal grain heavily abraded
32	212	Trench 05: Fill of ditch [033]	2					+	1	No	
43	213	Trench 15: Fill of ditch [028]	5							No	Archaeologically sterile
30	214	Trench 15: Fill of ditch [029]	5							No	Archaeologically sterile
38	215	Trench 15: Upper fill of ditch [037]	5				<i>Stellaria media</i>			No	
40	216	Trench 15: Lower fill of ditch [038]	5					+	5	No	
42	217	Trench 15: Fill of ditch [041]	10				<i>Stellaria media</i>			No	
20	218	Trench 16: Fill of ditch [019]	10					+	5	No	
47	219	Trench 02a: Basal fill of pit [044]	200				Buds, seed heads	++++	10	Yes	Contains lumps of compact organic material and several small twig fragments

**Key:** + = rare (1-5), ++ = occasional (6-15), +++ = common (16-50) and ++++ = abundant (>50)  
**NB** charcoal over 1cm is suitable for identification and AMS dating



## RADIOCARBON DATING CERTIFICATE

19 August 2015

**Laboratory Code** SUERC-61916 (GU38543)

**Submitter** Laura Bailey  
Headland Archaeology  
13 Jane Street  
Edinburgh  
EH6 5HE

**Site Reference** DRX011

**Sample Reference** 222 (1.04 cm)

**Material** Peat : Humic Acid Dated


**$\delta^{13}\text{C}$  relative to VPDB** -29.6 ‰

**Radiocarbon Age BP** 2504  $\pm$  36

**N.B.** The above  $^{14}\text{C}$  age is quoted in conventional years BP (before 1950 AD). The error, which is expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

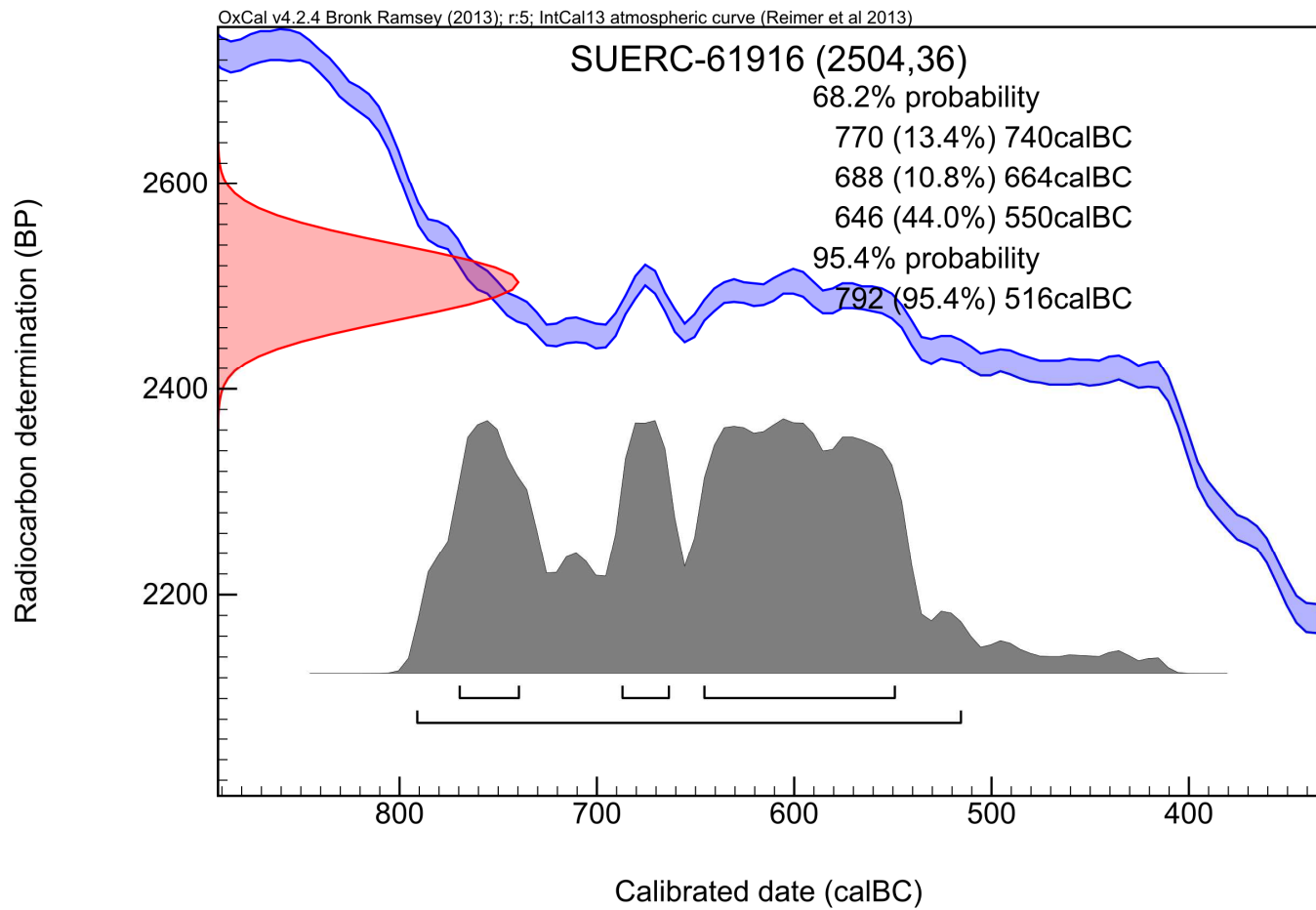
The calibrated age ranges are determined from the University of Oxford Radiocarbon Accelerator Unit calibration program (OxCal4).

Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Facility and should be quoted as such in any reports within the scientific literature. Any questions directed to the Radiocarbon Laboratory should also quote the GU coding given in parentheses after the SUERC code. The contact details for the laboratory are email [Gordon.Cook@glasgow.ac.uk](mailto:Gordon.Cook@glasgow.ac.uk) or telephone 01355 270136 direct line.

Conventional age and calibration age ranges calculated by :-  Date :- 19/08/2015

Checked and signed off by :-  Date :- 19/08/2015

# Calibration Plot





## RADIOCARBON DATING CERTIFICATE

19 August 2015

**Laboratory Code** SUERC-61917 (GU38544)

**Submitter** Laura Bailey  
Headland Archaeology  
13 Jane Street  
Edinburgh  
EH6 5HE

**Site Reference** DRX011

**Sample Reference** 223 (4.93 cm)

**Material** Peat


**$\delta^{13}\text{C}$  relative to VPDB** -30.5 ‰

**Radiocarbon Age BP** 4610  $\pm$  36

**N.B.** The above  $^{14}\text{C}$  age is quoted in conventional years BP (before 1950 AD). The error, which is expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

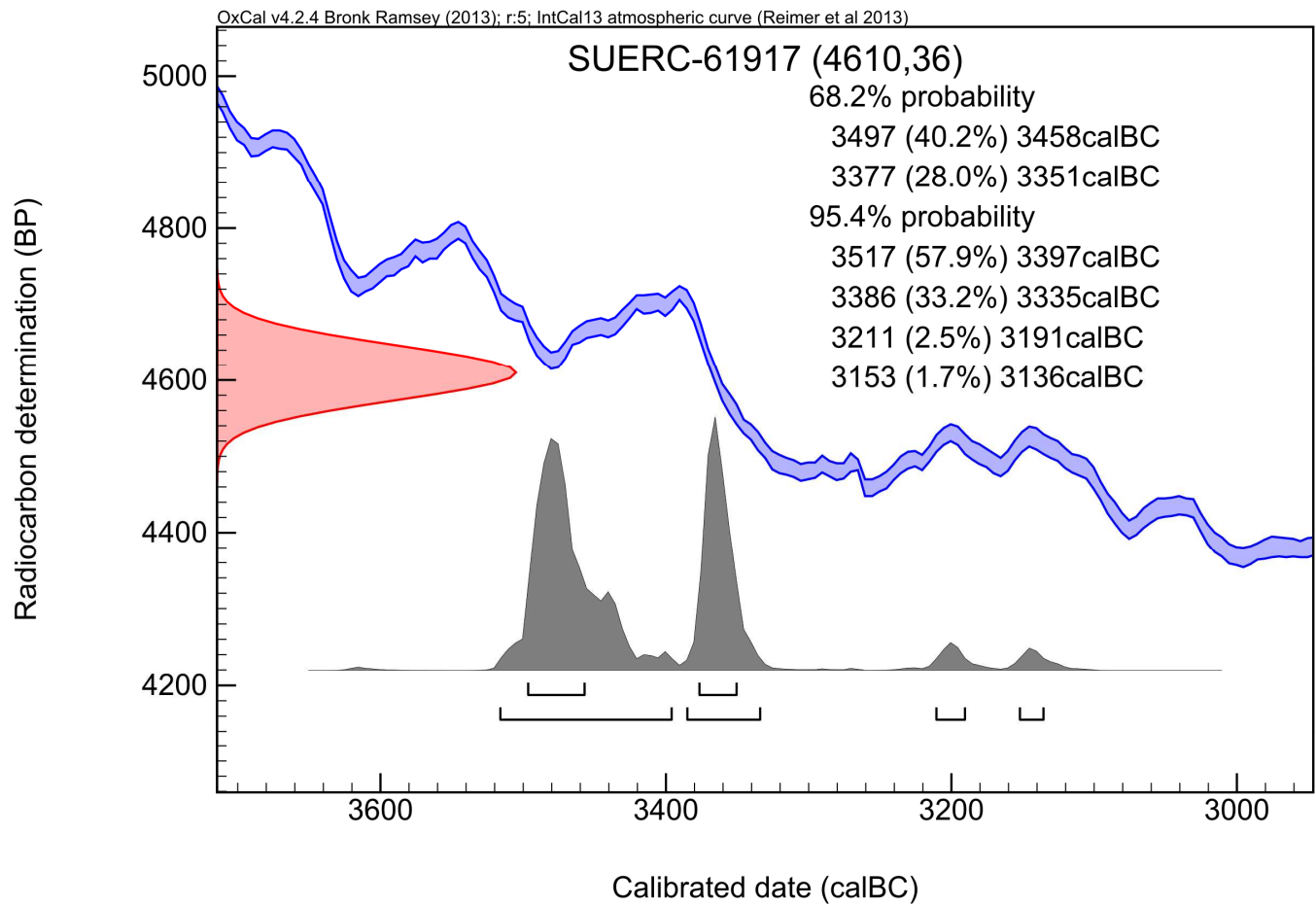
The calibrated age ranges are determined from the University of Oxford Radiocarbon Accelerator Unit calibration program (OxCal4).

Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Facility and should be quoted as such in any reports within the scientific literature. Any questions directed to the Radiocarbon Laboratory should also quote the GU coding given in parentheses after the SUERC code. The contact details for the laboratory are email [Gordon.Cook@glasgow.ac.uk](mailto:Gordon.Cook@glasgow.ac.uk) or telephone 01355 270136 direct line.

Conventional age and calibration age ranges calculated by :-  Date :- 19/08/2015

Checked and signed off by :-  Date :- 19/08/2015

# Calibration Plot





## RADIOCARBON DATING CERTIFICATE

19 August 2015

**Laboratory Code** SUERC-61918 (GU38545)

**Submitter** Laura Bailey  
Headland Archaeology  
13 Jane Street  
Edinburgh  
EH6 5HE

**Site Reference** DRX011

**Sample Reference** 224 (4.14 cm)

**Material** Peat


**$\delta^{13}\text{C}$  relative to VPDB** -28.8 ‰

**Radiocarbon Age BP** 4187  $\pm$  36

**N.B.** The above  $^{14}\text{C}$  age is quoted in conventional years BP (before 1950 AD). The error, which is expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

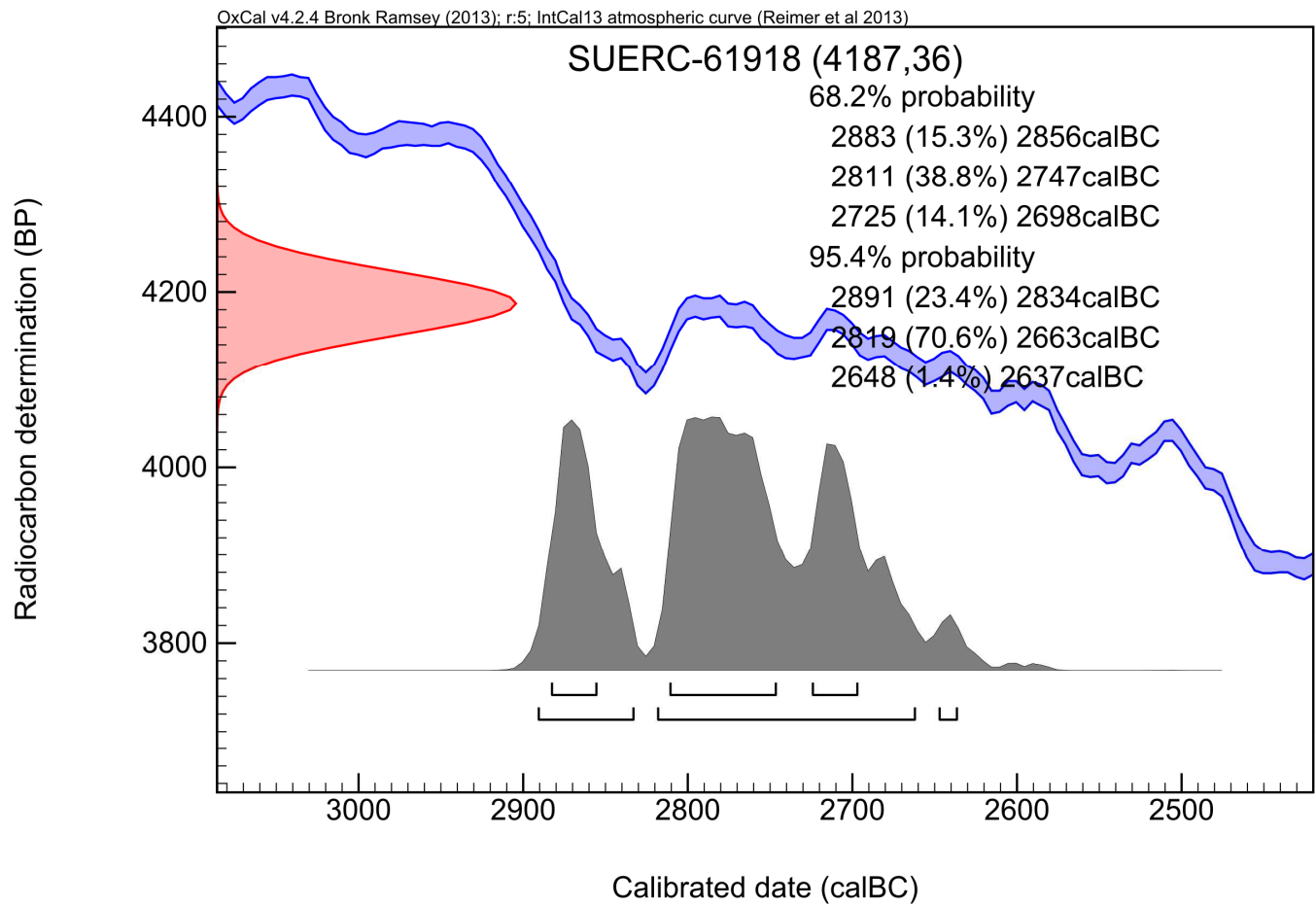
The calibrated age ranges are determined from the University of Oxford Radiocarbon Accelerator Unit calibration program (OxCal4).

Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Facility and should be quoted as such in any reports within the scientific literature. Any questions directed to the Radiocarbon Laboratory should also quote the GU coding given in parentheses after the SUERC code. The contact details for the laboratory are email [Gordon.Cook@glasgow.ac.uk](mailto:Gordon.Cook@glasgow.ac.uk) or telephone 01355 270136 direct line.

Conventional age and calibration age ranges calculated by :-  Date :- 19/08/2015

Checked and signed off by :-  Date :- 19/08/2015

# Calibration Plot





## RADIOCARBON DATING CERTIFICATE

19 August 2015

**Laboratory Code** SUERC-61919 (GU38546)

**Submitter** Laura Bailey  
Headland Archaeology  
13 Jane Street  
Edinburgh  
EH6 5HE

**Site Reference** DRX011

**Sample Reference** 225 (4.34 cm)

**Material** Peat


**$\delta^{13}\text{C}$  relative to VPDB** -27.9 ‰

**Radiocarbon Age BP** 4845  $\pm$  36

**N.B.** The above  $^{14}\text{C}$  age is quoted in conventional years BP (before 1950 AD). The error, which is expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

The calibrated age ranges are determined from the University of Oxford Radiocarbon Accelerator Unit calibration program (OxCal4).

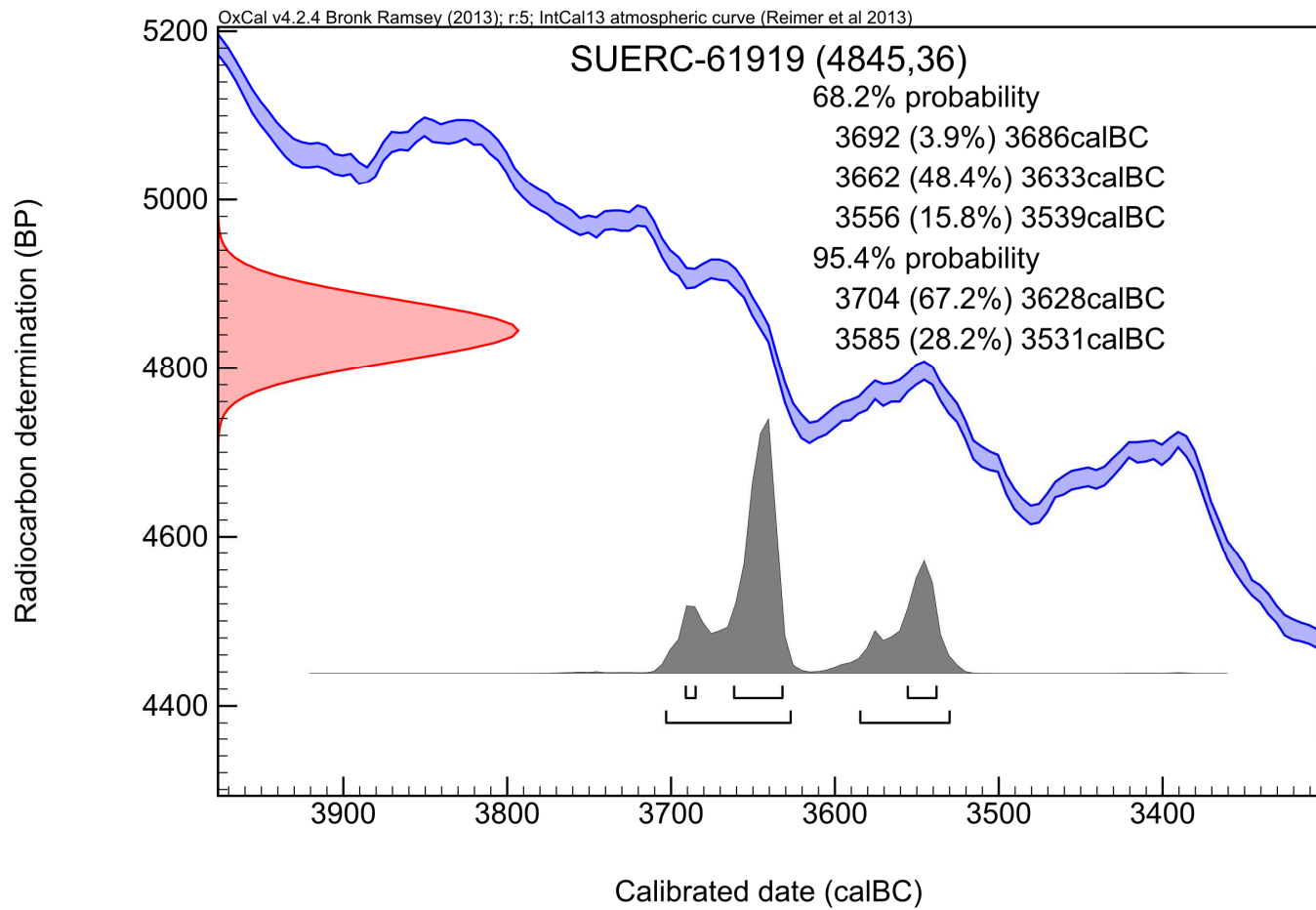
Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Facility and should be quoted as such in any reports within the scientific literature. Any questions directed to the Radiocarbon Laboratory should also quote the GU coding given in parentheses after the SUERC code. The contact details for the laboratory are email [Gordon.Cook@glasgow.ac.uk](mailto:Gordon.Cook@glasgow.ac.uk) or telephone 01355 270136 direct line.

Conventional age and calibration age ranges calculated by :-  Date :- 19/08/2015

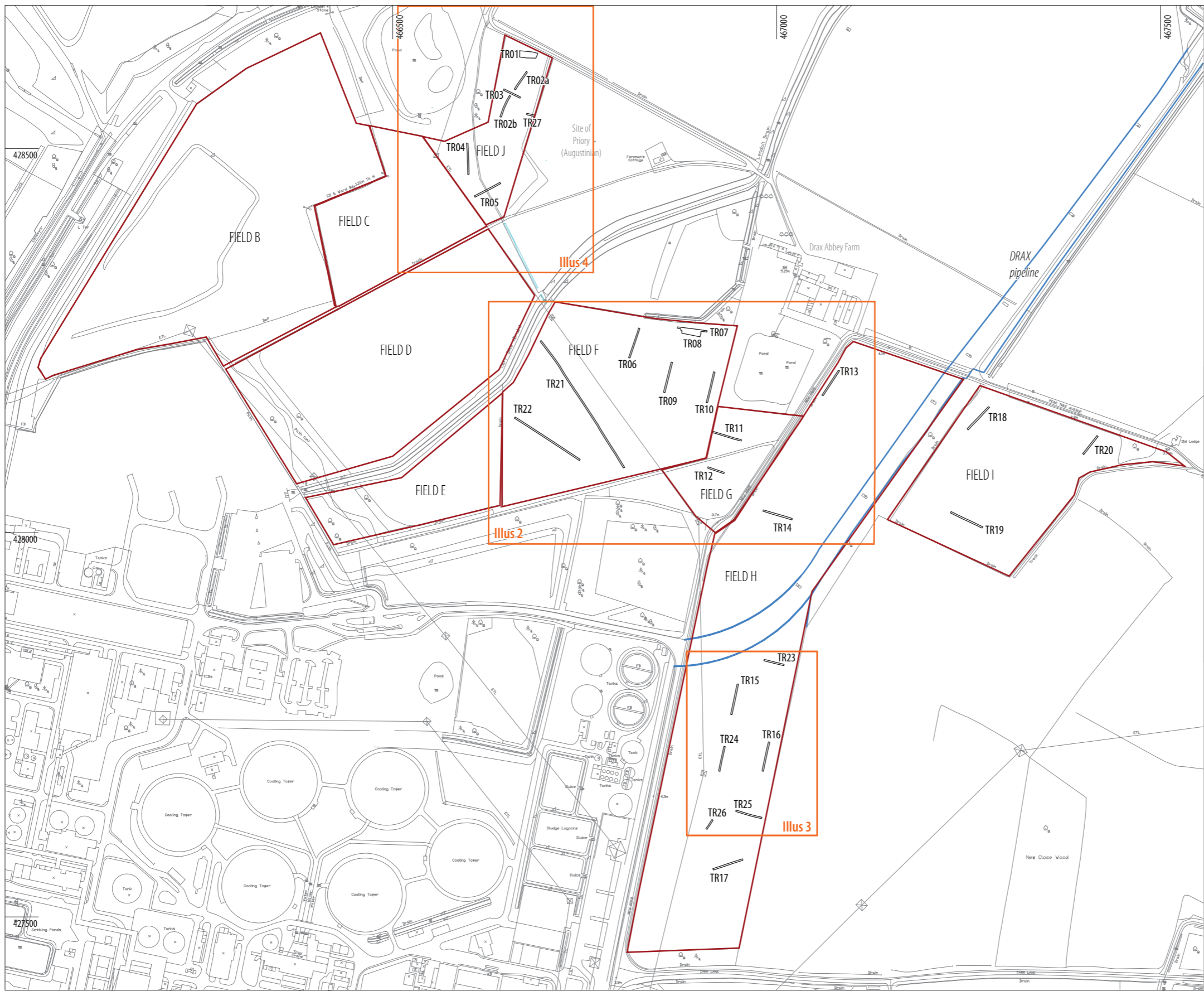
Checked and signed off by :-  Date :- 19/08/2015



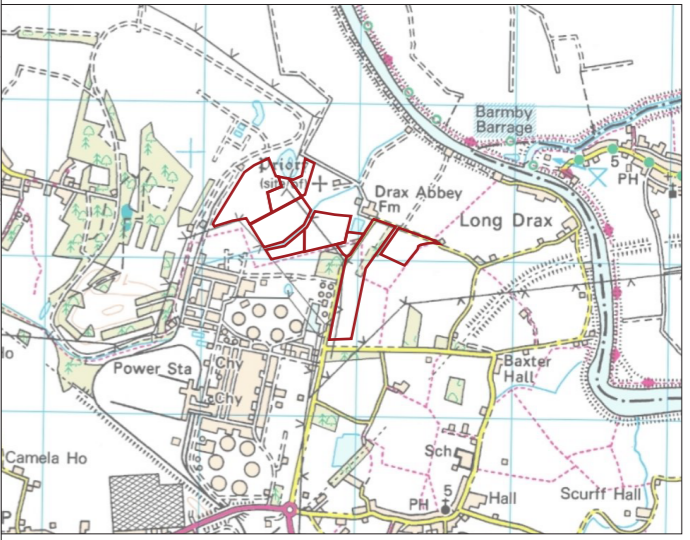
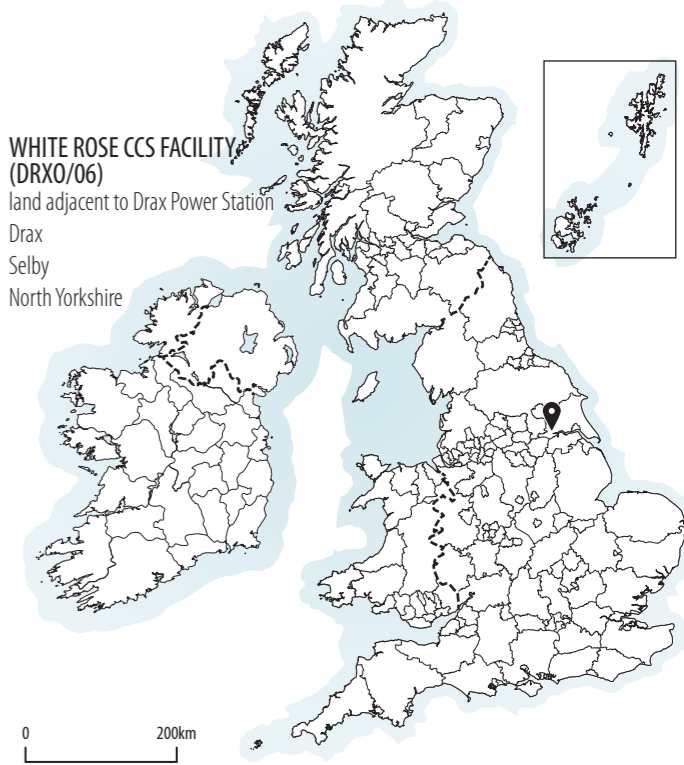
# Calibration Plot



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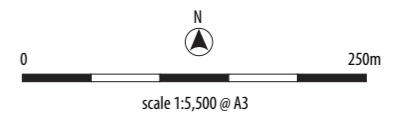


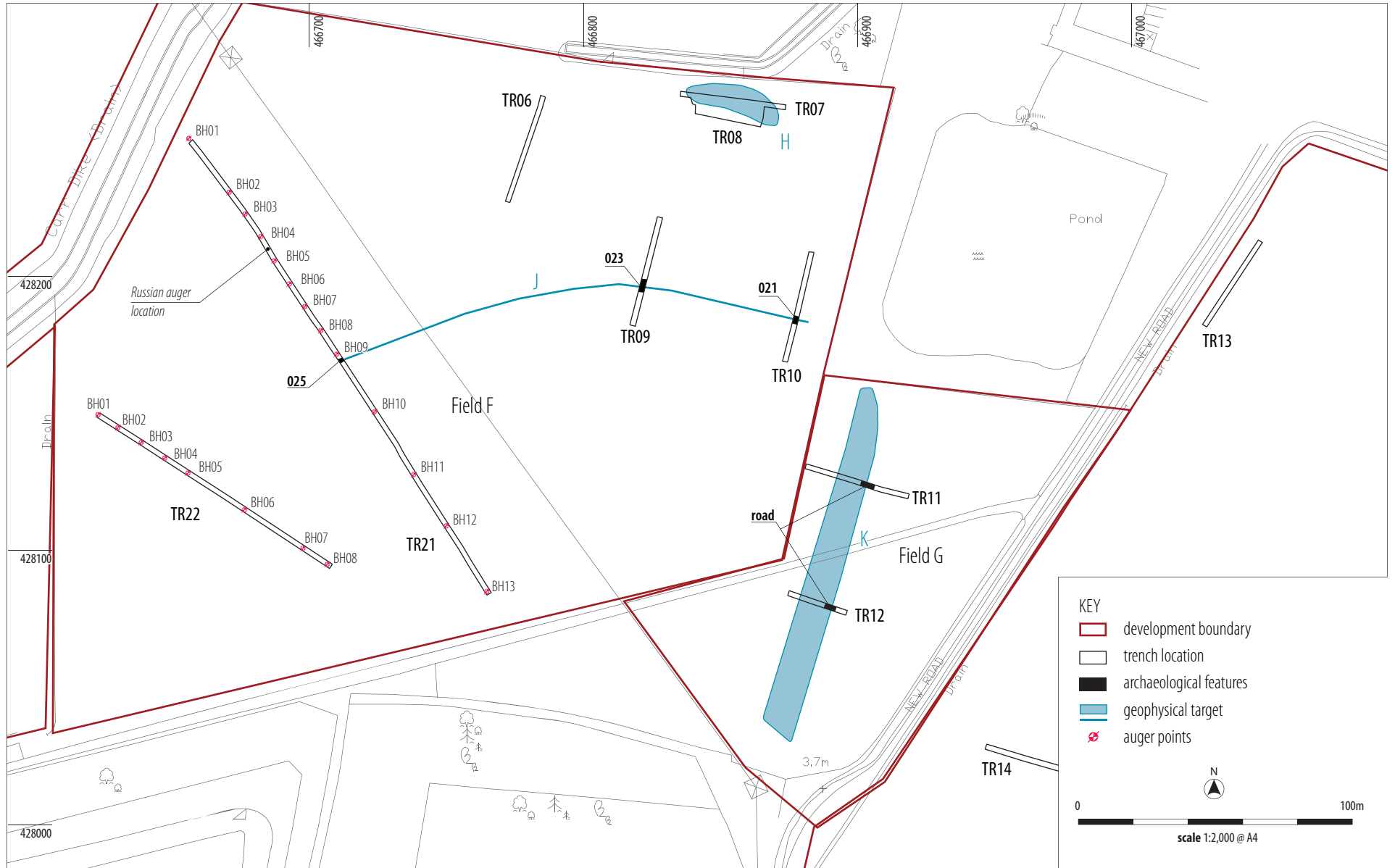
**WHITE ROSE CCS FACILITY (DRXO/06)**  
 land adjacent to Drax Power Station  
 Drax  
 Selby  
 North Yorkshire



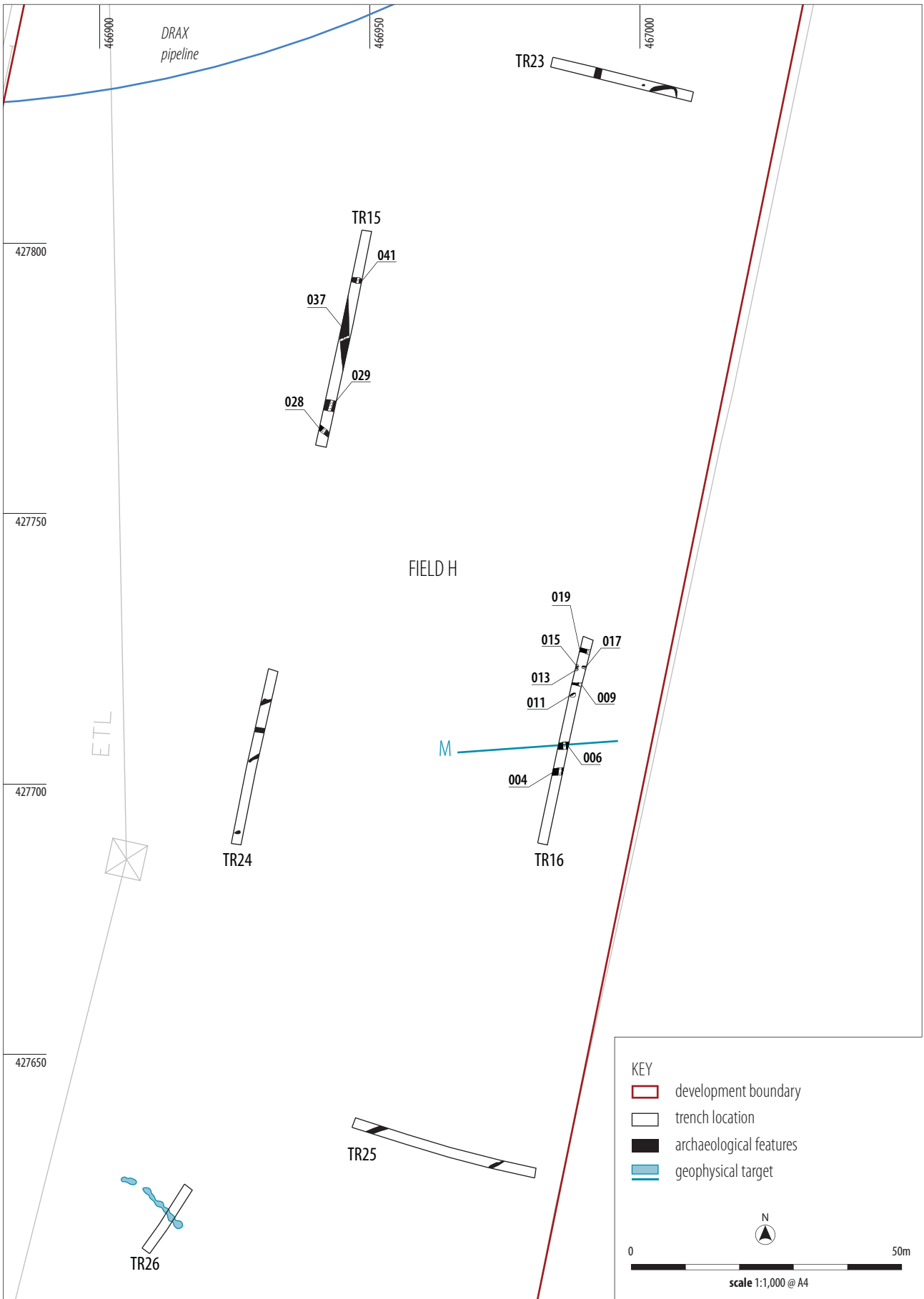
**HEADLAND**  
**ARCHAEOLOGY**

**KEY**  
 [Red line] development boundary  
 [Black line] trench location

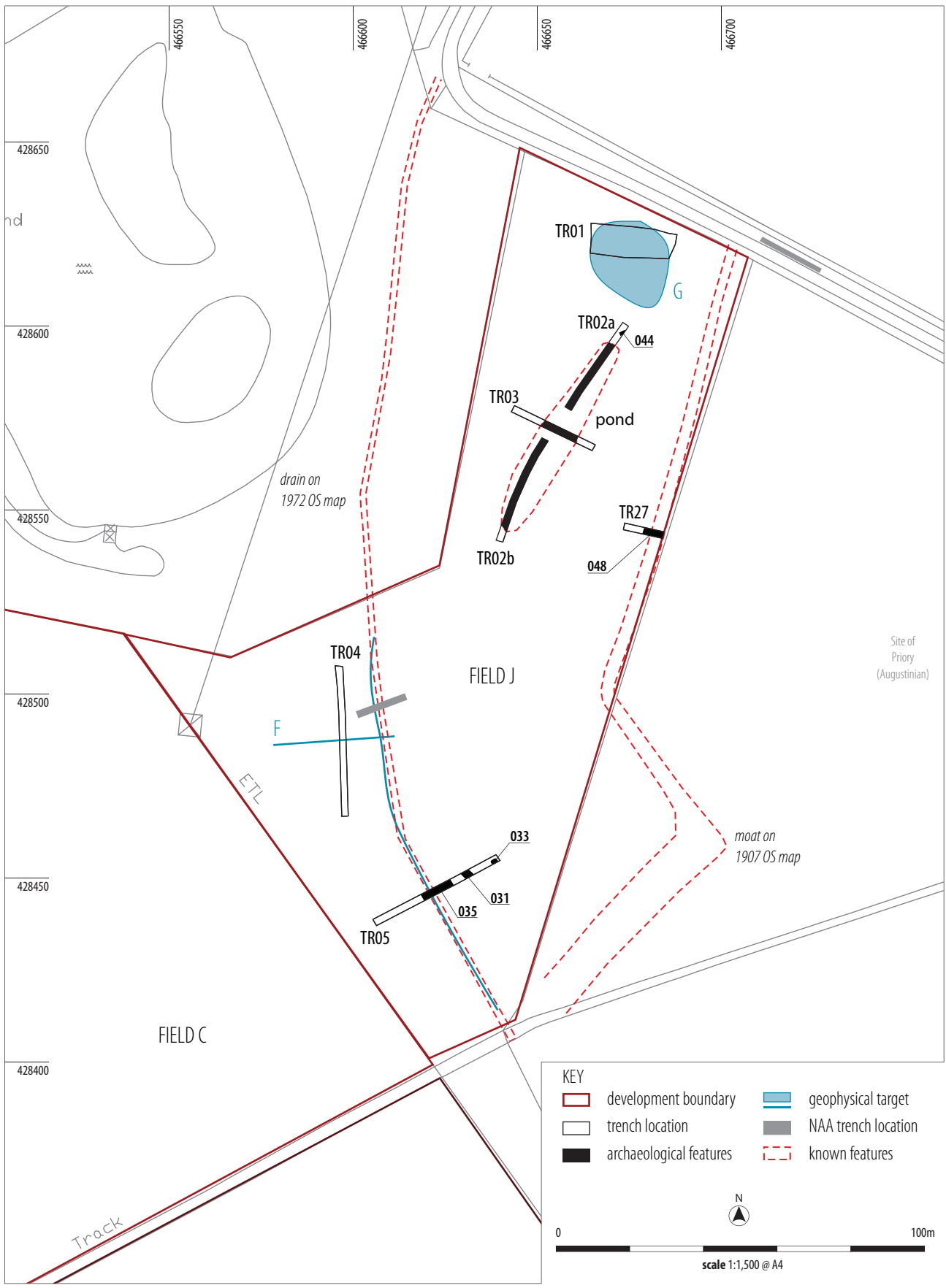




ILLUS 2  
Detail of features in Fields F and G



ILLUS 3  
Detail of features in Field H



ILLUS 4  
Detail of features in Field J

**ILLUS 5**

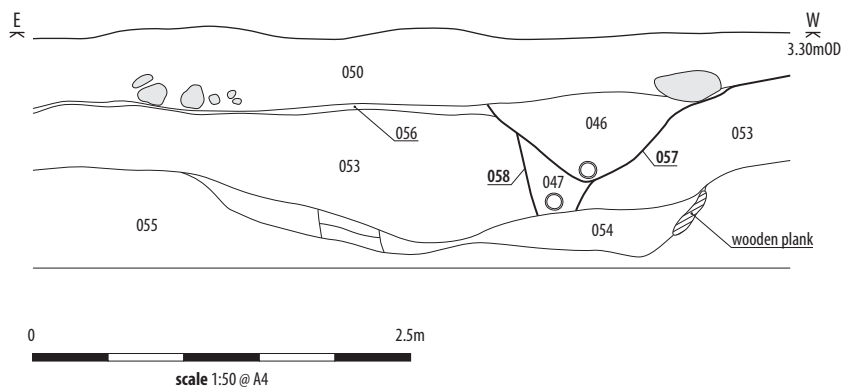
Trench 16, general view of features [013], [015], [017]  
Facing N



**ILLUS 6**

Trench 15, S facing section across ditch [037]





**ILLUS 7**  
N-facing section in Trench 3

ILLUS 8

Trench 2a, slot cut across S end of pit [044]





ILLUS 9

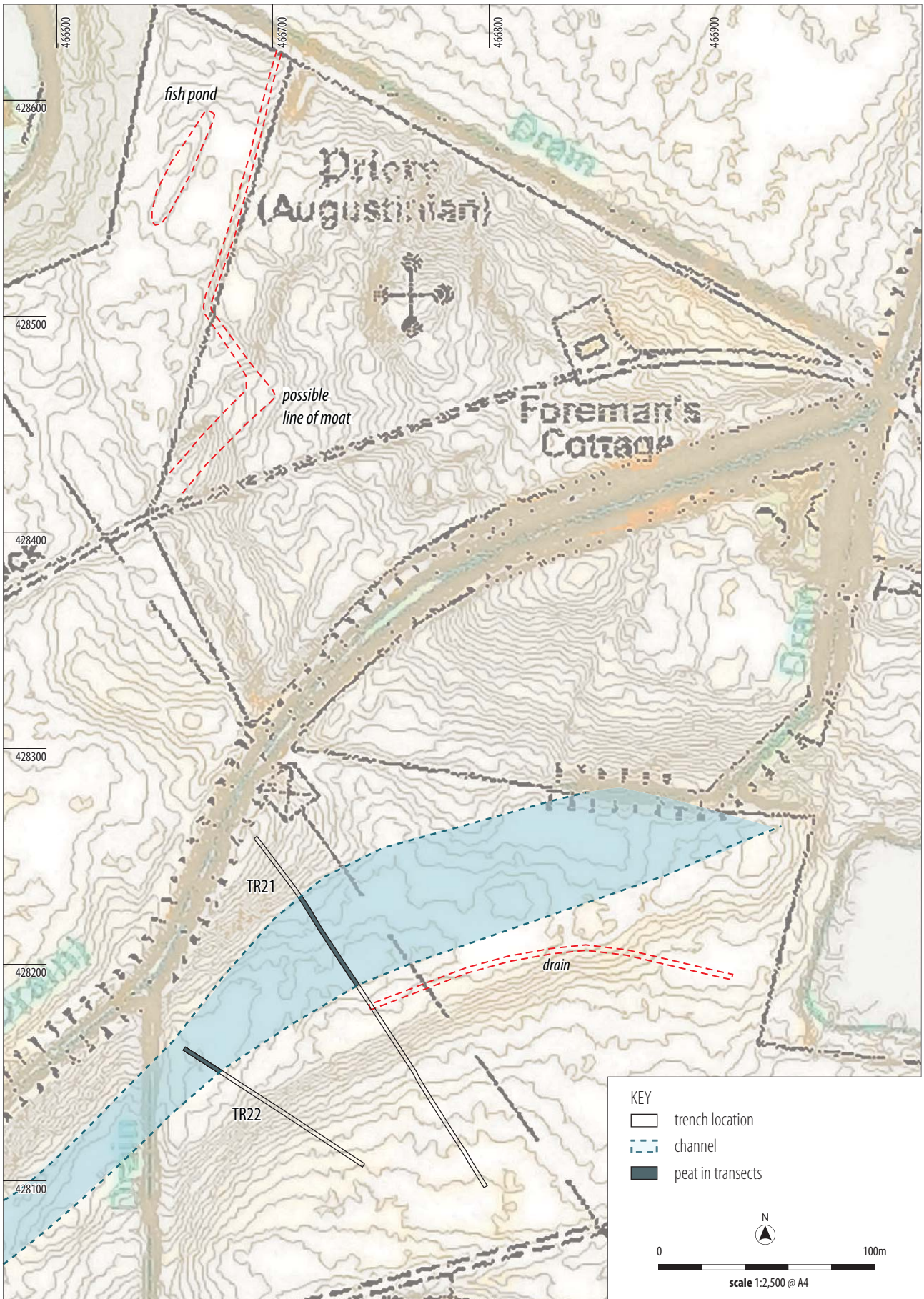
Trench 5, NW-facing section across ditch [031]



ILLUS 10

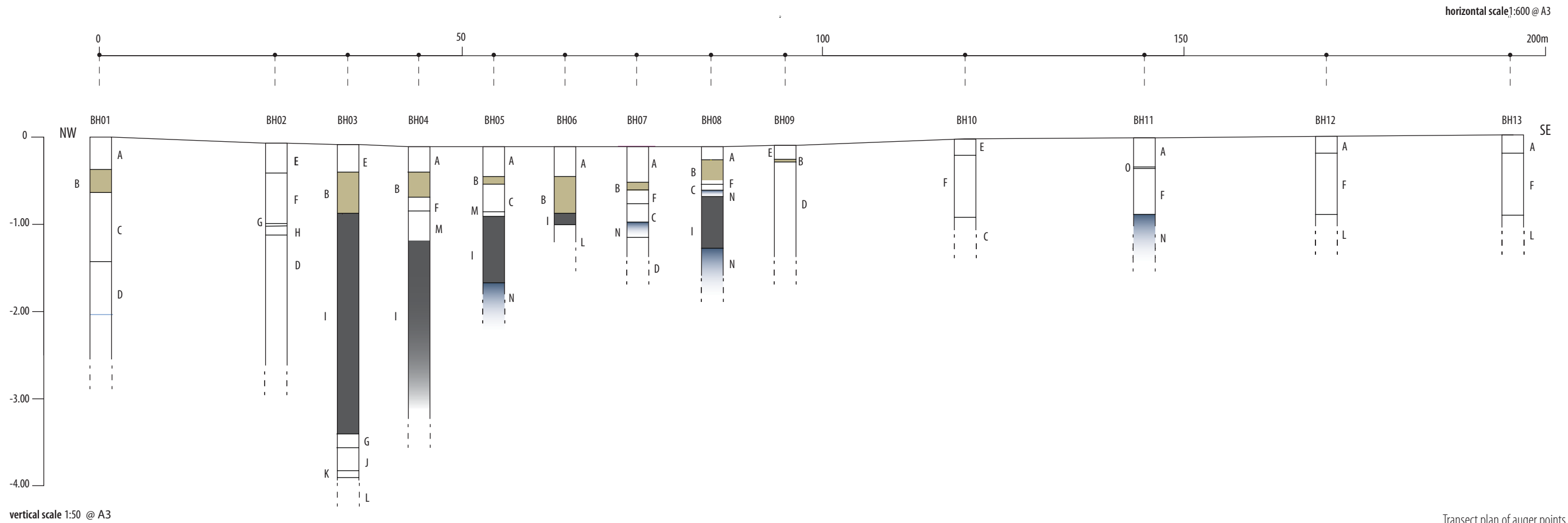
Trench 5, NW-facing section across pit [033]



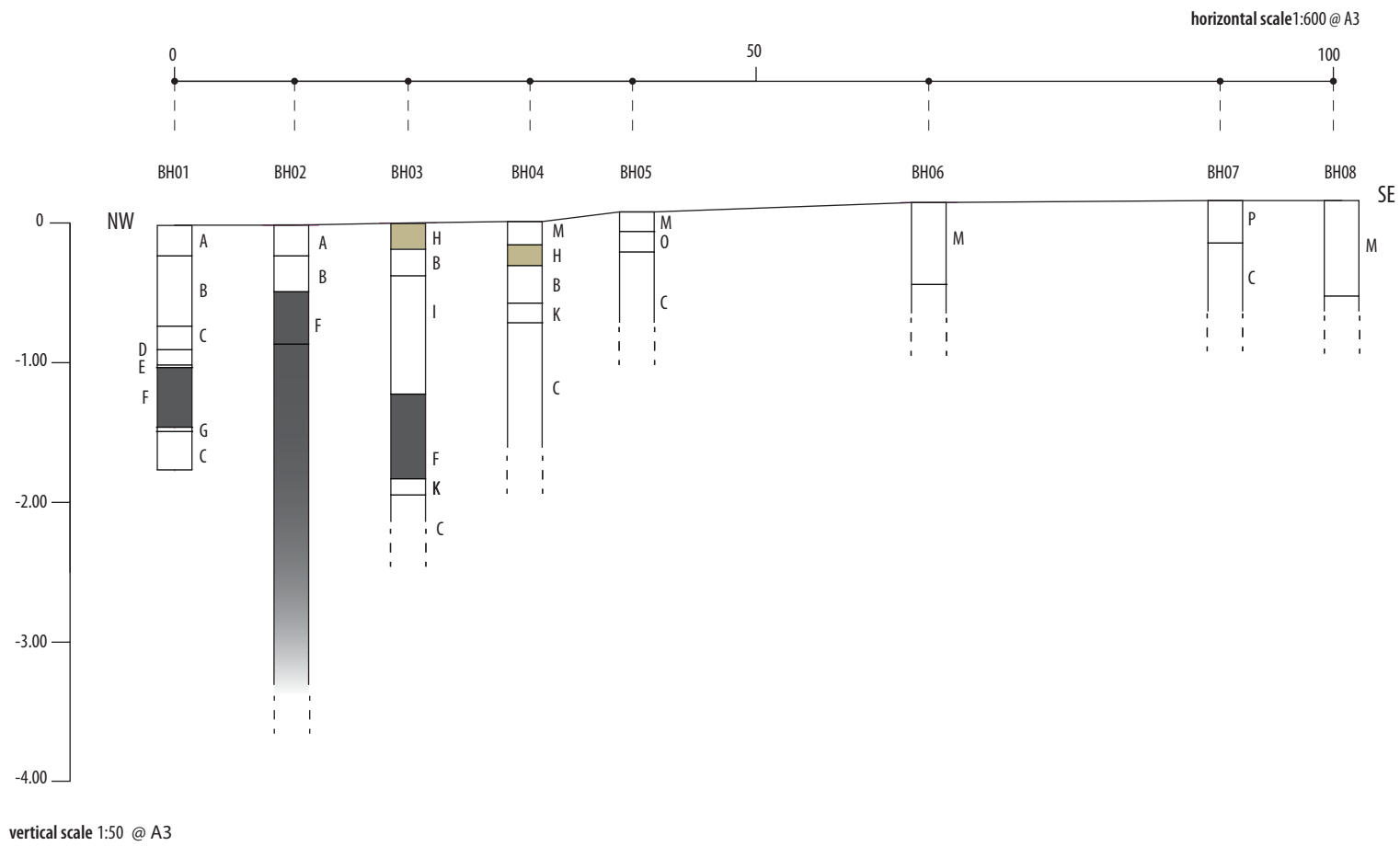


ILLUS 11

Lidar data of western part of the site with selected features annotated



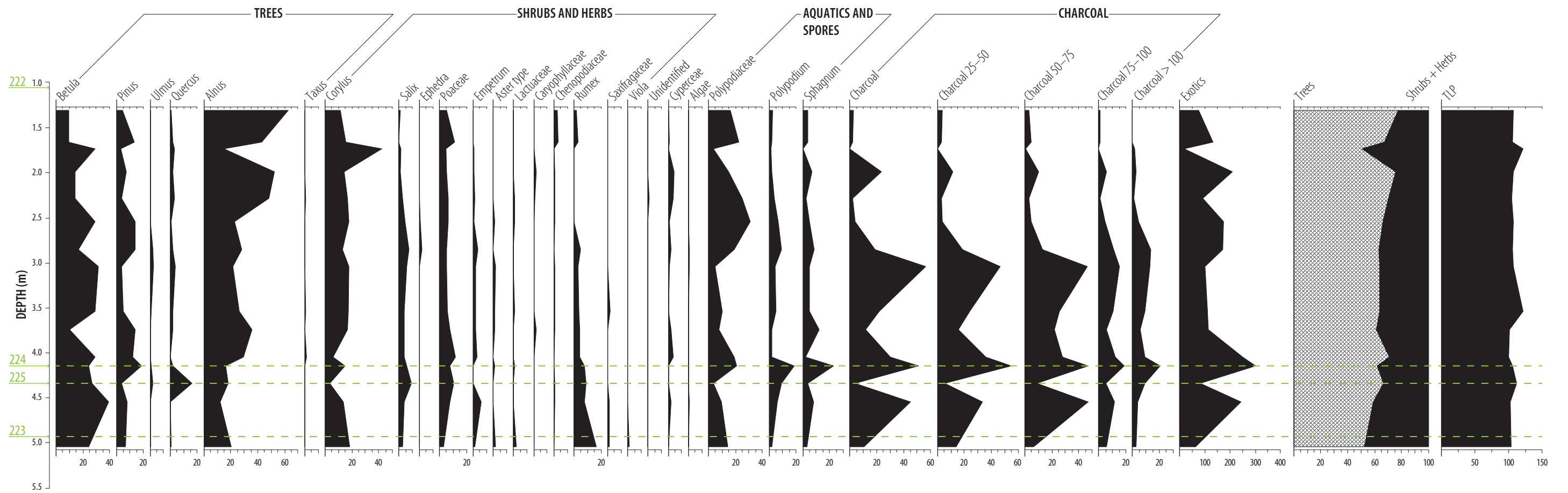
ILLUS 12  
Transect plan of auger points in Trench 21



KEY  
 B, warp  
 I, peat  
 N, peaty clay  
 A, B... soil deposit (see Appendix 2.1 auger register for description)

ILLUS 13  
Transect plan of auger points in Trench 22

SAMPLE	DEPTH (m)	CALIBRATED AGE RANGE 2σ
222	1.04	792–516 cal BC
223	4.93	3517–3136 cal BC
224	4.14	2891–2637 cal BC
225	4.34	3704–3531 cal BC



ILLUS 14  
'Skeletal' pollen and microscopic charcoal counts from Borehole 14

ILLUS15

Photos of wooden planking retrieved from possible fishpond in Trench 3

