Home Farm

Kirkby Fleetham

North Yorkshire

Archaeological Evaluation Stage 1

January 2010

Report

ARCHAEOLOGICALEV ALUATION

HOME FARM

KIRKBYFLEETHA M

NORTHY ORKSHIRE

SITECODE :KFH09

REPORTC ODE:F AS2010442KF H396

NGR:SE27999625

REPORT

January201 0

FIELD ARCHAEOLOGY SPECIALISTS LTD

Unit8 Ful fordB usiness Centre
35HospitalFieldsRoad
York YO104DZ

TELEPHONE (01904)652 000
FACSIMILE (01904)749 014
fas@fieldarchaeologyspecialists.co.uk

CLIENT

AGGREGATEI NDUSTRIESU K LTD
HighRoa ds
NetherK ellet
Carnforth
Lancashire
LA61 EA

PROJECT TEAM

JustinG arner-LahireBA
CecilyS pall BScM AM IfA
JonathanC larkB AM AD Phil
RichardJ acksonBA

REPORT PREPAREDBY

CecilyS pall BScM AM IfA

REPORT REVIEWEDBY

JonathanC larkB AM AD Phil

.....

REPORT AUTHORISEDBY

JustinG arner-LahireBA

.....

LISTOF C ONTENTS

Figures

Plates

Tables

Appendices

Summary

This document presents the results of Stage 1 of a programme of archaeological evaluation at Home Farm, Kirkby Fleetham, North Yorkshire, towards a planning application for proposed mineral extraction. The evaluation was undertaken by Field Archaeology Specialists (FAS) Ltd for Aggregate Industries UK Ltd. Fieldwork was carried out between the 11th November and the 9th December 2009.

The Stage 1 evaluation followed the preparation of a Cultural Heritage Assessment and consisted of a programme of reconnaissance fieldwalking, magnetometer reconnaissance survey and borehole survey. Reconnaissance fieldwalking was undertaken along 20 m transects over all available arable fields. A variety of material was recovered including a handful of lithic objects, pottery with no table quantities of medieval and modern material, ceramic building material and two medieval lead weights. Modern ceramic and CBM was distributed widely across the site, but concentrations of medieval ceramic and CBM were noted within the central and southeastern zones of the site. The distribution of medieval ceramic was co incident either with areas of ridge and furrow cultivation identified in aerial photographs and with linear anomalies resulting from the magnetometer survey or with the position of Kirkby Lane, which may represent the line of an earlier route through the area.

The magnetometer reconnaissance survey was undertaken along seven, 30m-wide north-south transects. A number of anomalies and linear trends were identified; some of an omalies appear to reflect variations in the underlying geology. A total of nine anomalies are considered likely to reflect underlying archaeological features. Many of these align with historic field boundaries, while one of two strong, linear anomalies within the southwestern zone of the site has been identified as a possible Iron Age feature based on the results of a borehole and radiocarbon dating.

The borehole survey was designed to assess the presence and character of palaeoenvironmental deposits. A total of 90 boreholes were sunk at 25m intervals along three north-south transects. Five boreholes produced evidence for palaeoenvironmental deposits mainly within the southwestern zone of the site. Borehole 5, coincident with a strong, linear anomaly detected during the magnetometer survey, produced a sequence of waterlogged, possibly structural oak, organic clay and peat; the sequence has been radiocarbon dated to the Iron Age. Boreholes 10, 11 and 15 produced deposits of organic clay and peat which have been radiocarbon dated to the Bronze Age, while Borehole 86 produced a deposit of possible alluvium, which contained plant and insect remains, but no material suitable for radiocarbon dating.

The results of the Stage 1 evaluation have demonstrated that reconnaissance fieldwalking is a useful indicator of areas of medieval, post-medieval and modern activity and the resulting distribution of material has been used to design intensive fieldwalking as part of Stage 2 evaluation. The results of the magnetometer reconnaissance survey have demonstrated that the site is susceptible to thistech nique and further areas for survey have been designed in order to enhance coverage of anomalies and to coincide with areas of intensive fieldwalking. Coupled with the logs of a flight auger survey undertaken in 2007, the results of the borehole survey suggest that palaeoenvironmental deposits are representative of the site, but appear to be distributed only over restricted areas.

The resultsofthe Stage1 evaluationhav eenabledtheprepa rationofanupdatedg eomorphologicalm odel for thep roposedex traction areaa nd theS tage2 evaluativepro gramme. Thisis anticipatedto includeareas of intensivefieldw alking,m agnetometerarea surv ey, targeted borehole sampling,g roundpen etratingrada rsurv ey andeva luationtr enching.

Acknowledgements

Field ArchaeologySp ecialistsw ouldlik eto thankGeoffStorey ,Ag gregateI ndustriesforprov idinginform ation and advicefor theev aluation programme. TheL awson family and Mr Garner kindly granted access tothe site. FASa rea lso gratefult o LucieH awkins,D evelopmentC ontrolA rchaeologist,H eritageS ection,N orthY orkshire CountyC ouncil,an dA ndyH ammon,R egional Science Advisor, English Heritage forthe iradv icean dg uidance.

1.0 INTRODUCTION

This document presents the results of Stage 1 of a programme of archaeological evaluation at Home Farm, Kirkby Fleetham, North Yorkshire, towards a planning application for proposed mineral extraction. The evaluation was undertaken by Field Archaeology Specialists (FAS) Ltd for Aggregate Industries UK Ltd. The geophysical reconnaissance study was undertaken by Archaeology Services WYAS and the boreholes were carried out by R.J. Drilling Ltd. Fieldwork was carried out between the 11th November and the 9th December 2009.

1.1 LOCATION AND LAND USE

The proposed extraction site lies *c.*1km to the north of the village of Kirkby Fleetham, to the southeast of the town of Catterick (Figure 1; NGR: SE 2799 9625). The proposed extraction area represents a total of approximately 13 1.5ha occupying low-lying ground, sloping very gradually from 39 mAOD to the west, to 32 mAOD to the east (Figure 2). The southern boundary of the site is marked by a steep slope, rising to 50 mAOD. A small cluster of buildings, including Kirkby Fleetham Hall, St Mary's church, and associated cottages and residences occupy the lower reaches of this slope, where it forms a small spur northwards. The northern part of the site, to the north of the river, is bounded by a floodbank to the south and there is a road to the north, lying immediate south of the house of Low Kiplin.

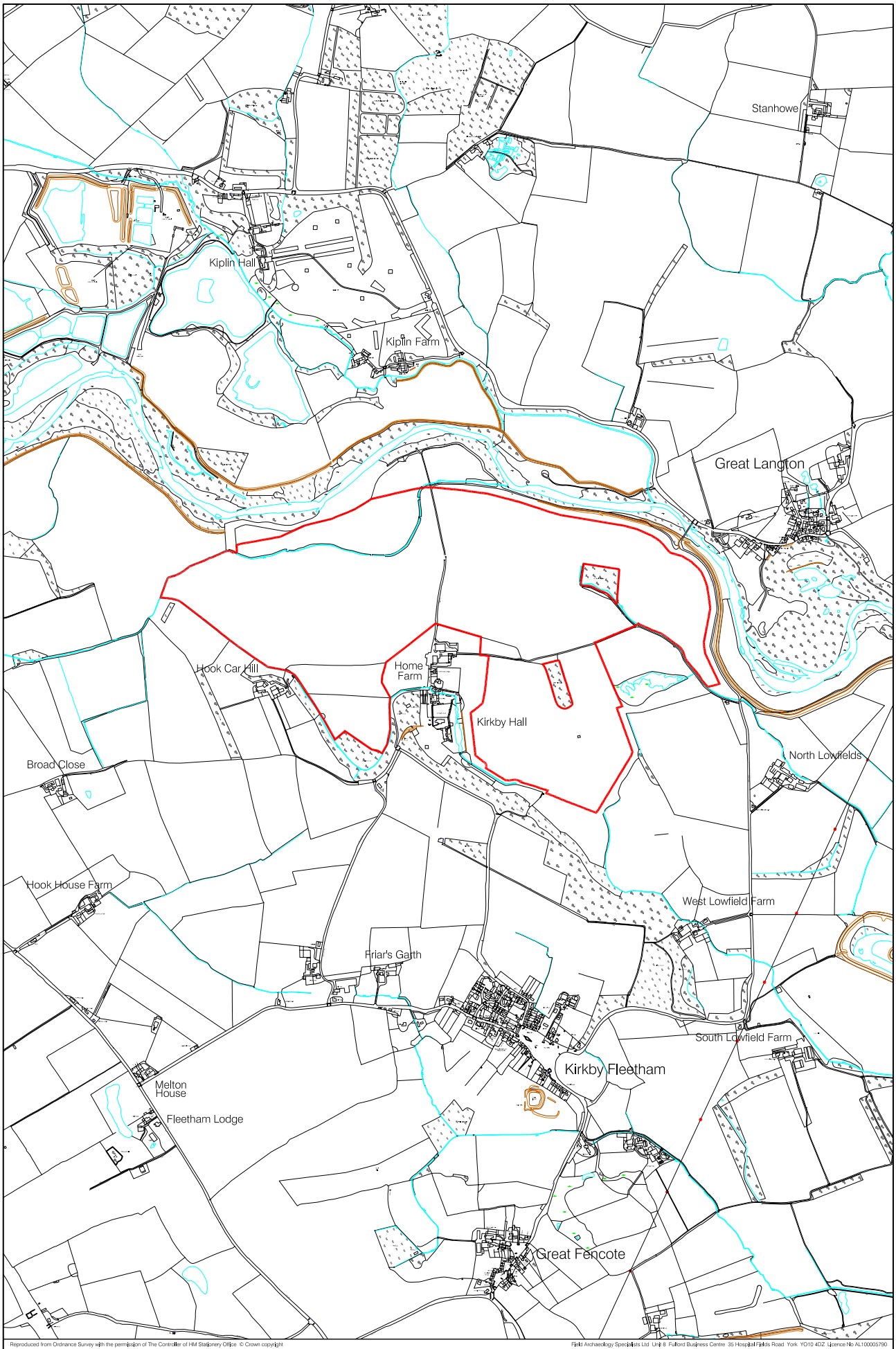
The site is exploited as agricultural land (Grade 2 and 3), interspersed with stands of woodland. During fieldwork the land had been recently ploughed and crops of wheat and winter beans sown. Land to the north of the Swale is grassland. A central trackway, Kirkby Lane, connects the buildings of Home Farm with the river and two tracks lead off it to the east. In the north western corner of the site lies Fiddale Beck, which acts as a large drain, and is close to modern flood defences. Home Farm itself is currently unoccupied, although the outbuildings remain in agricultural use.

The site lies within the Yorkshire Ouse basin, adjacent to the River Swale as it flows southeast towards the confluence with the River Ure, some distance away. The proposed extractions lie within the valley bottom, and is situated almost entirely on the flat alluvial flood plain.

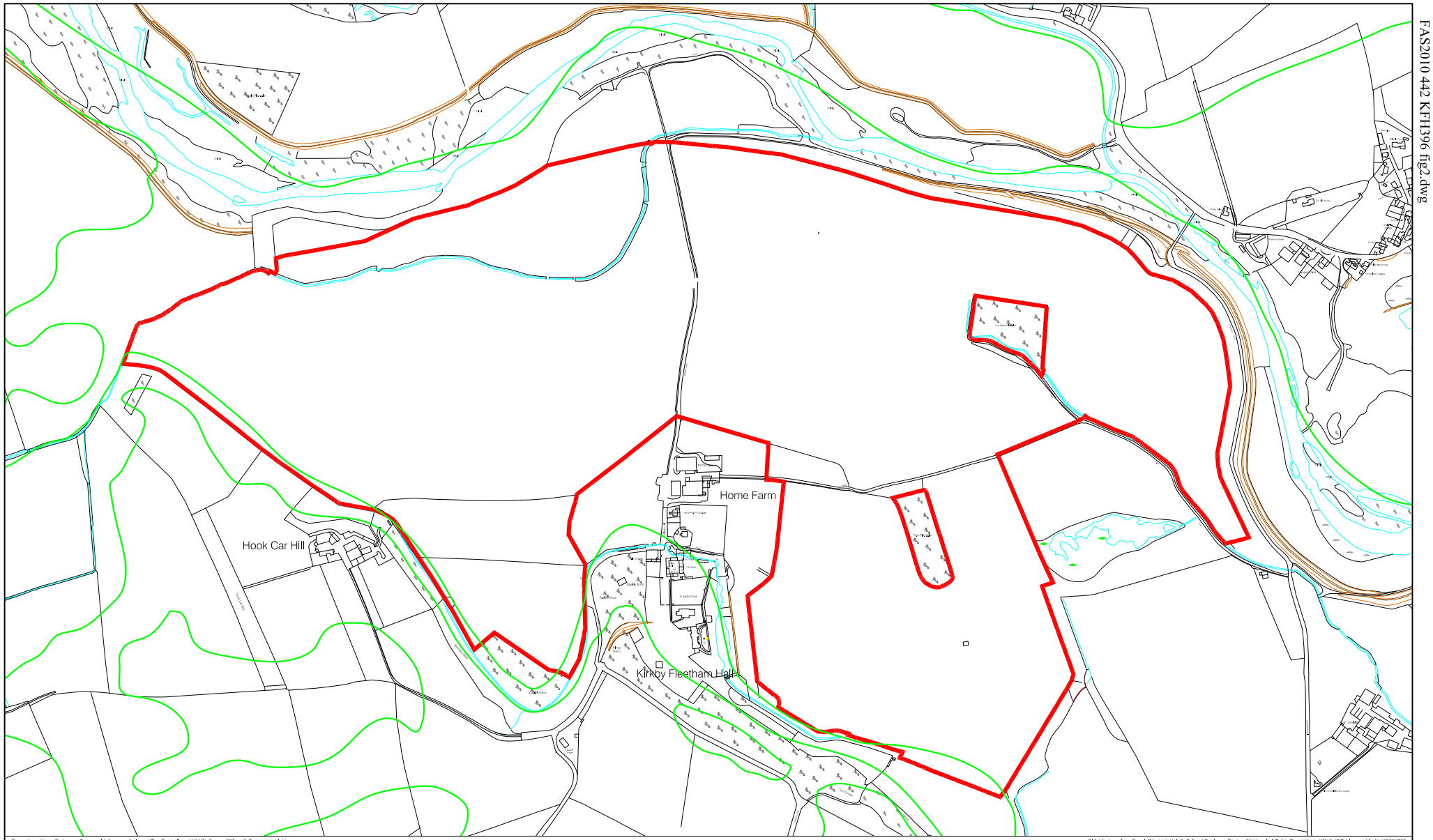
1.1.1 Geology and topography

The underlying geology has been mapped by the British Geological Survey and is published as Sheet E 42 (Northallerton), and in more detail on Sheet SE29NE (1: 10,000). Available geological information indicates that the underlying geology of the site comprises Upper Permian Marl (Roxby Formation) to the west, and Triassic Sherwood Sandstone to the east. The Upper Permian Marl consists of a sequence of red mudstones and sandstones, with gypsum and anhydrite, which become more sandy before passing into the overlying Sherwood Sandstone, which consists of red brown fine- to medium-grained sandstones with mudstone partings.

The Marl and Sandstone are overlain by River Swale Gravels, the depths of which have been defined during a drilling programme (Minshall 2007). The sand and gravel was generally found to be between 1 to 3m in depth,



Location map | Scale 1:20000 | Figure 1



Proposed extraction site with OS contours at 5m intervals

Scale 1:10000

Figure 2

with a much deeperb asino f gravela djacentt o HomeF arm,rea chingathi cknessof8m . Overlyingth e gravel, overburdenh asb een describedas topsoilandsandy clay eysubsoil,v aryingindepth from0. 2mto 2.4m. The deptho fo verburdenwa sgr eatesta tt hewe sterna nde asternl imitso ft hes ite,wh erei te xceeded1 .5m.

1.2 AIMSA NDO BJECTIVES

Theprincip alaim of theev aluationprog rammeis toallow the archaeologicalan dp alaeoenvironmentalp otential ofthe site tobe asce rtained moreaccurately in order to enable anin formedd ecision tobe m ade regardingthe planning application for proposed mineral extraction at the site. It will also allow foran inform eda ssessment ofthe impact of the proposed extraction, along with an appropriate archaeological mitigation strategy tobe designed includinga protocolfor unexpected discoveries and nationallyim portant archaeologicalde posits.

Thisev aluation programmesee ksto followMinerals andH istoricE nvironmentF orum(MHE F)P lanningfor mineral e xtraction and archaeology; Prac tice G uide (2007, 11), w hich states th at 'the [pre-determination evaluation] shouldbe con sistentw ithbe stprac ticeac rossth eco untry, p roportionateto thearc haeological potential of the site, and reasonable in allothe rrespe cts'.MH EF reiteratesth atpre- determination evaluation shouldno rmallybe arap idan dine xpensiveop eration whichh elpsto d efinet hec haracterand extent ofthe archaeologicalr emainsth ate xistin th e areao f a proposed development(inMH EF2 007,1 1).

Theev aluation programmehasbeendesig nedasa stagedprocesswhereb ytheresults ofthe early stag esare used toinfo rmthe designo fsub sequentinv estigation.Thisstag edapproac his designedwiththea imof providing a'realistically ach ievable'p rogrammew hich willa ddressth eaim sof theinv estigation,w hilerep resentingan effective expenditure ofres ources. Thef irstp arto f thein vestigative process consisted ofth e preparation ofa detailedC ultural HeritageAss essment (CHA)(FAS200 9) whichwas usedas the basis tode signt hefi rstst age ofev aluation.

FieldworkStag e 1 (Reconnaissance)w asd esigned andp repared asa f ormalP rojectD esign (Appendix A) in consultation w ith Lucie H awkins, D evelopment C ontrol A rchaeologist, N orth Y orkshire County C ouncil (NYCC)and D rA ndyH ammon,R egional ScienceA dvisor, EnglishH eritage. The programme ofev aluation was alsop repared with reference tothe *StandardandG uidanceforArchaeolo gical Field Evaluation*(Institute forF ieldA rchaeologists20 08).Theev aluationcons istedof non-invasiveandinv asiveinv estigation and was designed inord erto assess:

1. thed epth and character ofd eposits acrossthe site;
2. the presenceo f anya reaso f hithertou nidentifieda rchaeologicalp otential;
3. the character and depth ofp alaeochannels,a ndth eir palaeoenvironmentalp otential;
4. the effectiveness ofd ifferente valuative methodsw ithin thiss pecific landscape context.

1.3 ARCHAEOLOGICALAND HISTORICALB ACKGROUND

1.3.1 Palaeolithic(*c*.250,000 BCto *c*.8000BC)

No palaeolithicm aterialha sbe enid entified within the proposed extraction area, althoughw ithinth ew iderare a ofthe Sw ale-Urew ashlands,p alaeoenvironmentale videnceh asp rovided information on landscaped evelopment duringthis period.P ollen samplesfro ma sequence ofpeatandcalcareou sorg anicm ud fromthe floodplains ofthe R iverU read jacent to Ripon Racecourse (tothe so uth), havebe end atedto the earlyH olocene, on thecu sp of the Pa laeolithic and Mesolithic p eriods (Howard *et al* 2 000). Th ese pollen s amples, c arbon-dated to *c*.9710+/-60 B P(*c*.9300-8840cal BC),su ggesttha ttow ardsth een do fthe Palaeolithicm uch of the areaw as parto fa low-lyingw aterloggedflo odplain,p ossiblyco evalw ith channel features seen on theea stban kof the RiverU resou thof Great Givendale (Howard *etal* 20 00). Thiswo uldsug gestthat theareawaslarg elym arginal and probablyun occupied.

On abro ader level,th ep aucityo flatePalaeolith icev idence inthe w iderare am aybe related topa raglacial developmento f many river valleys, resulting in increased water flow duringthe Holocene,leadin gto theero sion and reworkingo fea rlierse dimentswh ichm ayhav eco ntainedPa laeolithicm aterial(C hurch and Ryder 1972).

1.3.2 Mesolithic(*c*.8000 BCto *c*.4500BC)

Palaeoenvironmental evidence

Againan dto date little evidence of Mesolithic activity is knownw ithinth ew iderare aof thep roposedex traction sitea ndn one within the site itself. Furthera field,p alaeoenvironmentalr esearch undertakenb yth e Swale-Ure Washlands pro ject inc luded sampling at R ipon Racecourse (H oward *et al* 2 000; Rutherford 20 03), w hich captured po llen an d p lant m acrofossils, *Mollusca*, *Coleoptera* and *Ostracoda*, in dicating th at in th e early Holocenep eriod,s ediments w ered epositedi ns low-movingo rs tagnantwa ter,s urroundedb yma rshy,d amp grassland(H oward *etal* 2 000,3 1).Th isin dicates thatd uringth e Mesolithicp eriod the habitata round the Ure was waterlogged, probablya floodplain, possiblyas ith ad been in the late Palaeolithic and a similarland scape mightbeenv isagedaround the Swale.T hepollendata- setalsorevea leda risein herbaceous taxain dicativeof thecle arance ofw oodsor heathlandex pansionty picallyasso ciated with woodland reduction.Thisprov ides reasonablyplau siblep alaeoenvironmentale videncefothum anactiv ity(Rutherford 2003,2). C ertainly,s imilar landscapes and gravel terraces have revealed conclusive evidence for intense Mesolithica ctivity(H ardingand Johnson 2003,1 2)an dthe sam em aytherefo rebe assu medto be trueo fthe areaa roundthe RiverS wale.

Lithic evidence

Recent inv estigations adjacentto th e eas t side ofthe A 1 at KillerbyFa rmhav e enc ountered evidence for prehistoricactiv itythou ghtto belongto theMeso lithic-Neolithic(B laiseVy nerp ers. comm.). Thesite lies approximately2 kmw esto f KirkbyH alla ndr epresentsa n areaofcl ayand pea tsu bsoilsa t *c*.45mAOD which haveretain edw aterun tilrecently . Inp rehistorythe presenceo fm eresm ayhav eattracted activ ityand the investigations have found pits containingan aurochv ertebraean dan tleras well asco ncentrationso fcha rcoal aroundth e watery areas. Thea ctivityd emonstrates thep otentialf orp rehistorica ctivityf ocussed adjacentto water bodies.

Closerto thestu dyarea, Mesolithic flinta rtefactsh avebe enfo und atB roughS tG iles(C ardwelland Sp eed 1996). Radiocarbond atingof organicd eposits withinflood plain sequences atS tG ileside ntifieda terrace surface ofMeso lithicda te(Tay loran dMack lin1997, 322). FurtherMesolithiclithicev idence has alsob een encountered inth e Thornborough landscapeF ieldwalkingin th e Thornborough area(some distanceto th e south ofth e proposede xtraction site),un dertakenb etween 1994 and 1997,a ndid entifiede videncef orla ter Mesolithic and EarlyN eolithic activitycom prisinga smallbu tsig nificant numbero ffinds from ac rossa gr avelterrace (Harding1 998).

1.3.3 Neolithic (*c*.4500BC to *c*.2000BC)

Likethe Mesolithic, theea rlyto middle Neolithicpe riodisp oorlyrepres ented withinthe immediate areao f HomeF arm,a lthoughw ithinth ew iderreg ion, a number of early to middle Neolithic sitesan dfind sare known. Evidencef romth is period within the region comprises principally cursuses, henges and other earlyN eolithic monuments, potteryand lithics includingston eax es.

Within the Swale-Urec atchmenta rea (an areae ncompassingth e lowerr eacheso f the Rivers Urea ndS wale fromtheir confluence atB oroughbridgeno rthwardstotheSwale'sdescen tfrom the Pennines)thereare atotal off iverec orded cursuses,t woo f which have been excavated (Thornboroughа ndSco rton)(Topping 1982;FAS 1997). Although their functionrem ainse nigmatic, the positionof these monumentsw ithinth eland scape and associationw ithoth er, usuallylater, feature s, notablyb urialm onuments, highlightsh ow theym ayhav eacted asim portant focifo rlocal populations (Hardingand Johnso n2 003,1 5). Inaddition to thecu rsuses,othe r Neolithic m onuments a re k nown f romw ithin th e S wale-Ure catchment are a. These in clude a nu mber o f funerarym onuments, includingm ortuaryenc losures.

As well as large ceremonial and funerarym onuments, evidence forsettlem enth asb een encountered withinthe Swale-Ure region. Two possibleareas of settlementc loseto the A1 corridor(Tavener199 6;H ardingand Johnson2 003,1 5)a rec haracterised by pit groups. At Marton-le-Moora la rge concentration ofo ver1 00p its ine ights eparate clusterswa sex cavated,wi thasec ondc oncentrationof17 pit sak ilometretoth e south.B oth sitespro ducedsig nificantq uantities ofN eolithic pottery(Tav ener 1996,1 83).S imilarpit groups havebe en excavateda tN osterfield Quarry(FA S2 005a)and atL adybridgeF arm. AtL adybridgeF armthe pitg roups appearedto be restricted toan area ofh igherg roundto the southwestof thesite, believ edto repre sentdrier groundatth elim itsof anin- filledlak e(F AS20 05b).L ithic evidence fromthe regionc ontributedto this picture. Fieldwalkingu ndertakena s parto f the A1(M) motorwayth rough the Cattericka rea producedar ange ofli thic materialw hichh asb een suggested tob e residual,a ndin dicative of an areaw ithoutin tensive prehistoric activity (Make19 94,10 2inWilson2002 ,8). However, ithas beenn oted thatthe m onumentald ensityof thew iderare a runsc ontra toth is,a ndth atp erhapsth e areaw asu sed more for monumental i nvestment. O therm aterial, includingleaf- shapedarro wheads,po lished axe fragments,a sick lefrag mentandv ariousform sof scraper and retouchedflak esh avebe enfo und inthe w iderS wale-Urecatch mentare a.

Evidencef ort helaterNe olithicis representedm ainly inthe reg ionb ya group ofh engem onuments. Se ven known henge monumentse xistw ithinth eS wale-Ureca tchmentar ea,inc ludinganex ample whichh asr ecently beenp artiallyex cavated(Moloney19 96;Mo loney *etal* 20 03).F ieldworkarou nd hengesin thew iderare aha s

been sporadic (*cf* D ymond 1964) and on ly the henges at Thornborough have been the sub ject of an archaeological research project. Other possibly late Neolithic monuments known in the region include the Devil'sA rrowsstand ingston esat Boroughbridge(B url1961),aburial cairna nd pitco ncentrationat Catterick (Moloney1 996).

Since lithictraditio nsrem ained verysim ilar into the Bronze Age, the discussion of thelithic materialfrom that period willb eco nsidered here . There is a clear p attern of lithics in t he r egion, with little lithic m aterial recovered fromthe areao fthe henge monuments around the River Ure but a greater concentration inthe area ofthe R iver S wale (Harding 20 00). This h as b een used to sug gest a distinction betw een c eremonial and settlementsites . However, this bias may reflect the lack of any extensive fieldwork in the arearath erthan any reald istinction(Hardinga ndJoh nson2 003,2 0).

Itisc leartha tw ithinth ebro ader regionth ereexiste d apre historic landscaped ominated bya largeg roup of apparently asso ciated funerary m onuments a nd which stre tched from at least Sc orton to the no rth an d Boroughbridge toth e south(H arding19 98).C umulatively,th e evidencef romth e widerr egion for the Neolithic periods uggeststh atth e proposede xtraction sitew ouldh ave beenlo cated toth e easto f ana rea ofla rge-scale Neolithicactiv ityw hich arguablycom prised them ostim portantcerem onial landscapes inthe cou ntry(H arding 2003).

1.3.4 BronzeA ge (*c*.2000 BCto *c*.700BC)

No monumentsorfindshav ebe enre cordedin thep roposede xtraction siteor thesu rroundingarea, bu tan umber ofo therB ronzeA gesites and finds existw ithinth ereg ion,in cludinga BronzeA gerap ier,d iscoveredfrom riv er gravelsto then ortho fthe Swale(B urgess1 995) and a near-complete early Bronze Age pot, encountered during excavationsa tB rompton-on-Swale (Evans inWi lson2 002,1 0).

Inthe w iderreg ion, burial monumentsd ominateth earc haeologicalreco rdo f theB ronzeA ge. C oncentrations ofb arrowsare known,includin gtwelv earoundThornb orough,and afurth erg roup ofab out2 0at HuttonMoo r and Cana Barn.H orsley(1732,4 00) alsor ecountedth epre senceof tu mulib etween Brough Halla ndth e river, and onth e north banko f the riverb etween CatterickB ridge and BromptononS wale,al though these remain unlocated (Wilson20 02,8). Two tum uli are markedon the current Ordnance Surveyedition sou theast of Tunstall. These findings may be indicative of further groups of prehistoric monuments formingfoci withinthe landscape.

1.3.5 Iron Age (*c*.700B C to *c*.AD 43)

Evidencef orI ron Age activityin the region iss parse and ith asb een suggested thatth e areab etween the Swale andUr ewa sno tse ttledd uringt hispe riod,p ossiblydue to an ex haustingo fth eso ilsdu ringt heBr onzeAge (Tavener1 996).N onetheless, ade gree of continuity hasbe enre flected atsites such asC atterickR acecourse, where early Iron Age occupation has been encountered adjacent to theea rlierhen gem onuments(Mo loney19 96; Moloney2003), and atSc orton, where an IronAges ettlementwa s excavated in thevici nityof thec ursus(F AS 1997). Thesesettlem entsc omprisero undhouses,frequ entlyasso ciated with largeen closures.

Slightly further afield, at BroughS tG iles, *c*.6kmto the west,a 3rd-centuryB C settlementw asen countered. Notably,I ron Agefeatu resw erefou nd toha vebe enc ut intoa bu ried soilw hich sealed colluvialdep ositso f somede pth. T hiswou ldi ndicateth att heri verte rraceha db eenc learedsome ti mepr iorto th eI ronAge occupation (Wilson2 002,10). Itisn otable thattho seI ronA gesettlem entsth athav ebe end iscovered havebe en situated att heb ottomof scarps tothe sou thof theR iverS wale. S uch apo sitionw ould accordw iththe topographyof thep roposedex traction site, and ifthis areaw as not subject to flooding,it mayhav eform eda suitable settlementsite duringthis period.

1.3.6 Romano-British (*c*.AD 43 to *c*.AD 409)

TheRo manpe riodi sw ell-attested in thes urrounding area,n otle astdu eto th ein tensivee xcavationsth atha ve been carried outin and arou nd the walled Roman town of Catterick, to the northwestof thep roposedsite. These investigations providea contextfor theR omano-Britishp eriod forthis areaa sa whole. Theresults ofthe se investigationsa rec omprehensivelyd iscussedin th e published monograph(Wilson 2002).

TheRo manlan dscapeof theare ais todayprese rvedm ostev identlyin theline of Dere Street,rou ghlyfollow ed by the A1, some distance to the southwest of the proposed extraction site. The Roman road led fromYo rk, northwardsto wardsA ldborough and Catterick. C losestto the proposede xtraction site,R omana ctivityis representedo nlyby spo tfinds ofco insfro mLo wKiplinandGreatLang ton.Noneth eless,itcan be envisaged thatthe R omans ettlementso fC atterick and Bainesse, with theirm ilitaryprese nce,w ould havedo minated the landscapea nd theu seo fthe surroundingarea. I tisli kelythatc onsiderabletractsof land withinthe wider landscapew ould havebe eng iveno verto agriculture to supportthe m ilitaryand civ iliansettlem ents.

Catterick

The Roman town ofC atterickisfirst mentionedin the 2nd century,w hen Ptolemydo cuments *Caturactonium* (various spelled *Caturractonium*, *Taturactonium*and *Tacturactonium*)(Rivet and Smith 1979, 302). T hen ame appearsin theA ntonineI tineraryand the Ravenna Cosmography;the place-nameis believedtoderiv eithe r fromthe Celtic *catu*-'battle', referring to '(placeofthe)battleram parts'(Riv etandSm ith1979, 30 2-3), orfrom the Latin*c ataracta*,m eaning'w aterfall/rapids'.C atterickiss ituated ata strategic locatio nin thelan dscape, wheret hemai n north road crossest heR iverS wale;D ymond (1961, 153)h asa rgued thatC atterickwo uldh ave possessed a bridge and a fordo verth e river.Th e settlementh adit s originin m ilitarya ctivityo f the 1stc entury (notably,n o Iron Age predecessor was identified), and continued in use into the 5th centuryw hen occupation appears to have de clined. A fter bein g estab lished *c*.AD 80, m ilitary activ ity w ould have dominated the settlement, and the civ ilian elem ent o fthe populationis b elieved t o have been occupiedin sup plyingthe garrison.E vidence forleather- andm etalworkinghas b een encountered.Military activ ityceas ed *c*.120, tobe re-establisheda tth eri vercr ossing *c*.AD 160,and con tinuingto *c*.AD 200.The civiliansettlem entd eveloped further, and a *mansio* w as co nstructed. A Roman a mphitheatre w as en countered a t the site o fC atterick Racecourse.

Bainesse

Also established inth e 1stc enturyw asth e smaller settlement of Bainesse, situatedto th e south of *Caractonium*, and located tothe w estof thep roposedex traction area.E vidence forthe settlem ent, discovered since atleast

the1 9thc entury,in cludedw alls, inscriptions, a bronze steelyard, coins and ceramic. In1 939,exc avations at RAF Catterick rev ealed elements o f three rooms, associated with 4th-century po ttery. Further structu ral evidencew ase ncounteredto th e south of Bainesse in 1993/4, ina ssociationw ith kilnso f 3rd-to 4 th-century date(B usby *etal* 19 96). To th ew estof Bainesse, investigations in20 00 revealed 2nd-centuryinhu mation burials.

1.3.7 Earlym edieval(*c*.AD 409 to *c*.AD 1066)

Anglo-Saxon

No evidencefor Anglo-Saxonac tivityhas bee nen countered withinthe immediate environs ofthe pro posed extraction site. Activityof thisp eriod withinthe widerland scape appearsto havebe enfo cussedarou nd the Roman to wn ofC atterick and its e nvirons, altho ugh this may in part reflect the ex tent o f archa eological investigations. B roadly,th e available evidencein dicates thatth isla ndscape waso ccupied duringth e early medievalp eriod;h istoricalr eferenceto P aulinus' mass baptism indicates that the Swale would have beenp art ofthe cultu ralland scape,and therefo rem ayhav ebe enthe focus ofac tivitydu ringthis period.

Anglo-Saxon activity in and aroundC atterickinclu des findsof metalwork,a nd *grubenhäuser*at RAF Ca tterick, with both sitesalso pro ducinginhu mation burials (Wilson *etal* 1 996,2 -3;2 0).

Anglo-Scandinavian

Within the more immediate area of the proposed quarry, the place-name of Kirkby might indicate activityof slightly later, A nglo-Scandinavian d ate. The na me in corporates t hee lements *kirkja* and *-by* a ndis w idely considered tobe an indicationof a pre-Conquest church, although no church isdo cumented inthe D omesday Bookatth esettlem ent,and no materialof thatd ateha s been observed. I tisp ossible thatan early chu rchw as no longerex tantb ythe 11th century,o rthatt hep lace-namea ctuallyrefers tothe chu rcha tFlee tham. The village of Kirkby is d ocumented in the D omesday bo ok, s o the re w as likely to have be en a pre- existing settlementat thesite, w ithasso ciated agriculturals ystems.

1.3.8 Medieval(A D 1066to *c*.AD 1539)

Intoth em edievalperio d evidence for the character of the landscape, and of settlements within it,b ecomesm uch moreprolific,interm sof bothhistoricaland archaeologicalev idence.A tthe timeof Domesday,th eland scape ofthe stud yarea wouldha veco nsisted largelyof agricultural land , in terruptedb yvi llages. A numbero f settlements in the region are documented in theD omesdaysurv ey,in cludingthos eof Kirkby,F leetham,Kiplin, Killerby,a ndE llerton (Page 1914,3 06-7). Other villages known from documentary sources toh ave existed in them edievalperiodincludeGreatLang ton,LittleLang tonandGreenberry .Som eof these examples, including Greenberry and Little Langton, no longer survive, and are evident onlyin documentarysou rcesan dcro pmarks. Inthe surro undingfields, ev idence forridg ean dfu rrow,ascropm arksan dea rthworks, atteststo thew idespread occupation and exploitation of this landscape. Po ssible ridgean dfu rrow inthe pro posedextrac tiona rea, tothe easto f KirkbyF leethamH all,c anb e seeno n aerialp hotographs (Plate1).

The manorso fK irkby and Fleetham

During t he m edieval p eriod t here w ere t wo d istinct settlements of K irkby and Flee tham. The v illage of Kirkbyism entionedinthe DomesdayB ookw hen itwa s held byEld red, aS axon,w hor etained thelan dsu nder CountAlan(Chet wynd-Stapylton 1889, 79; Page1914, 320).Two 'm anors' atFle ethamw ereh eldb eforeth e conquestbyG ameland U htred; these was alsoh eldo f CountA lanafte r10 86,and sub sequently formedp artof the chamberlains' fee. A ' priest a nd a c hurch' a re documented bythe DomesdaySu rveyatFleetham . The estatea tFlee thamwasthel ocationof am ottean db ailey castle belonging toth e hereditarych amberlainsof th eHon ourof Ri chmond,th eea rthworkso fwhi chs urvive today.

Plate1 R idgean dfu rrow cropmarksne arKirk by FleethamH all(N MR2 161)

At theen do fthe 13th century, William Giffard held a mesne manor lordship at Kirkby which lapsed. I n1 298, thed emesnem anorofK irkbywasgra ntedtoSir NicholasStapletonthey ounger,sonofSirNich olasS tapleton, byh iso lderb rotherMi les,f irstL ord Stapleton(d.1314)(l'Anson1 929,1 7).

The manorofFleetham occursintheL aySu bsidyof 1301.I n *c.*1300,tw o-thirdso f the manoro f Fleethamw ere purchasedb ySi rHe nrySc rope,a ndin 13 14co nstructedth eol df ortalace,l oweringt hem ottean db uildinga stonecastle(*Calendar ofP atentR olls* 1313-1317, 175). Fleetham then followed the descent of the Scrope estate atB olton.F rom13 04,the Stapletonsstill held 'am anorat Fletham'w hich mayhav ebe enth eon ethird that SirN icholas Stapletonh ada ddedto his estate at Kirkby (I'Anson1 929,1 7).A c hartero f thaty ear grantedS ir MilesS tapletonf ree warren ina llh isd emesnela nds 'atKi rkbyF lethama ndF letham',in dicatinga n estate spanningbo thsettlem ents(*Rot Cart32E i. no.10 0*,in Chetwynd-Stapylton1 889,9 1).

KirkbyF leethamha lland chu rch

MilesS tapletono ccupied a manorh ousea tK irkbyF leethamf ora tl east part of the year, and early1 4th-century documentsin dicateth ath e had a 'gardyn' there. Th e houseis b elievedto h ave beens ituated close toth e site ofthe curren tKirk byFleetham H all,n earto thech urch. Thehang ingw oodsby the current KirkbyFlee tham Hall havebe enid entified asthe ' *Bois deF letham*',a djoiningthe 'gardyn'w here theP rioresso fMarrig had common rightsse cured tohe rby H enrySc rope in13 01 (*ChartersofM arrigAbb ey, Nichols'T op.etG en. v.108*; Chetwynd-Stapleton1 889,9 9).

MilesStap leton was abe nefactoroftheKnig htsTem plars,a nd in13 12,the churchatKirk bycam einto the possession ofthe k ing,fo llowingthe suppression ofth eO rdero fthe Temple. Sc rope attempted toclaim the advowson ofthe chu rch, naturallydisp uted byStap leton. Eventually,th ech urch was granted bythe kingto the KnightsH ospitallers. Uponthe dea thofSirNicho lasin1322theestatepassedtohis nephew,also Nicholas, secondL ord Stapleton;an effigy commemorating his death is found in the church (I'Anson 1929,1 7-18). The manor continuedto des cend with theS tapletons. Int he1 ate1 4th-century,lan dh adp assed toS irThom as Metham,h usbando f Elizabeth Stapleton,s ister and onlyh eir ofS irTh omasS tapleton.I n 1514,a notherS ir

ThomasMe thamle t the manor with all his land in Fleetham to William and Elizabeth Conyers, shortlyb efore grantinga further leaseto William B elforth.

Them anora ndv illageof Kirk byhav eno tsu rvived,a nd the churchis a ll thatrem ainso fthis medievalsettlem ent(P late2). Asn oted,them anor house and garden areb elievedto hav ebe ens ituated closeto thep resent KirkbyF leethamH all.Th e village ish eld toh ave been located close to the ch urch, pr obably in th e gro unds o f t he h all, wh ere ‘e xtensive foundations were dugup ’(Whellan185 9, 366).A erialp hotographs show oldr oadsco nverginghe re, butt hega rdenso ft heH allobl iteratean ysi gn ofth e village (Beresford1 955,3 02); numerous paths leadingto wardsth is area a re d epicted on th e 19th-century Or dnance Survey m aps. I t i s supposed that Kirkbyw asd eserted due torecu rringfloo dsfro mthe River Swale. A sno ted, therea resug gestions ofridg eandfurrow totheea stof KirkbyFlee thamH all(w ithinth e proposed extraction area), althoughthe quality of the aerial photographs does not permit secure id entification (AP:R AF106G/UK1512/4341).

Plate2 S tMary ’sC hurch, KirkbyFlee tham

Killerby

Situatedim mediatelyou tsideth estud yarea, bu tlik ely toha veinco rporated lands withinit, thecu rrentsite of KillerbyH allocc upies thesite ofa pre-existingcastle . A license was granted toB rianF itz-Alanto makea castlein the manor ifKilwardeb y;this wouldha vebe ensituated on hig herg roundin acarr landscape. The castlew asin r uinsb yL eland’s day(Chandler 1993,5 64).

Religioush ouses

In ad dition t o the ch urch or ch urches of Kirk by an d F leetham, th e influ ence of a number o f relig ious establishmentsw ase videnti n the medieval landscape. At Kirkby Fleetham, an area known asF riar’sG arthis believedto be thelo cation ofa cellor grange;believ edto hav ebe longedto the prioryof Marrig,w hich had been granted rightsin the *Bois deF letham*(Chetwy nd-Stapylton1889, 99). Foundationsare reportedto havebe en foundin thearea.At Kiplin,a freech apeld escendedw ith them anor untilth e17 thcen tury. A chapelded icated toS tMartinw asin existenceby the 12th century,a ndwa s g ranted toS tMary ’sA bbey, Y ork; a c ellw as subsequentlyestablished (*VCH* 1968,3 07,31 2). Theea rliestph asea tLittle LangtonG rangeha sbe ena ssigned tothe 14 thcen tury(R CHMn. d.),w hen theg rangeis known toha vebe en associated with Jervaulx Abbey. The village ofGr eenburyis no tm entionedi nt axl ists,b utte nementsar ekno wnto ha vee xistedi nt he12 thc entury. Duringth e 13thc entury,th e village came to form part of the estate of FountainsA bbey,b ecominga m onastic grangew iththe villagersev icted. The villageis cited aso neo fthe best examples ofd epopulation following the creationo f a Cistercian grange (Beresford1 955,2 99;1 983,1 52-3).

1.3.9 Post-medievalto EarlyMode rn(*c*.AD 1539- A D 1900)

Duringthe post-medievalperio d, thelan dscapeof thew iderare arem ained largelyrural inch aracter. Se veral of the farms and buildings of the area were constructed during thisp eriod.The 18th centuryalso saw significant

development of the various halls within the study area, and theco nsolidationo ftheir surroundingland scapes, whichw illhav eha da significant impacto nthe w iderp erceptionsan dse ttingof these buildings.

Kirkby FleethamG ardensa ndH all

In1 600,the manor ofKirk byw asso ld by ThomasMe tham(son of Thomas)to LeonardS melt. In1 670,the manorof Fl eetham hadp assedf romth eDa rcyfa milytoRi chard Smelt, youngerb rotherof th elo rdo fK irkby, who united the estates as KirkbyFlee tham. Them anor wasp assed downt heS meltf amilyin tot he18 thc entury; LeonardSm elt,MPfor Northallerton,w asd escribedas 'ofKirk byFlee tham'in 1740.

By 17 52, the manor was in the po ssession of John Aislabie (Page 1914, 3 21), w hose la nds eventually passed to his d aughter, wife of William La urence. Duringthe 18th century,th e gardens and hallat Kirkby Fleetham w ere d eveloped, a nd the wider landscape redesigned byWi lliamA islabie ofS tudley(Plate3).

Plate3 Ki rkbyF leethamH allf romth e south

WilliamA islabiere organised thelan dscapeat Kirkby, in order tom akethe land morep rofitable and toen hance thees tateaes thetically. Thev illageofKirkb ywasrem ovedtotheplateau atFle etham(Ey res19 81),w hich may have beenth e origino f the combined settlemento f KirkbyF leethama s ite xists today.Th isr esulted ina m ore cohesiveag riculturalu nitto theso utho fthe RiverS wale;the homefarm was then situated beside theh alland the'rec ently-drained'land (Ey res19 81). The home farmpresu mablyocc upied thelo cation ofthe bu ildingsthat bear the n ame tod ay, w hile the s uggestion that lan d was recently drain ed a t this time m ay pro vide an approximateda tefo rso meof th efl ood-defenceswhi chex istal ongth eba nksof th eSwa leto day.

Fromth e village,a m ile-longte rrace drive tracedth e edge ofth e scarp slope tod escendd irectlyto theh all, churcha ndfa rm;t histr ackca nb etr acedo nOr dnance Surveye ditionsin tot he19 thc entury, andw ouldh ave runth rought heha ngingwo odlandcu rrentlyk nownas 'K irkbyW ood'.T here moval of the villagewo uldh ave allowedan un interruptedv iew acrossthefarm landtowa rdstheriver, inco rporatingthe hallan dch urch intoth e widerdesig ned landscape. I n1 771,A rthurY oungdes cribesthe terrace:

> 'theed geo f it planted, and temples, etc., built att hosep ointswhich co mmandt heb est views:A tt he bottom ast ream winds ina beautiful manner and formsseve ralca scades: The principalpros pecti s from a temple about the middle of the plantation;f romwh ich youl ookdownu pont he riverve rypi cturesquelyand command av erynobl epr ospect over f ine co untry, b eautifully variega ted wit h w oods, vil lages, scatt ered ho uses, inclosurese tc.' (Young17 71)

A plan of the gardens created by Eyres (Plate 4), shows the route of the terrace drive withthe appr oximate locations ofte mples.C urrently, little remains of this terrace, and the temples are note xtant.Th e streams kirts theb ottomof thesc arpslo pe;n oca scades arecu rrentlyv isible, althoughp ondsexist withintheg ardens of KirkbyF leethamH all.

Theearliestc artographic source identified whichd epictsthis areais a mapd ating to 1811 (NYCRO). The map shows the village ofKirk by Fleetham,Kirk byFlee thamH all,c hurchand H omeF arm, and associated fieldb oundaries(P late5). The accompanying document providesa k ey to thisland ,a nd demonstrates am ixed landscapeo fm eadow,p asture, wasteland,bed s, with 'lawnand terrace' associatedw ith KirkbyFlee tham Hall. Those fields associated w ith the hall are listed as pasture and meadow, w ithth e large field immediately to theea st oft he hall(13) describedas 'park ',a nd listedas pasture. Thelater standso fw oodland 'ParkPlan tation', nowprese rvesthis name.

Plate4 Kirk byFlee thamg ardens (Eyres19 91)

Theti the map of 1838 shows a similarp icture;s ome fieldb oundaries to thewe stof t hep roposed extractionsi tear ede picteds lightlydi fferently, butth eco nfiguration isg enerallythe same (Plate 6). Theas sociatedtithe allocationsho ws thatm uch ofthe land w asretain edb yMissL aurence.

The185 7O rdnanceS urveym apde pictsa numbero f tracks leading across the field to the west ofK irkby FleethamH all,a pparentlyc onnectingw ith the eastern end ofth e terrace drive,a nd providingd irectr outes to NorthLo wfieldsand West LowfieldFarm . Tothe east, a rou te con nects with Hook C arr H ill. The routes radiating from this area, evident on the ea rlier cartographic s ources, s upport th e assertion th at th is wouldha vebe ena cen tralplacein itsownrig htun tilthe current village of Kirkby Flee tham eclips ed th at at Kirkby.

Plate5 E xtractfro m18 11 plan

The189 5O rdnanceS urveyedition labels 'KirkbyG ate' towards th e no rthern end ofthe track way con necting Home Farm to th e river. I t i s unclear whether th is represents an actual structure, reflects a no n-extant structure orsim plym arksthe pointa tw hich thetrac k crosses thep arishb oundary.

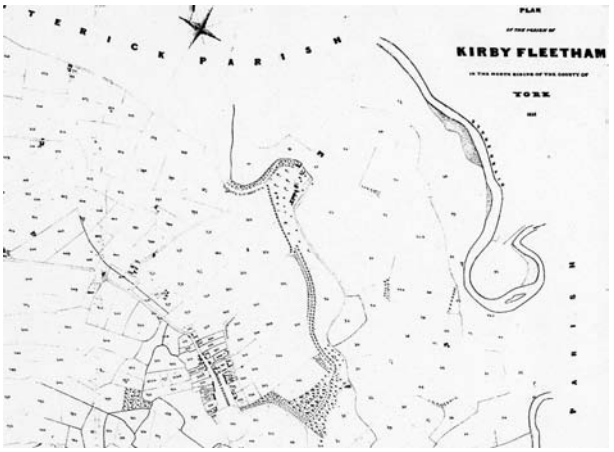


Plate6 E xtractfro m18 38 plan

Thelands atKirk byFlee thamre mainsin theh ands of theL aurencefa milyun til184 5, whena MissLa urence left th e es tate to on e H.E . W aller. T he te rrace dr ive begant od ecline fromthis date, and today'requ iresan archaeologist'sey eto detect any vestiges of the former terrace drive' (Eyres19 81)(Plate7). I n1 871,the church atKi rkbyF leethamw asr ebuilt.Wall ers oldt he manorin 1 889 toE dward Courage.A n ice house,li kelyto haveb eena ssociatedwi tht hee states urviveso nt hes lopet ot hewe sto fHo meFa rm.

Kiplin Hall

Situated to the immediate north of the proposed extractions itel iest he1 7th-centuryK iplinH all,w hich was co nstructed for George Calvert, L ord Baltimore, founderof MarylandC alvertreceiv eda lifetim e'sg rant of£ 1000 in 1620, a nd att he sam e tim e rece ived th e freeholdof theKiplin estatefro mB aron Wharton,and itis b elievedth atth e house wasc onstructeda fterth is date. A 'mansion house' had existed when the estate was purchased in16 20. KiplinHallwa sacq uired from thefif thLor dBalt imorebyChr istopherCrowei n1722, and significanta lterationsc arriedo utin th e mid-18th century arebel ievedtohavebeen under takenby Crowe, orh iss on,a notherC hristopher.

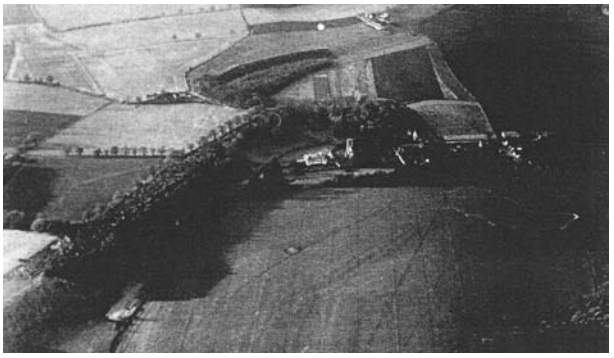


Plate7 Kir kbyFlee thamHall andte rrace(ANY 50/10)

The outbuildingsof KiplinHallwe reco nstructeddu ring the 1 8th c entury, a s w ere the g ate p iers, gates an d lodges. Thelay ingou tof thega rdensnec essitated the construction ofthe curren t road (B6271)(TheL andscape Practice 1990).A ccordingto a m apo f the KiplinH all estate(P late8), land w ithinth e proposed extractionarea tot heimmed iateno rtho fth eRi verSwa lewou ldh ave been p art o f the original, e arly 1 8th-century e state attachedto th e manor.

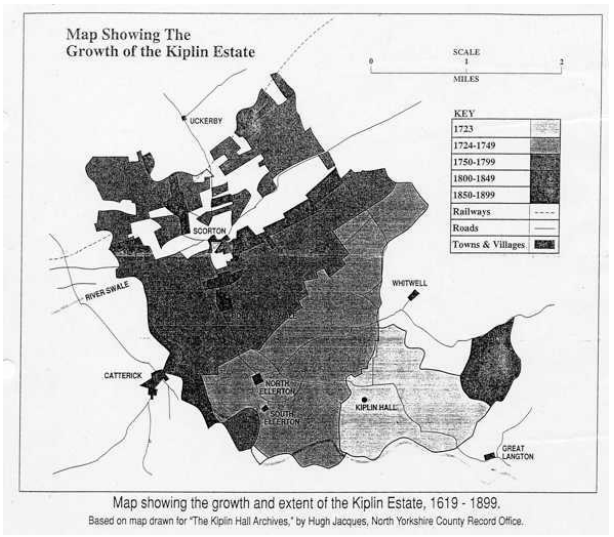


Plate8 P lan ofth e Kiplin Halle state

Industrialac tivityan dinfr astructure

An umber ofm onumentsin the a rea attestto in dustrya nda griculture inth e landscape inth e 17thto 1 9th centuries.A m illi s documented atF leethamin th e 17th century,w orkedb yMill Be ck(Pa ge19 14,32 0).A m ill atK iplini sco njecturedf romdo cumentaryso urces. Bricka ndt ileworks ared ocumented atEl lerton.Dr ainage featuresha veb eeni dentifiedf romae rialph otography.

1.3.10 20th centuryto present day

Despites ocialandeco nomiccha nge, theg eneral topographyand infrastru ctureo fthe landscapeo fthe area surroundingthe proposed extractionsite remained largely the same throughout the 20th century, and retainsa rural, agriculturalc haracter. S omeex pansionca nb e seen withinthe surrounding villages, and individual farmsteads haveacq uired further outbuildings, butthis has nota lteredth ew iderch aractero fthe landscape. Somech angeha soc curred nearby;to thew estof thep roposed extractionsite liesthe 20th-centuryWorld War IIfig hterp ens (NMN 34720). These were added to the airfield of Catterick, one of the firstm ilitaryairbas es inthe w orld, inus efrom 19 15.

Field boundaries and woodland

Specificcha ngesw ithinth epro posedextrac tion site appear to have mainly included changes tofield boundaries, pathwaysan dg ardens,allo fw hich can be traced on the historic maps that areav ailablefo rthis period.F rom 1857,Ordna nceSurvey editionsprovide sm oreaccu ratesou rceofevid encefor thech anging landscape(OS 1857,1 893; 1895; 1913; 1919; 1928). Using these sources, aplan of pre-existingfield boundaries withinthe proposed extractionarea can bet raced, and theirg raduald isappearance overthe followingdec ades can be charted.I n addition,th e establishmenta ndd isappearanceo f a number of plantations can be traced; to the north ofthe site, 'Lo w BedsP lantation' was inex istence to the immediate west ofthe w oodlandw hich nowbea rsthe name.T hel atterwa sn ote stablishedu ntilt hee arly2 0thc entury.T hel inearw oodlandt ot hee asto fHo me Farmw asn otin existence in 1895, but had been planted by 1913. The plantingw ithinth epro posedextrac tion site, therefore,isa reflection of modern land management, rather than relics of historic planting/woodland,as maybe reflected inthe han gingw oodlando nthe scarp slop eto theso uth.

Variousrou tesrad iatingfrom K irkbyFleetham on the 1857 Ordnance Surveyare showno nsu bsequented itions, butg radually fell out of use duringthe 20th century;th etrack leadin gto theterrac eha dd isappearedb y19 13, and bythe early20 thcen tury,th ose leadingeastw ards alsoa ppear toha vefallen ou tof use.

Quarrying

Theo nlym ajorin dustriald evelopmente ncounteredw ithin the studya rea isth e quarryingth atc ontinuesto providea valuable resource,a nd importantpartofthe economy,withinthisreg ion. Theg ravelterraces of the riverinela ndscapein this areah ave longbee nex ploited for mineral e xtraction. Sand a ndg ravelq uarrying is known to have occurred within the wider ar ea throughout the 20th century, and probably from am uch earlier period. Sp ecifically,s mall-scale gravelp its are markedonthe O rdnanceS urveyedition sof 1913and 1919,inthewest ernpar tofthepr oposedex tractionare a. Ona l argersc ale, tothe no rthof theare aof proposed extraction, q uarrying o ccurred at th e Kiplin Quarry duringthe 1990s, tothe im mediatew estof theL isted Buildingo f Kiplin Hall(Plate9).

Plate9 G ravele xtraction adjacentto Ki plinH all (Aeroscene 408/18)

2.0 EVALUATIONSTRATEGY

TheSt age1 e valuationwa sd esignedwi thr eferencet ot her esultso ft heCH Aa s parto fa s tagedp rogramme ofw ork. Existingb ackgroundi nformationin cludingp ublisheds ources,h istoricm appinga ndae rialph otographs were usedto in formth e Stage 1 strategy.I n addition, the CHA allowed a geomorphologicalm odelo f the site tobe com piled usingthesesourcesas well asg eological information,topo graphic information and aflig htau ger surveyu ndertakenin 2 007 (Minshall2 007).

Thedesig no fthe stagede valuation programmealso r eferred torese arch undertakenw ithintheTill- Tweed

Valleys, Northumberland, w hich identified a v ariety of site-types subject to d ifferent g eomorphological processesw ithinth eco ntext ofthe riv erv alley(Wadd ingtona nd Passmore2 006,6).Thoug hsp ecificto the Till-Tweed Valleys,th e geomorphologicalla ndformc lassification canb e applied tor iverv alleys more generally and the Home Farm proposed extraction site can beid entifiedas Type2b - pre- 19th-centuryH olocenealluv ial terraces and floodplain su rfaces. A lluvial activ ity at the site w ill hav e ero ded a nd rework ed, or b uried, archaeologicalr emainsand ear thworksan dar tefactsca nbean ticipatedw ithin the ploughzone.A s suchth e site iscon sidered to besusc eptible tothe rang eof evaluativetech niquesno rmallyuse dd uringpre- determination evaluations inclu ding fieldw alking, g eophysics, trial tren ching, d eposit modelling and env ironmental assessment.

2.1 GEOMORPHOLOGYANDARCHAEOLOGI CALPOTE NTIAL

Geology

In su mmary, th e g eological m ake-up ofthe pro posed extractionarea consists ofU pper PermianMarl (Roxby Formation) tothe w estan dT riassicSh erwood Sandstone tothee astov erlainb yR iverS wale Gravels. Thusth e siterepr esents anarea oflo w-lyingg ravelter racewhi ch, alongw iththe Sw aleitself, has influe nced land use at the site. The site is likely to have been affected b y fluvial a ctivity un til the 15th century and aerial photographs may dem onstrate the extent of fluv ial activityo n the gravelte rrace (Plate1 0).

Plate10 P ossible riverch annels visibleas cropmarks(A PN MR1 99 71 818)

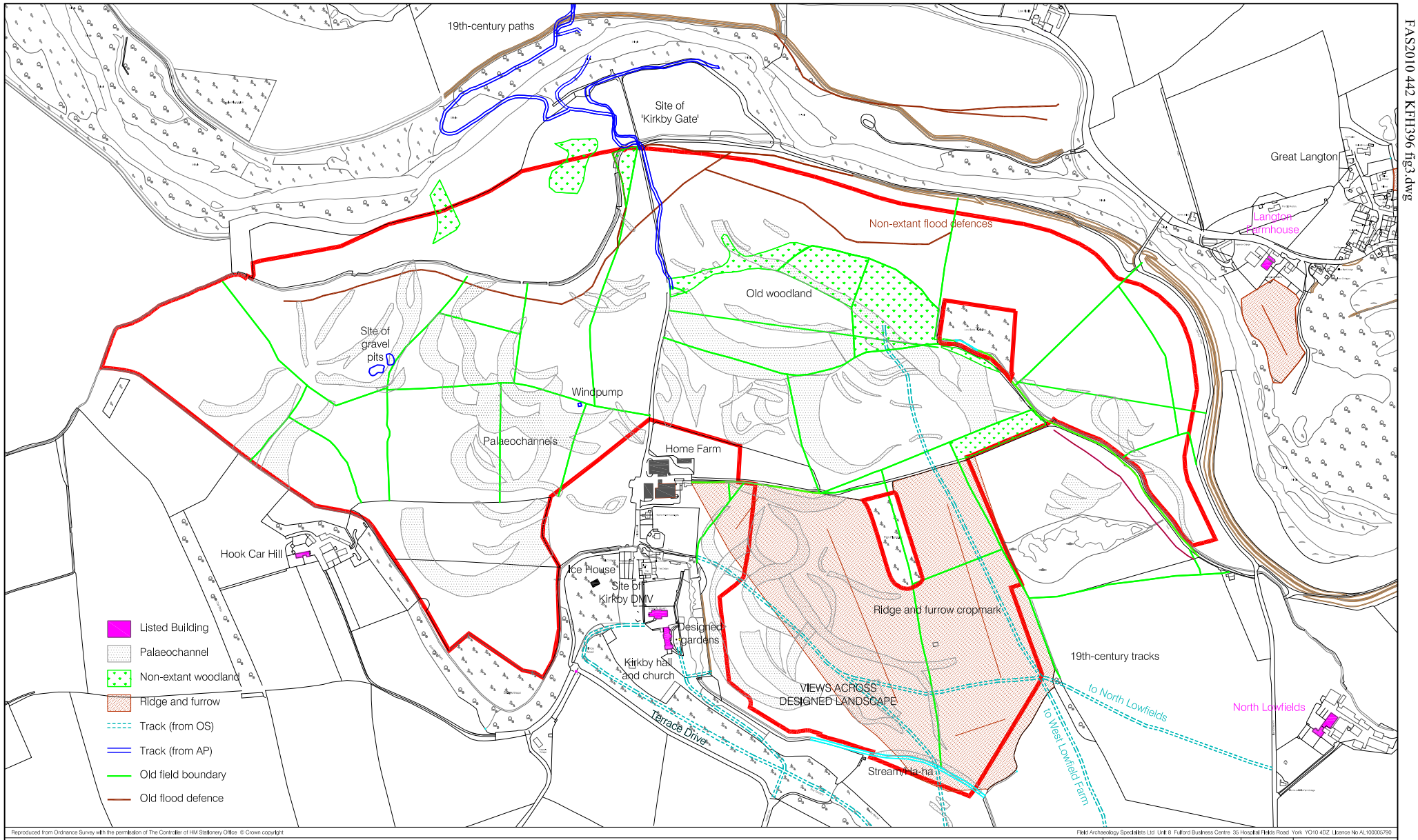
HistoricLa nd-Use

Perhapsd uetothe make-upand nature ofthe pro posedextrac tions iteno ev idence forsettlem enth asy etbee n defined. The siteoccupied byKirk byFlee thamH alland the medievalSt Mary'sC hurchrepres entsa nelev ated positionsu ggestingt hatan as sociatedmed ievalse ttlementa ndp redecessorto th eha llar eal sol ikelyto ha ve occupieda similarchorog raphicsetting .Morecle arly, aerialp hotographic evidence suggeststha tthe sitew as used asag riculturalla nd with an area of ridge and furrow visible to the east of the hall and church. Itm ayno t have be en u ntil the 18th century and En closure that the remainder of the p roposed ex traction site w as sufficientlyw ell-drained toa llowm ore extensive cultivation.S inceth e 19thc enturys ome ofth e earlier field divisionsha veb eenl ostre sultingi nt hela rgeo penmode rnf ieldswhi chs urviveto day.

Theg eomorphologicalm odel allowedare aso f greater potential to betarg etedm osteffe ctivelyand w iththe most appropriatetec hniquesduring Stag e1(Fig ure3). Dueto variation inlan d-use,techn iques were onlyapp lied toarea sof thesite wherethey w ered eemeds uitable.

2.2 ZONATIONAND INTERVENTIONS

Dueto thesiz eof the site and the varying land use,the pro posedextrac tiona reaw asd ivided intoe ightz ones forthepurposesofproj ectm anagement(Fig ure4;T able1). This approachprov ided am eans ofass essingthe

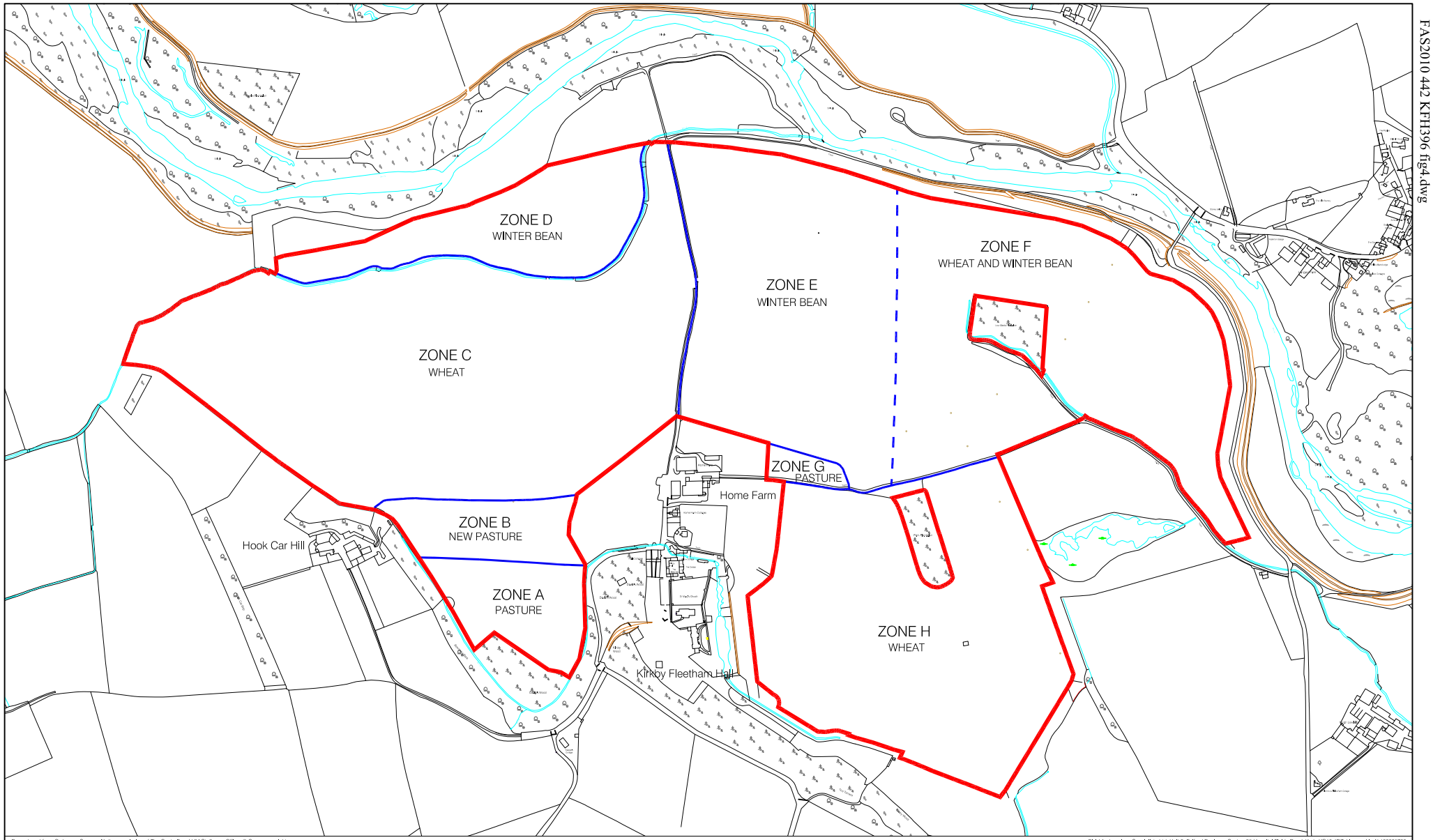


Geomorphology and known archaeological sites

Scale 1:10000

Figure 3

FAS2010 442 KFH396 fig3.dwg



Location of Zones

Scale 1:10000

Figure 4

likelyv ariationin ar chaeologicalvis ibilityas we llas pr edictingt here lativesuccessof in dividualin vestigative techniques.

Table1 Zones ofinv estigation

Zone	LandU se
A	Pasture
B	Newly-sownp asture
C	Arablewh eat
D	Arablewi nterbea n,divi dedf romZo neC byFi ddaleB eckand f romZo neE byK irkbyLane
E	Arablewi nterbean
F	Arablewi nterbea nand ove rsownwhea t,i ncorporatings tandof woodland
G	Pasture
H	Arablewheat ,i ncorporatings tandof woodland

Eachsep arateac tivityof Stage1 was assigned aun iqueinterv ention numberin orderto createa structu red project a rchive. I ntervention 1 w asa ssigned to th e geophysical r econnaissance survey, I ntervention 2 to reconnaissancef ieldwalkinga ndI ntervention3 to th e borehole survey(Table2).

Table2 Archaeologicalinterv entions

Intervention	Zone	Activity	Date
1	A-H	Geophysicalr econnaissances urvey	November-December2009
2	B-F,H	Reconnaissancef ieldwalking	November-December2009
3	A-H	Borehole survey	November-December2009

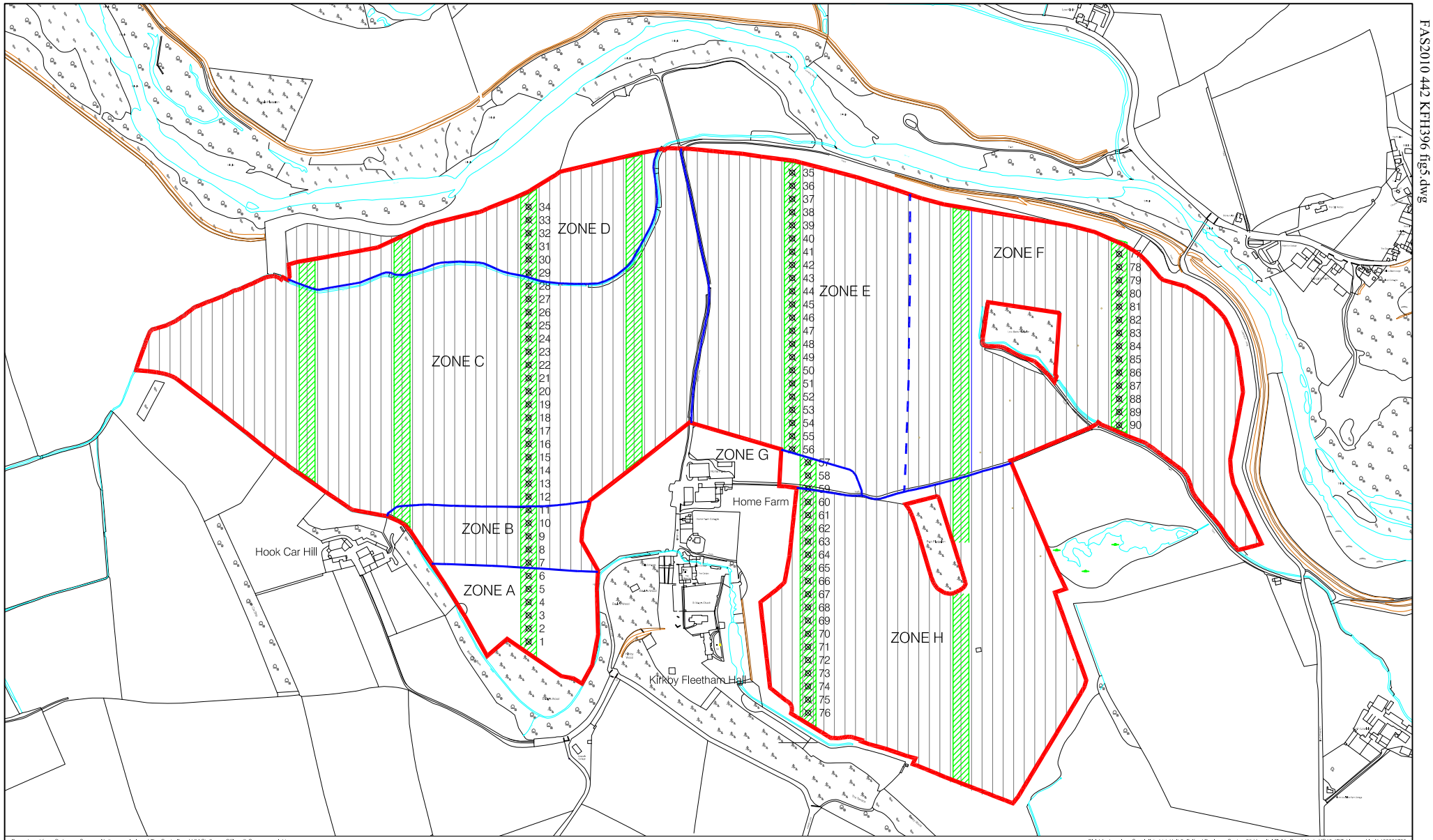
2.3 SURVEY

Priorto a nyf ieldworkb eing undertaken, an array of semi-permanent survey stationsw ere seto uta round the site perimeter by A rchaeological S ervices WY AS usin g Trim ble 5 600 RTK dGP S to facilitate archaeological recording.

3.0 GEOPHYSICALRECONNAI SSANCESUR VEY

3.1 GEOPHYSICALPROCEDURE

A totalof seven3 0m-widem agnetometertrans ectsw ere undertaken, orientedno rth-south,enc ompassinga total areao f1 5 hec tares, representingov er10 %ofth epro posede xtraction site (Figure 5). Them agnetometersu rvey was undertakenb yA rchaeologicalS ervicesWY AS using Bartington Grad601 instrumentslo ggingread ingsat 0.25m interv alson 1m z ig-zagtrav erses resultingin 3600read ingscap tured within each 30 m^2 g rid. The readings w ere d ownloaded, a nd processed a nd presented usingG eoplot 3 (G eoscan R esearch). F urther



Location of Stage 1 evaluation

Scale 1:10000

Figure 5

informationonpr ocedureis cont ainedwith inApp endixB.

3.2 GEOPHYSICALR ESULTS

Theresults ofthe g eophysicalreco nnaissance surveya repres ented infull as Appendix B. What follows isa digestan dsu pplementaryinterp retation ofthe results (see Appendix B)(Figure6 and 7). F orthe pu rposes of discussions urveytr ansects have beenn umbered Transect1 to 7 r unningw est-east.

3.2.1 Transect1

An umber off errousa nomalies or‘ spikes’ were identifiedsc atteredo verthe a rea ofTra nsect1 a nda reli kely tor epresentf errousd ebris within the ploughsoil;in cidencesofth esesp ikeswa sfe werto th e north ofF iddale Beck.Toth eim mediateno rtho f FiddaleB ecka n area ofli nearf errousd isturbancef lankingth e beckis li kely to r elate toth e formerp osition ofa m etals tockf ence. I n additionb roadli nearb andso f weakm agnetic disturbance were identifiedinth eno rthan dso uthar easofth etr ansect. Thesem ayr epresenta reaso f modern ploughing.

Twoan omaliesw ereco nsideredto representpos siblea rchaeologicalfeaturesandw ereass igned F1 and F2.F 1 issituated cen trallyto thesu rveyarea south ofFiddaleB eckand con sistsof anu mbero fw eaklym agneticlin ear anomaliesd istributed overan area measuring40.0m north- south. F2isloca tedto wardsthe southernen do fthe transect and appearsas alinea rano malyalig ned broadlyN NE-SSW traversingthe transect.T othe no rthan d south ofF 2a number of areas of enhanced magnetic activityare considered likelyto representv ariations inthe make-upo f subsoil.

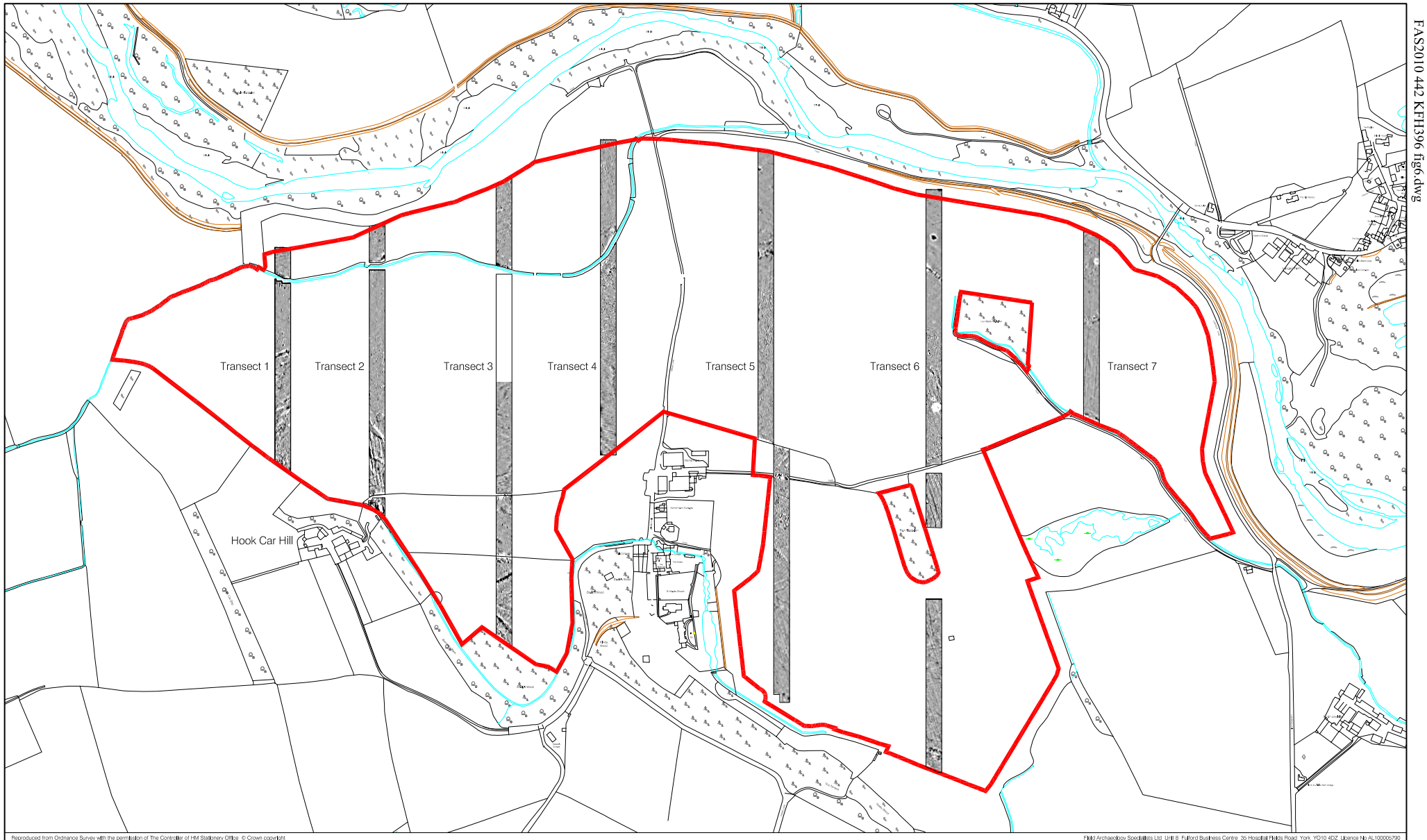
3.2.2 Transect2

Ther esultso fTransect2 reflected thos eof Transect1 and inclu ded ferrous spikes, whichw erefew erto the north ofF iddaleB eck,a reaso f enhancedm agnetic response close tof ieldb oundaries,a reaso f variationin subsoilm ake-up and lineartren ds, probablyreflecting m odernplou ghing. Thesouth erna reao fth esu rvey transect traversesin toa smallfield enclosurean dt hee xtantsto ckfenc esan dm oderntrack acce ssap pear as areaso felev atedm agneticre sponse.

Ap redominanta rea ofli neartr endsw asa ssigned F3 and appears aspar allellin ear anomalies aligned broadly north-south with a few exceptions on a NW-SE alignment. These anomalies may represent modernplou ghing orsu bsoiling,b utitis also possiblethat theyreflect anearlier ploughingreg ime, possiblyridg ean dfu rrow.

3.2.3 Transect3

Thes urveyr esultsw ithin Transect3 in cludeds cattered ferrous spikes,s ome ofw hicha ppear superficially aligned,altho ughd istributem ored enselytow ardsth ec entrala nd southernp ortion ofthe plou ghed portionof the transect.S everala reaso f likelys ubsoilv ariationwer e identified again towardsth e centrala nds outhern areas ofth e transect.Tw o areas of broad linear trends were identified, to the north of Fiddale Becka ndc entrally

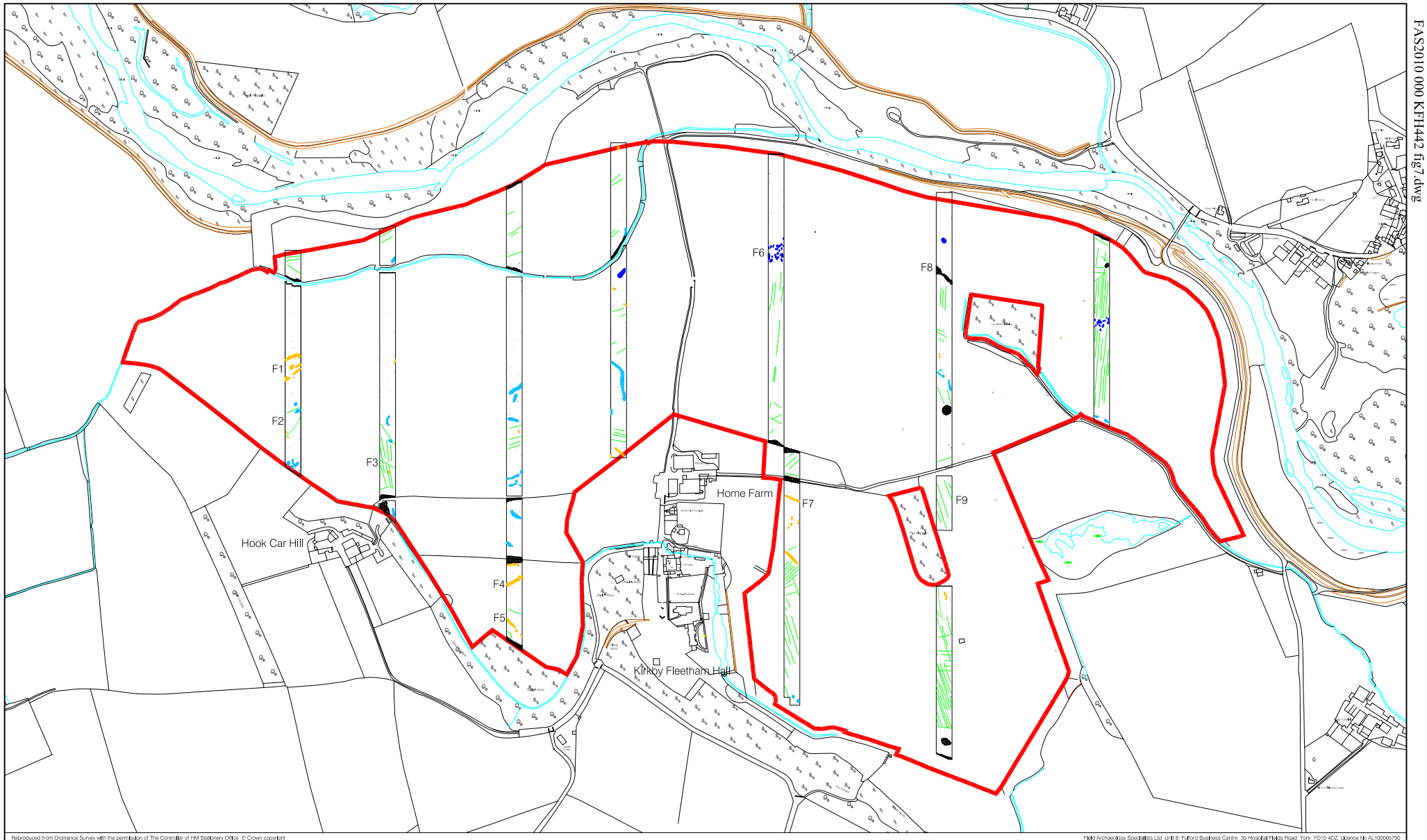


Field Archaeology Specialists Ltd Unit 8 Fulford Business Centre 35 Hospital Fields Road York YO10 4DZ Licence No AL100005790

Results of magnetometer reconnaissance survey (after ASWYAS)

Scale 1:10000

Figure 6



Interpretation of magnetometer reconnaissance survey (after ASWYAS)

Scale 1:10000

Figure 7

withint hetr ansect;th esear eli kelyto re presentm odernpl oughing.

Twow ell-definedpo sitivean omaliesw ithinth esouther nmostareaof Transect2were assigned asfeatu res, F4 and F5.F 5 iss ituated close toth e southernli mito fth et ransectan dap pearsas alin ear anomalyo riented NW-SE and measures *c*.3.5mw idean dtrav ersesth esu rvey area, althoughm aybec omedisc ontinuous towardsth e southeast. A pproximately80 .0mto the north of F5 asec ond,m orestro nglym agneticlin earan omalyislo cated, F4.F 4is orientedbro adlySW- NEand m easures *c*.3.5mw idean dalso trav ersesth esu rveyarea.

3.2.4 Transect4

Thes urveyr esultsw ithinTra nsect4in cludedasca tterof fer rousspi kes,w hichw ere more commonto th e south offF iddale Beck and again showed superficial alignments. Some anomalies are again considered tobe v ariations inth em ake-upofun derlyingg eology,no tablyacur vilinearano malytow ardsthe sou thernen d ofth e transect. Areaso f broadli nearm agnetictr endswe reide ntifiedw ithinth esu rveyare astoth eno rthan dso utho f Fiddale Beckan da reth oughtto re flectm odernp loughing.

3.2.5 Transect5

There sultswith inT ransect5ag aincons istedofan arr ayofm agneticspi kesdis tributedacr ossthet ransect.Two broadz ones ofline artrend sw ereide ntified, thefirst spannedthe northern and southernp ortions ofthe transe ct and the second was located towards the southernmost end of the transect; both areas are thoughtto reflect modernplou ghing and the latter maybe associatedw ith alinea rano malyto itsim mediate north interpretedas a formerf ieldb oundary.Tw o areas of strong magnetic disturbance correspond to ane xtantw ire field boundary and farmtr ack.Tw o smalla reaso f likely geological variation were identifieda tt hes outhern end ofth e transect.

A distinct group of magnetic anomalies was identified towards then orthern end ofthe transe ctand assig ned F6. F6 was dispersed irreg ularly acro ss an area measuring 47 .0m no rth-south and traversing the transect correspondingw ith an area of former plantation the anomaliesh avebe enin terpreted astree boles.A furthe r possiblearch aeologicalfeatu reis representedb yF7 w ithin theso uthern portionof thetran sect. F7 m easures *c*.3.0mw idean dtrav ersesth etrans ectN NW-SSEand mayrepres enta ditch ord rain.

3.2.6 Transect6

Transect6 wasscattered w ithm agnetics pikesb ecomingm orep redominant towardsth eso uthern parto fthe transect.I ntermittent areas ofline artrend sw ereide ntifiedw ithinth eno rthern parto fthe surveytranse ctand arelik elyto representm odernplou ghing,w hilethesouthern mostg roupoflinears, located tothe no rthof the farmtrack ,m ayrepres ent therem ainso fa historic trackto WestLo wfield Farm,a lthougho nlyapp earsas a fainta nomaly. W ithin the southernp arto f the transectf urtherli neartr endsa rel ikelyto r epresentm odern ploughingand predominate at the southernmost end of the transect. These can be distinguished froma different regimeof lineartren ds.

Twoan omaliesw ereco nsideredhig hlylikely to representarchaeolog icalfeaturesandw ereass igned F8 and F9.

F8 wass ituated towardsth e northerne ndo f the transecta nda ppeareda s a strongli nearm agnetic anomaly measuringup to 11.0min widthand o riented NW-SE. Theanom alyisc oincidentw iththe boundaryof an historicplantation andlikely to representthe formerpo sitionof am etalstoc kfenc e. F9 w asass igned toan area ofli near trends distinct from areas elsewhere considered to reflect modern ploughing. F 9 wasid entifiedw ithin thesm allt ransecta reat ot hen ortho fP arkP lantationa ndc onsistedo fa tl eastf ivel ineara nomalieso riented NNE-SSW thoughtto relateto ane arliercultiv ation regime.

3.2.7 Transect7

Ther esultsw ithin Transect7 in cludedv eryf ewm agnetics pikes, but wasd ominatedb yli neartr endsp robably reflectingm odernplou ghing. An area of strong magnetic disturbance at the northernmostlim itof thetran sect isc oincidentw ith a smalla rea off encedp lantation. A nyo thera nomalies are consideredli kelyto r elate to geologicalv ariation.

4.0 RECONNAISSANCEFI ELDWALKING

Reconnaissance fieldwalkingw asca rriedo utas soonas possibleafte rharv esting,p loughingand sow ingof crops for20 10.Z ones A and Gareun derp asture and were therefore excludedfro mthe fieldwalkingpro gramme, while Zone B has been sown as grass to create a smallfie ldof pasture.C onsequentlysurfac ev isibilityin Zone B was relativelypo orin whatw asa d enselysow nan drea sonablyw ellg erminated grass. Else wherecrop regimesco vered much largerareasrepresentedby Zo nesCto EandH and repres ented areaso fg ood surface visibility.W ithin ZonesD ,Ea ndF w inter beanc ropsh ad beens own,a llo f whichw ere beginningto g erminate atth e time off ieldwork with the exception of Zone F which wass hootingb utn otd enselys own.Th e other main cropw asw heatw hichw asd ensely sown over Zones C, F and H, buto nlyjus tb eginningto s hootr esultingin goods urfacevis ibility.

4.1 RECONNAISSANCEFI ELDWALKINGPRO CEDURE

Reconnaissance fieldwalkingw asu ndertakena longno rth-south transects located atinterv alsof 20mov er Zones B toF and H (seeFig ure5). The transectsweresetout usinga TotalStation Theodo liteand m arkedo utalo ng theirco urseu singrang ingpo les. A llarcha eological finds were recovered within a2m corrid orce ntred on each transect. E ach find w as b agged a nd flagged a t its l ocation and w as the n loc ated using a Total Station Theodolite,lifted and allocated afind snum ber.Distribu tionm aps offind san dap propriate categorieso ffinds were preparedusin gA ccess and AutoCAD software.

FindsR ecoveryan dT reatment

Withthe exceptiono fclearly m odernceram icbu ildingm aterial, such as fragments of ceramicfield drain,any finds encountered duringf ieldwalkingw ere collected. F indstr eatmentw asu ndertakeni n accordance with guidelinesset downin *FirstAidfo rF inds* (Watkinson andN eal19 98).Material archivepre parationhas bee n undertakenin acco rdancew ith *Guidelines for the preparation of excavation archives for long-term storage* (Walker1 990).

4.2 RECONNAISSANCEF IELDWALKINGR ESULTS

Ato talo f 280 finds were recoveredd uringr econnaissance fieldwalking.Th e majorityo f finds were ceramic (228) orce ramicbu ildingm aterial(39),b utfind sof flint (11)a nd lead(2)w erealso reco vered (Figure8 ; Appendix C).

4.2.1 Lithic material

A totalof eleven lithici tems were recovered duringfie ldwalking. Fiveitem sw ereide ntifieda sna turalflint materialdu ringspe cialistasse ssment. Theseh avebe enreco mmendedfor disposal,a re notc onsideredfu rther and do nota ppear on thed istribution (Appendix D; Findno s17 , 46, 49, 101 and 214). The remainingsix pieces were identified asa smallpiece of angularw aste(Fin d 32),fou rflak es(F indn os2 ,1 15,14 6an d2 13) and a smalls craper(Find no1 5)(Figure 9). Thek nappingt echnologyo f the piece ofa ngularw astea ndf lakesis suggestiveof aMesolith icor earlyN eolithic date, whilethe scraper maybe Neolithicto BronzeA gein date.

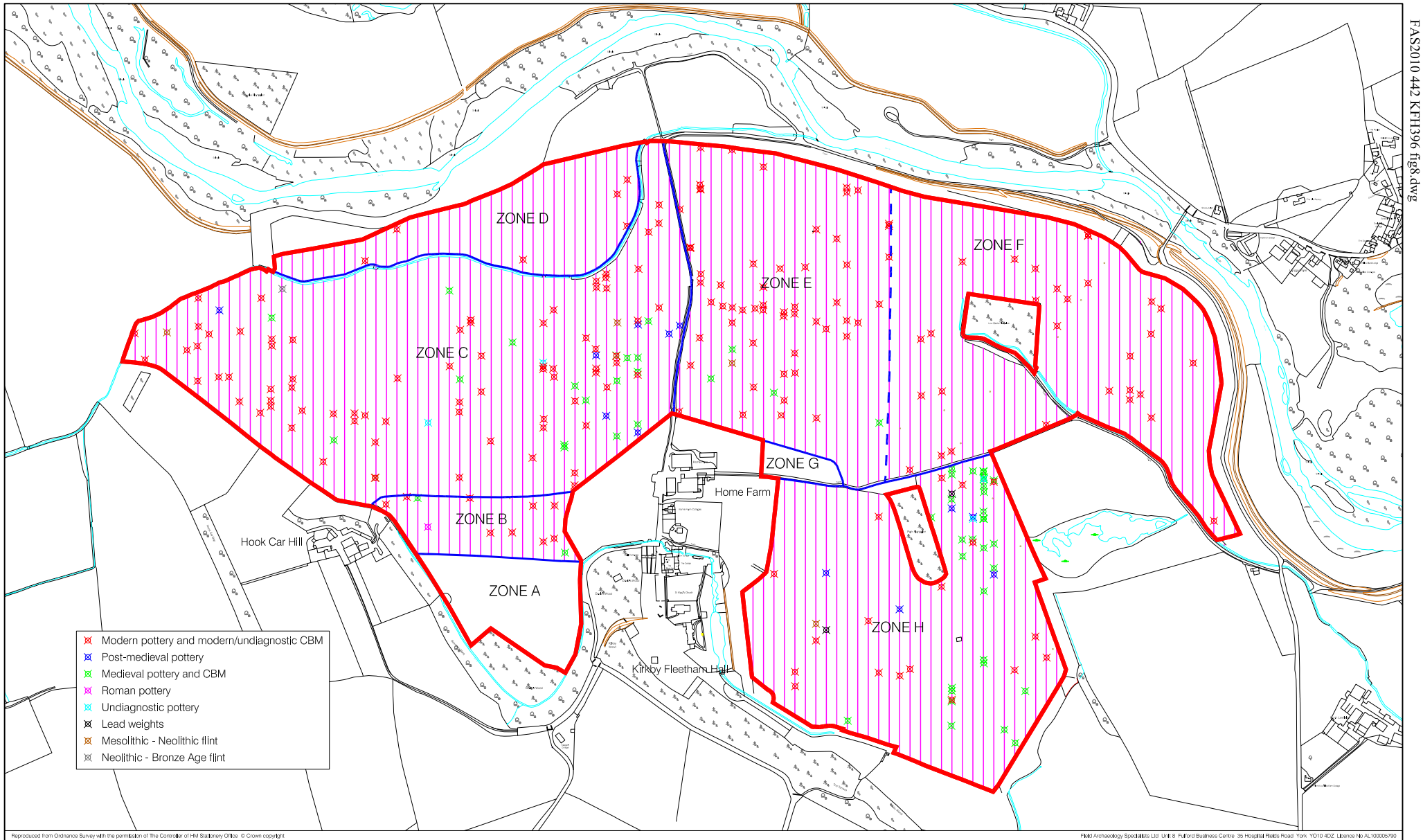
The distributio n o f this sparse assemblage, scattered w idely acro ss the pro posed extrac tion area, is no t considered toreflect underlyingarch aeologicalde posits.

4.2.2 Ceramic

Ato talo f 228 ceramicf indsw ere recovered,o f which 165 were identifieda s modern (18th century+)(Figure 10;s eeA ppendix C).These findsinc luded Englishs tonewares,w hitea ndc reamg lazedc hina,a ndtr ansfer-printed wares or fragments of ceramic insulator as well as ten fragments of clay tobacco pipe. Th ese finds were recovered and mapped,w erefou nd tobe distribu tedw idelyacro ss the site and were therefore nots ubmittedfor further studyand w illbe discarded.

At otal of6 0 sherdso f post-medievalo r earlier datew ere submitted for specialista ssessment(Appendix E). A singlepo ssibleR omans herd was recovered and assignedo nlytentativ elyto theRom anperiod. Afu rtherfo ur sherds were sop oorlyfired and abradedtha tthey cou ld onlybe assigned as Roman orp ost-Roman. Mediev al ceramicw asthe m ostco mmon with atotal of4 6sh erdsbe ingiden tifiedw ithinth epre -modernassem blage. Post-medievalpo tteryw asm uch lessco mmon with ato talof nine sherds beingassig ned tothis phaseand fou r claypipe stem stho ughtlik elyto predate 1700.

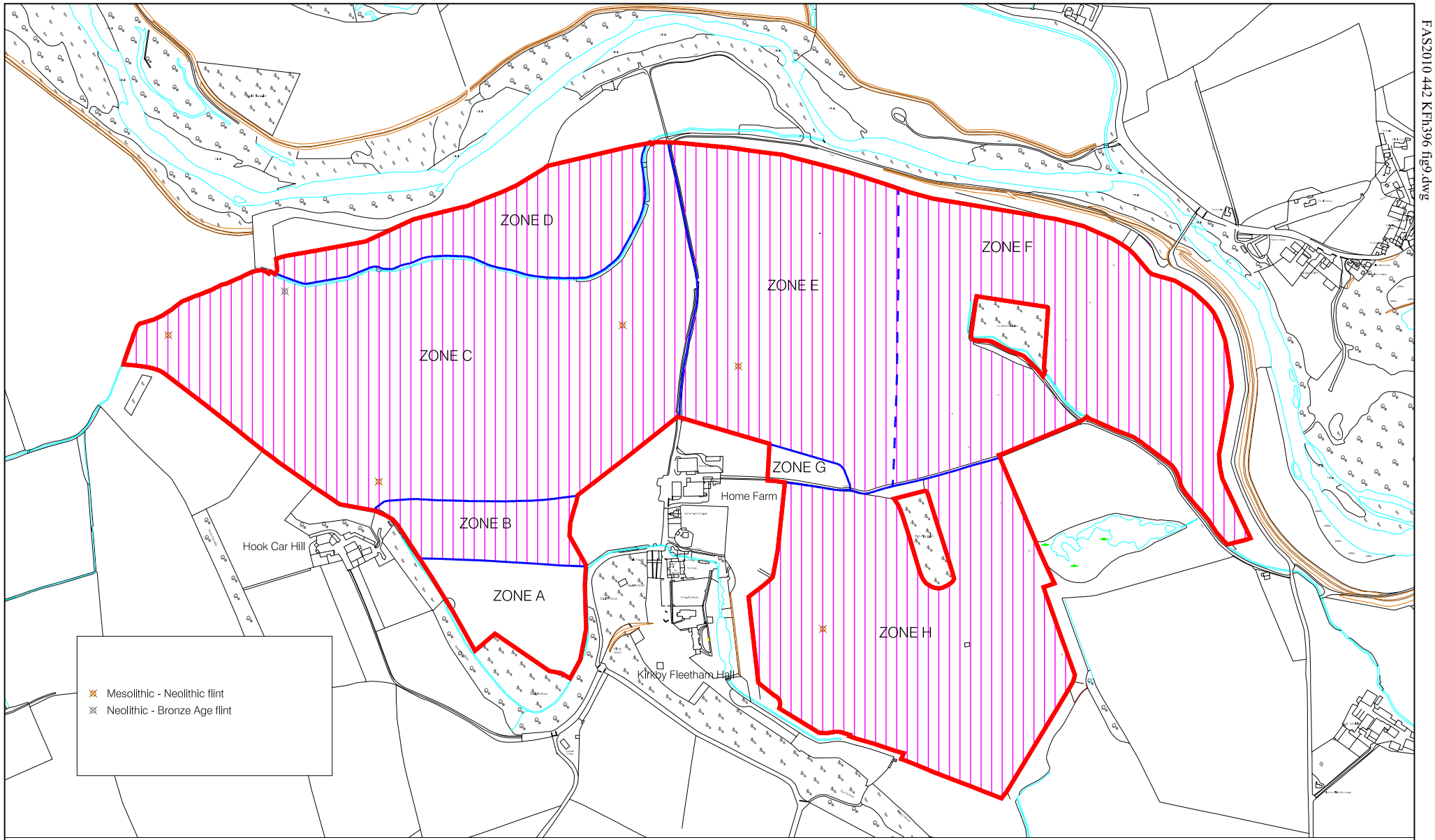
Thefreque ncyof potteryof modernandm edievalpottery is sufficienttowarrantdiscussio n,thelatteralso aided thei nterpretationo fp ost-medievalc eramic. Modernc eramici sd istributedwi delya crosst hes itewi ths ome notablecon centrations.T hefrequency of moderncera micappearssom ewhatelev atedatthe westernmostare a ofZ one C,li kewise there is a concentration adjacent to Kirkby Lane within the central area of Zone E. O verall, thed istribution islik elyt o reflectm odernm anuringpr actices and isof limitedinte rpretivev alue. Lik ewise, areas with littlem odern ceramicc an beid entified.Z one Dw asn otablef orit s lacko f materialo f modern date asw ellas ana reaw ithinZ one C to the immediate south of Fiddale Beck. This may be theres ultof different land managementp ractices.



Distribution of all fieldwalking finds by material

Scale 1:10000

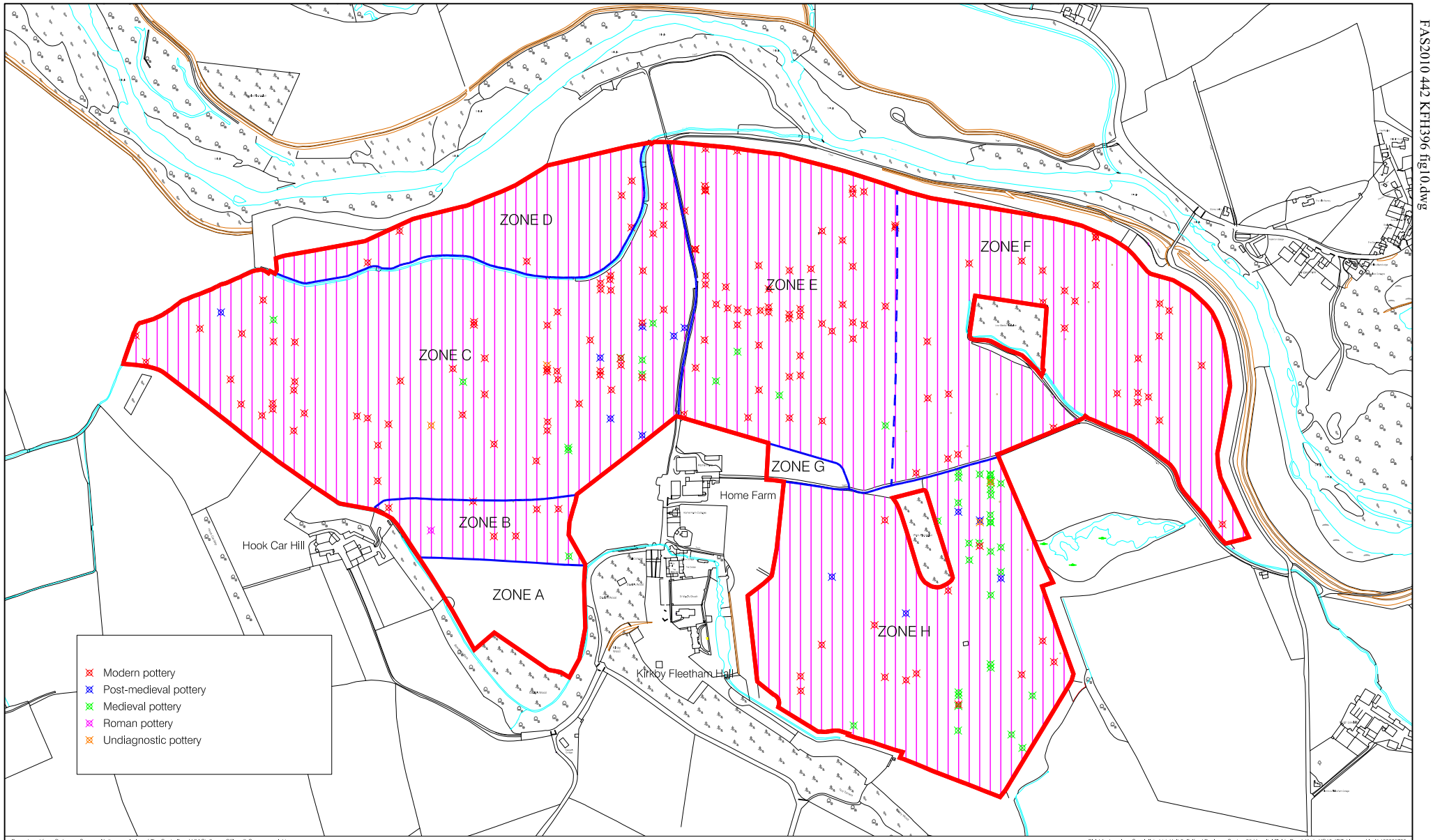
Figure 8



Distribution of lithic finds

Scale 1:10000

Figure 9



Distribution of pottery by period

Scale 1:10000

Figure 10

Thedistributio no fm edievalceram icis notablew ithin thew estside of Zone H and asca tterto thew estof KirkbyLa new ithinth eeas tsideofZ oneCcanalsobed etected.These mayalso reflectm anuringprac tices, buta relik elyto reflectthe locatio no fm edievalcultiv ationand fields. Wh ilepo tteryof post-medievaldate w as sparseth eove ralldi stributionre flectsth atof m edievalpo ttery.

4.2.3 Ceramicbu ildingm aterial

An assemblageof 39 fragmentso fceram icbu ilding material(C BM)w asreco vered,of whicha totalof 29 fragmentsofceram icbuilding m aterial(CBM)wasiden tifiedas modern(18thcen tury+), possiblym odernor undiagnostic and willbediscarded(Fig urel1;seeAppen dixC). Thefrag mentsin cludedm achine-made orslo p-moulded, b rick, p antile, and fieldd rain. These fin ds w ere reco vered and mapped and w ere fou nd to be distributedsim ilarlyto them odernceram ic.

A totalof ten frag ments o fm edieval or possible m edieval date w ere su bmitted for specialist assessment (AppendixF).T heyw ered ateableb roadlyt ot he1 3th to16 thcen turyand w ered istributedc loseto the west sideo fKirk byLa nea nd corresponded broadlyw itha scattero fm edievalceram ic.

Plate11 M edievalle adf ishingw eights

4.2.4 Otherfinds

Two lead ob jects w ere recovered and identified as medieval fishin g w eights (see Figure 8 ; Plate 11; Appendix G). T he items are dateableto th e 13th-to 14th-century andwere both rec overedwith inZoneH.

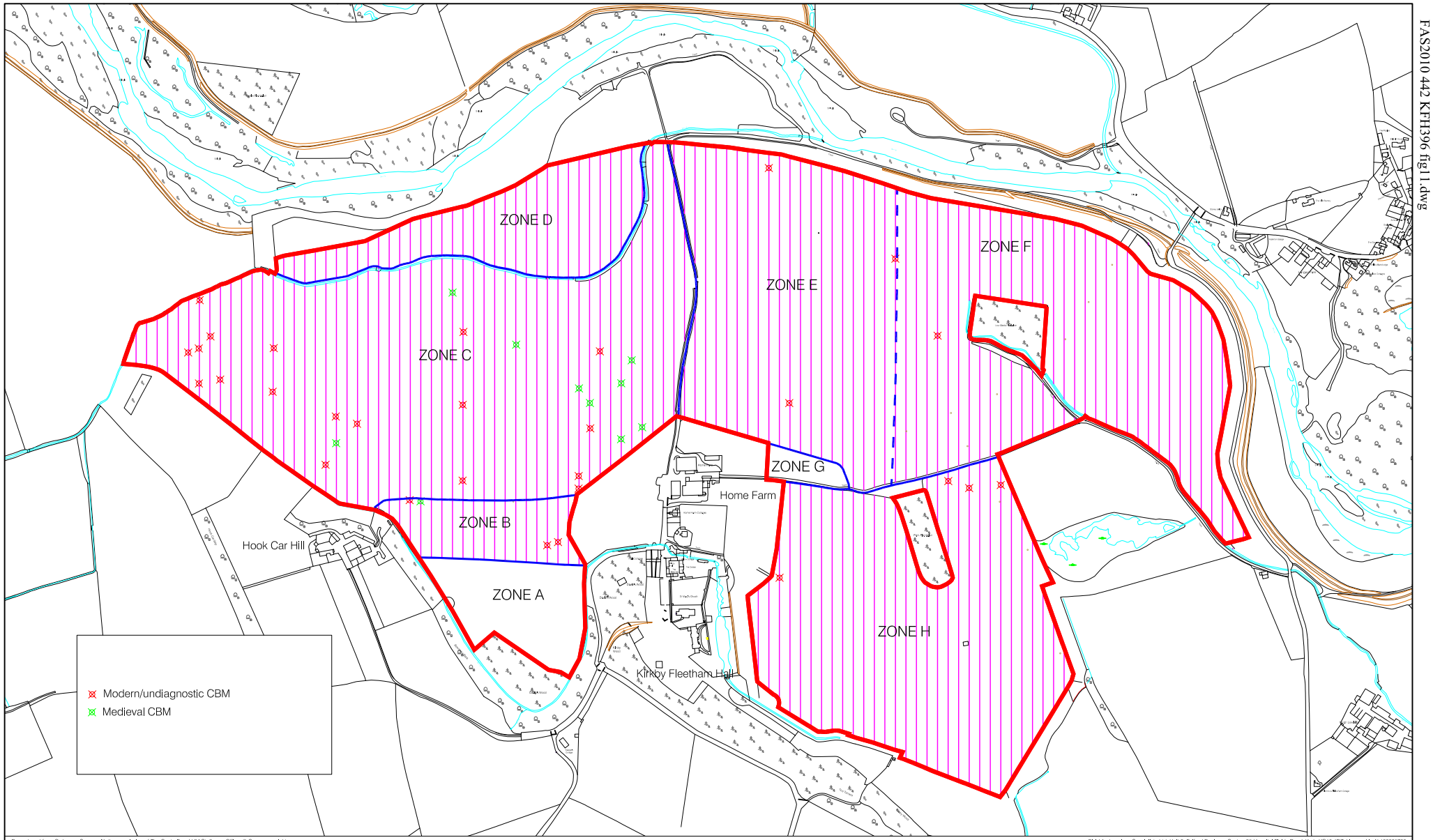
5.0 BOREHOLESURVEY

5.1 BOREHOLEPROCEDURE

A totalof threen orth-south transects (Borehole Transect 1 to 3), totalling 90 boreholes sunkat2 5minterv als, were undertakenusing a trackedsm all-corewind owsam plingrigs(102m mdiam eterreducing withdep th)(see Figure5). Drillingw asu ndertakenb yR JD rillingLtd ,o pen-cores were retrieved, and appropriaterec ording and sedimentsa mplingun dertakenb yFA S. Writtena nddraw nrec ords were made ofthe bo reholes undertaken duringthe course ofthe ev aluation.P alaeoenvironmentaldep ositsw ere recordedusin ga standardsy stemof contexts.

EnvironmentalE valuationS trategy

Theprincip al aim of the environmental evaluation strategy was to assess thev alue, range, qualityand po tential ofp alaeoenvironmentalre mainsw ithinth esed imentse ncountered.Basedontheresultsof aflig htau gersurv ey undertakenin 20 07 (Minshall2 007) itwa san ticipatedthat thep roposed borehole transects woulden counter



Field Archaeology Specialists Ltd Unit 8 Fulford Business Centre 35 Hospital Fields Road York YO10 4DZ Licence No AL100005790

Distribution of CBM by period

Scale 1:10000

Figure 11

occasionalh orizons ofclay and san d, and possiblype atw ithinth eg raveland san dd eposit. The sampling strategyaim edto cha racteriseth ena tureo fde posits,a nd toass essth eplan tm acrofossilsand insec trem ains preservedwi thint hem.

The environmentalev aluationstrateg ywasdesig ned in accordance with *Environmental Archaeology: Ag uide tothe theo rya ndpracticeofmethod sfromsamp lingand recoveryto po st-excavation* (EnglishH eritage,C entre for A rchaeology G uidelines 20 02) and *Environmental Arc haeology an d A rchaeological Ev aluations: Recommendations concerningth e environmental a rchaeology componento fa rchaeologicale valuationsin England* (Associationo f EnvironmentalA rchaeology1 995).

Bulks amplesfor t he recoveryo f palaeoenvironmentalr emainsw ere collected fromth e openc oresa ndw ere submittedfor specialist assessment. A ssessmentaim edto identifythe presence or absence of preservedp lant macrofossilsa ndi nsectrem ainsa sw ellas materialsu itablefo rreliable radiocarbon determinations. O nce material suitable for radiocarbon dating had been identified and assessed, samples were submittedfor A MS radiocarbon datingto SUERC tobro adlycha racteriset hes equenceo fdep osition atthe site.

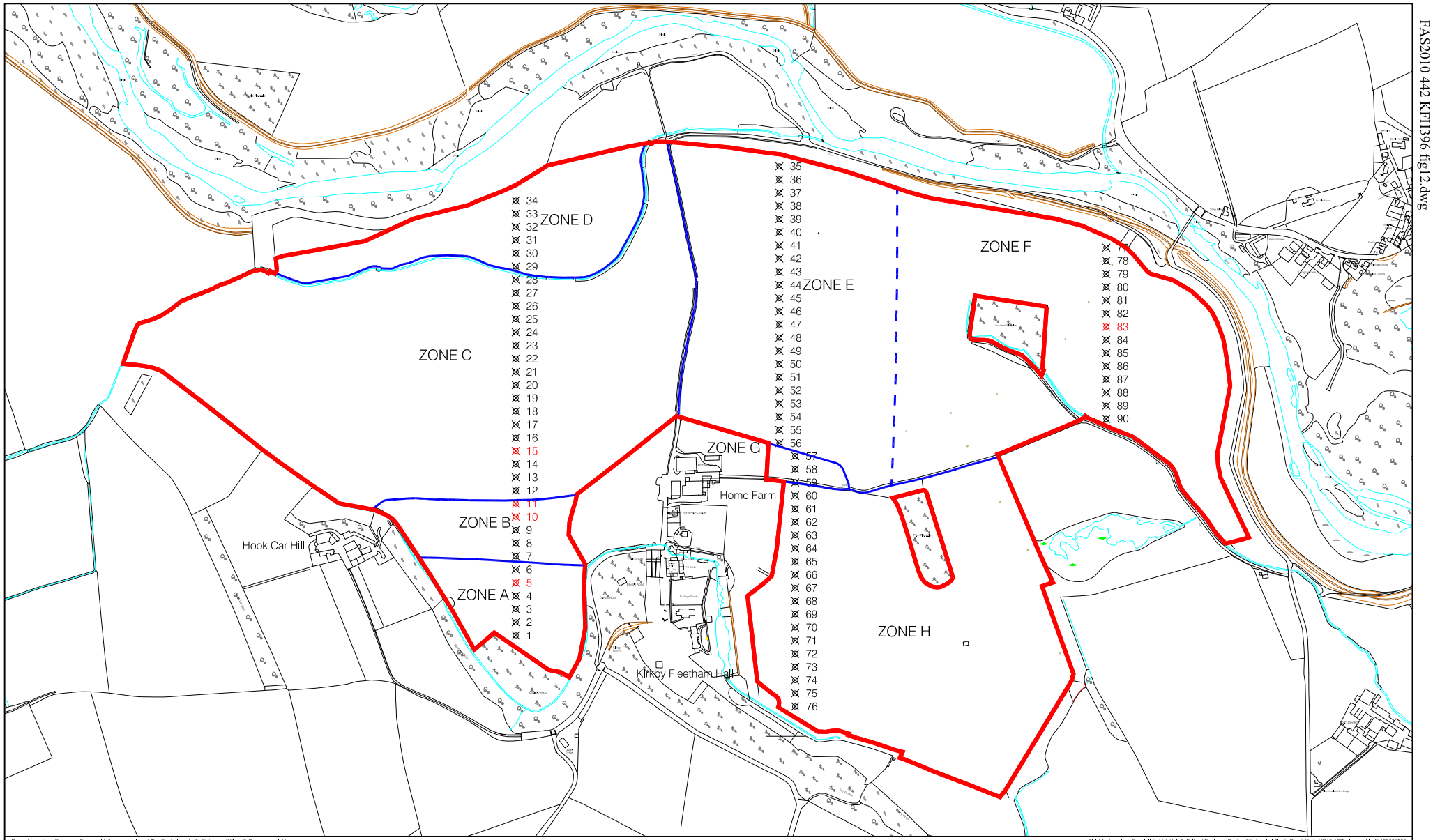
5.2 BOREHOLE RESULTS(F igure1 2)

The majorityof theborehole sreturnedsequenc eso fa deep, sterilede posits ofsan dsa nd gravelsran gingfrom largem ixed gravelin am atrixo fcoa rsesan dto occasionalban dso fpu re, clean coarse sand (Appendix H).The sands and gravelsw ereen counteredto dep thso fup to 4. 0mbelo w groundlev el. Underlyingthe sands and gravels was a stiff, laminated boulder clay encountered at various heights across the site beingas shallowas 1.8mB GLin Borehole 50 to3. 9mB GLin Boreholes 25 to27 inclu sive.T henatureof thesa nd and gravel deposit occ asionally cau sed obstructions to the bo rehole rig w hen large co bbles prevented drilling or occasionallythe water tablew ashedou tg ravellysam ple coresI nvariably,w here depositsof non-sand org ravel were encountered drillings uccessfullyr ecoveredc oherent,c leans amplesth rough the softerm aterial.

Depositsot herth ansan dan dg ravelwe reenc ounteredin th ree areas ofth e proposede xtraction site.B orehole 5p roduceda seq uenceof waterlogged wood, clay and peat, while to the north Boreholes 10,11 and 15 pro duced sedimentco ntainingw aterloggedo rganicm atter.A groupofboreholeswithinthee astern transect (Boreholes 78,7 9,8 1-3,8 5-7)o ftenrec orded a clayeys ilto verburdenw hichw asg enerallyd ry,a lthough within Borehole 83it p rovedb etter preserveda ndw ass ampleda ndf oundto c ontains ome organicm aterial.

5.2.1 Borehole 5

Threedep ositsw ereide ntifieda sco ntainingorg anicre mainsw ithinB orehole5 assigned C1012, C1013 and C1014.C 1014w aside ntifieda sa piece ofw aterloggedoak which was submittedfor specialist assessmentan d consideredto b e possibles tructuralt imber at least0 .14mth icka ndp ossiblyc ompressed byb oring(Appendix I). Overlying C1014w asa d ark greyc layc ontainingo rganicmat erial,C1 013,wh ichwa sf oundt oc ontains ome charcoal,p lanta ndin sectr emainsin dicativeof aquaticd eposition and nearbyw etlandw ith hints ofa rable farming andhum anoc cupation.A radiocarbonas sayofm aterialfr omC1013re turnedadat eof42 0-230BC (95.4%)(Appendix J). C1013 inturn wasov erlainby C10 12,a humifiedp eatde posit encountered 0.40mbelo w



Location of boreholes containing palaeoenvironmental deposits

Scale 1:10000

Figure 12

groundlev el(B GL)and ceas ingat0 .90m. Plant and insect remainsre covered fromC 1012indicated drier conditions for depos ition. A radiocarbon as say ofm aterial fr omC1012 re turned a date of100BC-70AD (95.4%)(see Appendix J).

5.2.2 Borehole 10

A depositof darkg reyish-brownclay con tainingorg anicm atter(C 1037)w asreco vered fromB orehole10 at a de pth o fbetw een 3.3to 3.6mB GL. Theclay w as subm itted for specialist assessment w hich identified charcoal, wood and bark fragments, mosses and roots, as well as examples of wetland and woodland taxaw ith undiagnostic insect remains w ith the exceptio n o fa weevil pron otum. A sample o fw aterlogged, non-oak roundwood was su bmitted for radi ocarbon dat ing which re turned a Bronze Age dat e o f143 0to 126 0BC (95.4%).O verlyingC 1037w asa s equence ofs andsa nd clayeys and and gravel.

5.2.3 Borehole 11

A deposit of dark greyish-brown clay(C 1042)w asalso encountered withinB orehole11 betw een 2.3and 2. 5m BGLa ndw ass ubmitted for specialista ssessment.Th e components identifiedw ere comparable toth ose within Borehole 10andincluded woodfrag ments,charco al,roun dwoodtwig s,bark ,m osses,althoug hp lantan dins ect remains w ere less sub stantial w ith on ly hem p n ettle and undiagnostic insec t rem ains b eing reco rded. A radiocarbon dateo f waterloggedr oundwood wasr eturneda s 1300to 1 050BC(95.4%).

5.2.4 Borehole 15

A thickdep osito fdark g reyclay con tainingorg anicm atter(C1055)wasrecordedinB orehole15 atb etween 2.0and 3. 9mB GL. Specialistasses smentofthe sedimentidentifiedwood, roundw ood,twig san dro otm aterial indicativeof woodland.A radio carbondateofnon- oakround woodex tracted fromC 1055w asretu rned as1 130 to9 20BC(95.4%).

5.2.5 Borehole 83

A thickdep osito fpo ssiblea lluviumw asen counteredw ithin Borehole 83 and assigned C1286. S pecialist assessmento f the sediment identified aquatic taxa and insect remains including a beetle whichliv eso nru shes. No materialsu itablefo rdatin gw asreco vered duringp rocessingand the depositrem ainsu ndated.

6.0 DISCUSSIONANDASSESSM ENT

The follow ing discu ssion assimilates all data fro m th e S tage 1 evaluation b y p eriod to wards an up dated archaeologicala nd geomorphological model for the proposed extractiona rea.Th e palaeoenvironmentald ata are discussed separatelyform the period accountto retainthe distinctionbetw een directa nd indirect evidence forhum anactiv ity. The exceptiontothis isthe resultsfrom palaeoenv ironmentalassessm ento fdep ositsfro m Borehole 5w hich can bea ssigned toan arch aeological feature with someco nfidence.

6.1 PREHISTORIC ACTIVITY (Figure 13)

6.1.1 Lithic material

These six pieces of lithic material, most of which were dated to the Mesolithic to early Neolithic, are too few to allow analysis of their distribution and they relate to low-level prehistoric activity in the area. The items are likely to have been moved from their original context of deposition, not only by modern ploughing, but by fluvial activity at the site ongoing since the 15th century. They are extremely unlikely to reflect underlying archaeological features.

6.1.2 Possible Iron Age feature

The geophysical anomaly assigned F4 within Transect 3 corresponds with the location of Borehole 5. Re-examination of aerial photographic coverage of Zone A also appears to show an anomaly or anomalies in the vicinity of F4 (Plate 12). Within the magnetometer survey results F4 appears as a strong and linear trending NW-SE, oriented broadly SW-NE, measuring *c*.3.5m wide. Some aspects of the character of the anomaly can be assessed based on the results of Stage 1 evaluation. F4 appears to represent a linear negative feature measuring *c*.3.5m in width, at least 30.0 m in length and up to 1.6m in depth. The feature contains a piece of possibly structural waterlogged oak overlain by two deposits containing waterlogged plant and insect remains dateable to the mid- to late Iron Age. The results of Borehole 5 suggest the feature underlies ploughsoil directly. To the south of F4, a further similar geophysical anomaly, assigned F5, may represent an associated contemporary feature.

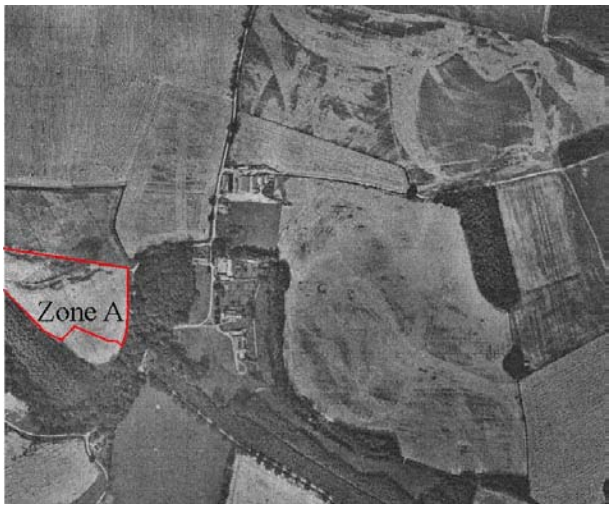


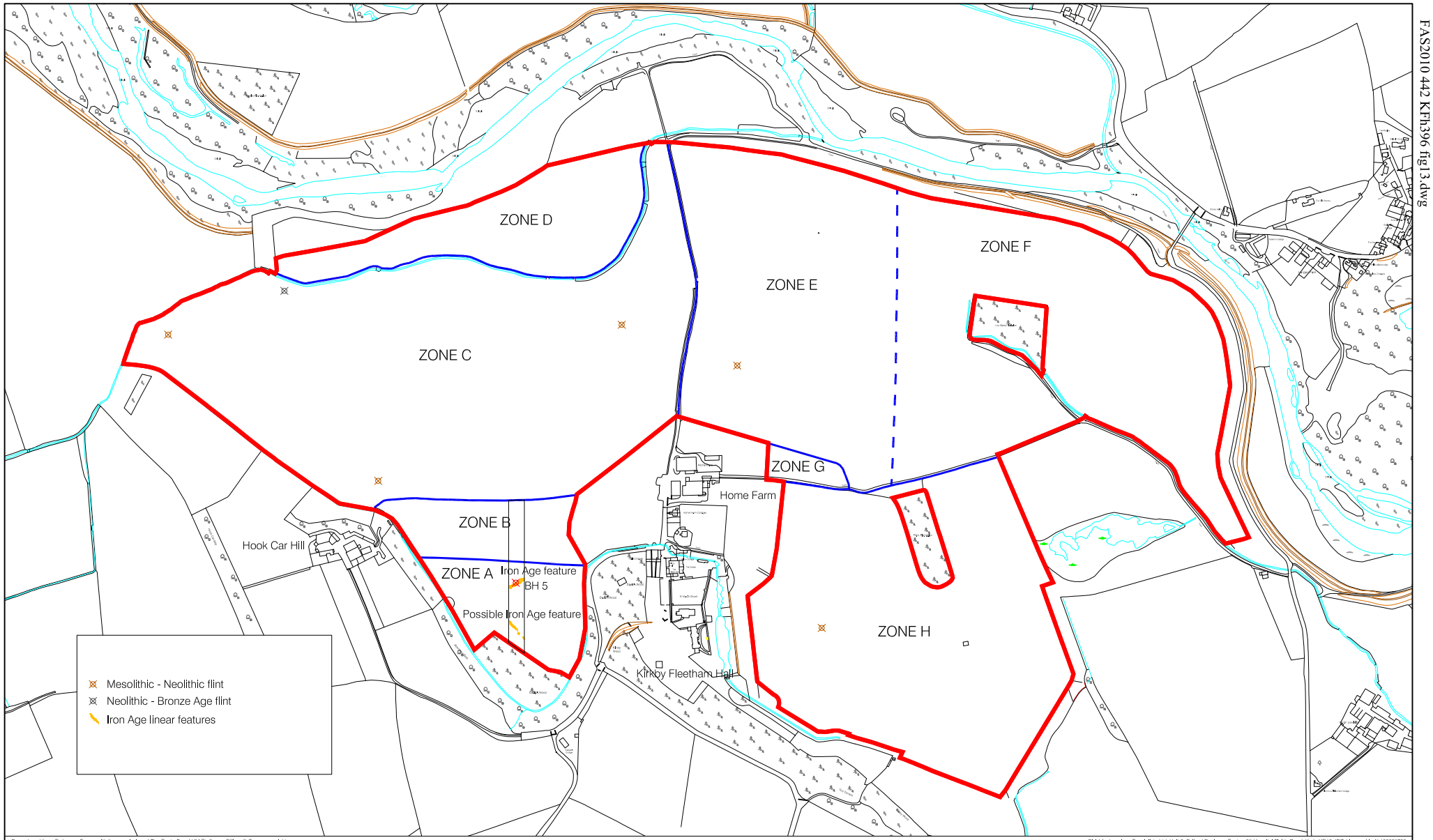
Plate 12 Possible Iron Age features visible as cropmarks in Zone A (APN MR1 99 71 818)

Without further thermoremanent magnetic investigation of this anomaly it has only been tentatively assigned as a man-made feature; the possibility that the oak is not structural, but natural, and therefore the anomaly may represent a natural watercourse or palaeochannel remains. It can be noted that the presence of Iron Age archaeological features on the river terrace close to the bottom of the scarp accords with evidence for Iron Age settlement to the south of the River Swale found elsewhere (page 8). Further investigation of the extent and nature of these features is required.

6.2 MEDIEVAL ARCHAEOLOGY (Figure 14)

6.2.1 Medieval artefact distribution

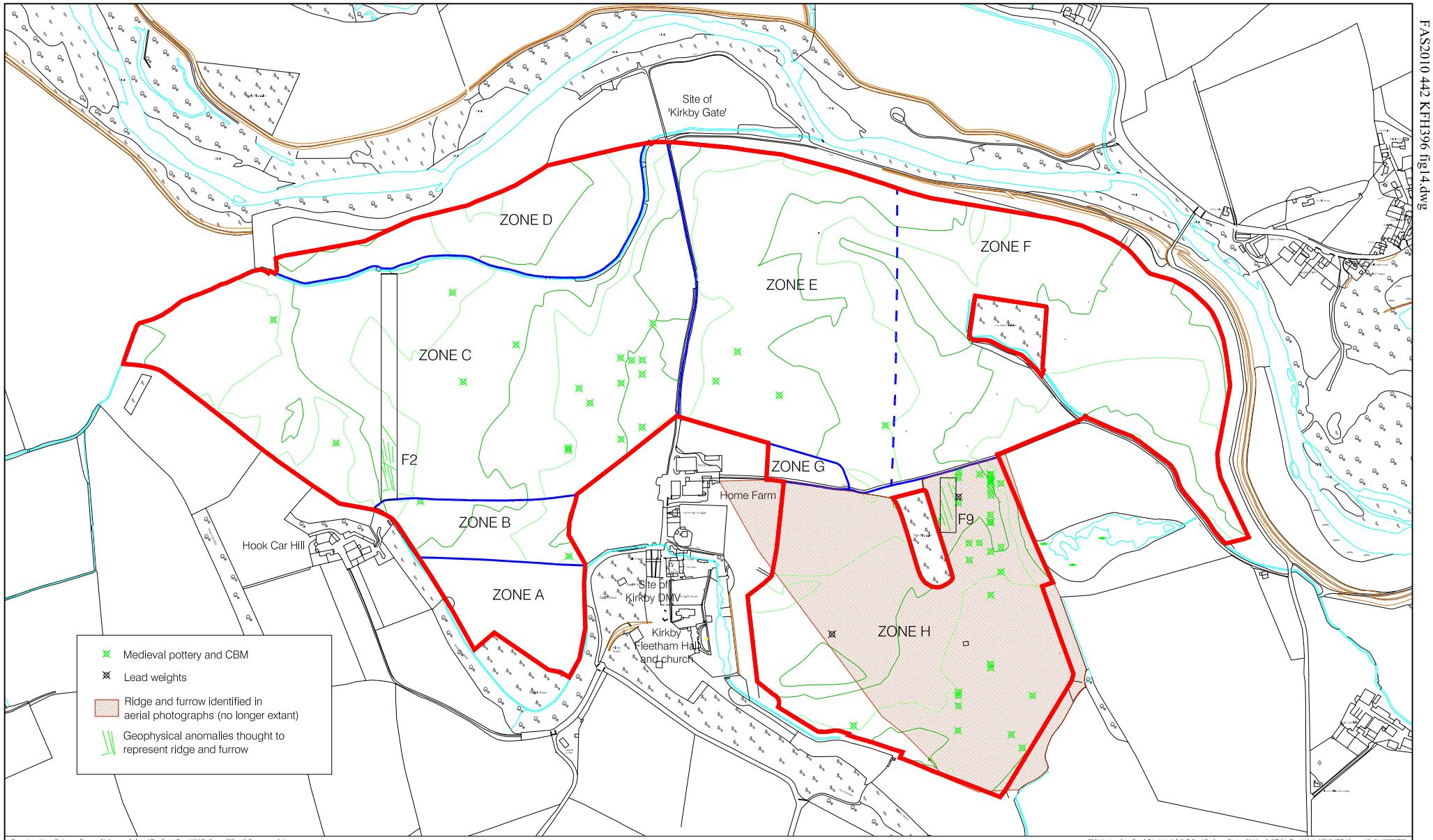
A total of 58 artefacts recovered by reconnaissance fieldwalking can be assigned to the medieval period



Distribution of prehistoric features and finds

Scale 1:10000

Figure 13



Distribution of medieval finds and possible medieval features

Scale 1:10000

Figure 14

including46 she rdso fpo ttery,1 0frag mentso fC BMa ndtw olead w eights. T hem ajorityof thism aterialan d notablybo thlead w eightsare distribu tedo verthe westernp artofZ one H. A furthe rscatter can bed efined adjacentt oKi rkby Lanewith inZoneC.

Thecond itiono fthe ceramicand C BM wasp oorcon sistingof low sherd weightsan drep resentingv arious stages o fabras ion. So meof thisco ndition can bea ttributed to modernplou ghingreg imes, althoughthe likelihoodthat thece ramicw asd epositedatth esite withinm anure used toen richa ploughsoil duringthe medievalperio drem ainss trong. T heproxim ityof the proposed areao fextrac tionto the putativesite ofthe medievalvil lageo fK irkbyan di tsex tantch urchi sno teworthy.

Althoughthe con centrationw ithinZ one H lies around the 34m AOD contours, and therefore representsa low pointwi thint hepr oposeds ite,wi thini tsimmed iatesu rroundingsth esc atteris de finedo ni tsea sterns idebya gentledo wnwardssl ope.T hissl ightri sein le velm ayha ve been sufficientw ithint heimmed iatesu rroundings toha vepre vented regularin undationo f fields by the Swale while in flood. Inad dition somesh elterfor thisarea ispro vided by the scarp on which the church stands. The finds distributionisc onsideredto reflect thep resence and broad positiono f areas ofm edievala griculturalacti vitywhile th e presenceo f the leadw eights suggests somelev elof riverinea ctivity,w hich while interestingisn otuns urprising. E xampleso fm edievalinlan d riverinee xploitationin England havebe en encountered archaeologically (Steane and Foreman 1988,9 9), and morep ertinentlyon g ravelterraces ,n otablyadjacentto the riverTrent where a shift in the course ofthe riv er had preservede vidence forfish weirs (Cooper2 003,3 2-38). It shouldbe no tedh oweverthat thesc enario of preservation atH emingtonQuarry cannotbecom paredto formationprocesse sw ithinth epro posedextrac tion area.

6.2.2 Possiblem edievalfeatu resan dridg ean dfu rrowcultiv ation

TheCH A defined areas formerly underridg ean dfu rrow cultivation asr ecorded bya erialp hotography(see Figure 3;P late13). Withinthe pro posedextrac tions iteaerial photographysug geststha talm ostth ewho leof Zone H was underridg ean dfu rrow cultivation. C orrespondent with both theco ncentrationo fm edieval materialan dthe evidence fromaerial photographs,isa g roup ofline ar anomalieso rtrend sdefinedby the magnetometersu rvey (F9 -Tra nsect6);th e anomalyis c onsidered likelyto represent further evidence for ridg e an d fu rrow cultivationwit hinZ oneH.

Plate13 R idgean dfu rrow visiblew ithinZ one H (NMR21 61)

A further group (F3 -Transect2)m ayalso reflectan ar eao fridg ean dfu rrow cultivation.

6.3 POST-MEDIEVALARCHAEOLOGY

Therem ainsw hich can bea ssigned tothis period arer estricted tonin esh erdso fceram icand fou rclay pipe

stems predating 1700. The distribution ofth ism aterialr eflects generallyth e distributiono f medievalc eramic and suggestsa le velo f continuityo f activity(Figure 15).

6.4 MODERNARCHAEOLOGY

6.4.1 Landm anagementreg imes

A totalof 194 modernartefacts, inclu ding29 frag mentsof CBMand 16 5sh erdso fceram ic,w erereco vered duringreco nnaissance fieldwalkingand are likelyto represent modern manuring. Nonetheless,the distribution whenan alysed alongside e vidence for historic fieldb oundaries ca n p rovide so me info rmation about land practices fromth e 18thc enturyo nwards. F igure 16p resentsth e modern finds distributiona ndh istoric field boundaries and tracksfrom the 1857O Sdig itisedonto m odernOSdata.Thedistribu tiono fm odernm aterial withinZ one C has becomem orerea dable and appearstoreflect differingfrequency withinfo rmerland parc els.

Thewe sternmostfi eldwi thinZon eCha sa higher frequency of modernfi nds thano therfi eldsan dmayha ve receivedgr eaterq uantitieso fman uret han others. N otablyt hef ield toi tsimmed iateno rtheastco ntainson lya singlem odern find. Th isf ielda ppears tobe longto a groupto th e north ofF iddaleB eckw hicha ree qually lackingin m aterial. The fields north of Fiddale Beck all lie north ofth e non-extanth istoric flood defencesw hile theso mewhatirreg ularn atureo fthesouth ernb oundaryof thefield w ithinZ one C mayreflect ano ldriv er course.The dearth ofm odernm aterialw ithinth esefiel dsm aybe theres ultof havingbee ng iveno verto water meadowo rse asonalpas ture,wh ichd oesno tre quirem anuring. Alternatively,s inceth eyw ere probablyli able toinu ndationby the Swalethe ydid notre quire manuringas theyreceiv edre gulard eposits ofriv erm ud.

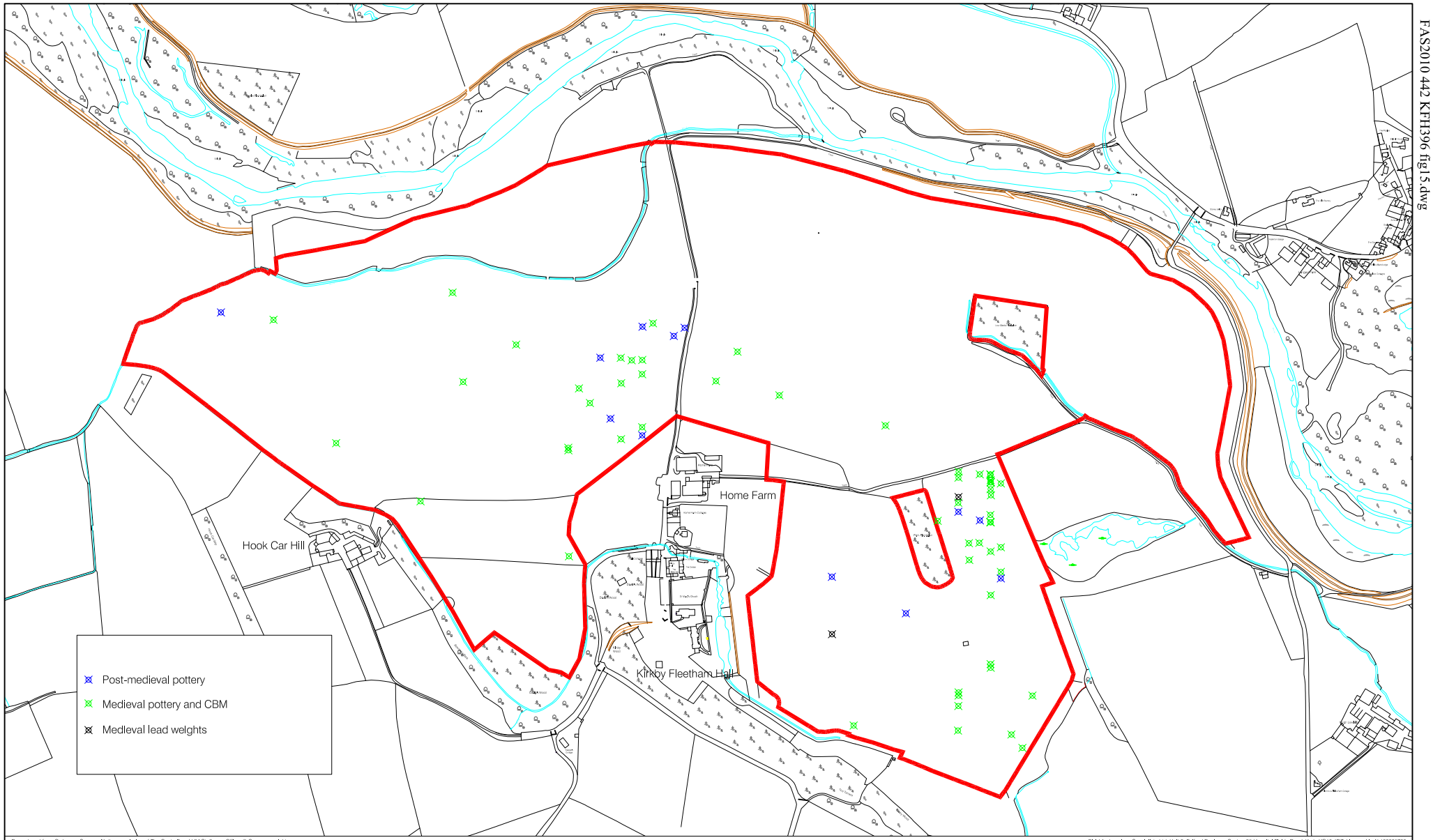
Similar discrepancies in distribution can be seen within Zones E and F and may equally relateto such land managementpractices.Afield boundaryat thewestern side ofZ oneEisnotablefor itslinear distributionof finds and theb oundaryapp earsto hav eattracted hig herlev elsof depositionth ane lsewherein thefield s.

6.4.2 Possiblem odernfeature s

Excludingano maliestho ughtt o relatetom odernplou ghingand stock fenc es, anu mbero ffurthe rano malies definedby the magnetometer survey can be assigned to the modern period (see Figure 16). F2 withinTransect 1co rrespondsc loselyw ithan histo ricfield boundary depicted on the 1857O S. F6 ,Transec t5 and F8,Transect 6appea rt or elatet oa h istoricp lantation. F 6h asb eeni nterpreteda st hef ormerp ositiono ft reesw ithinthe plantation,w hileF 8 appearsto rep resentthe for merpo sitionofam etalsto ckfen ceon the n orthern boundary ofthe plan tation. F7 app earsto repres entam odernf ieldd rainto the immediate south ofthe curren ttrack leadingeast fromH omeF armand a faint anomaly withinTransect 6o riented NW-SE corresponds with atrack toWest LowfieldF armalso depictedon the 1857O S.

6.5 PALAEOENVIRONMENTALD EPOSITS

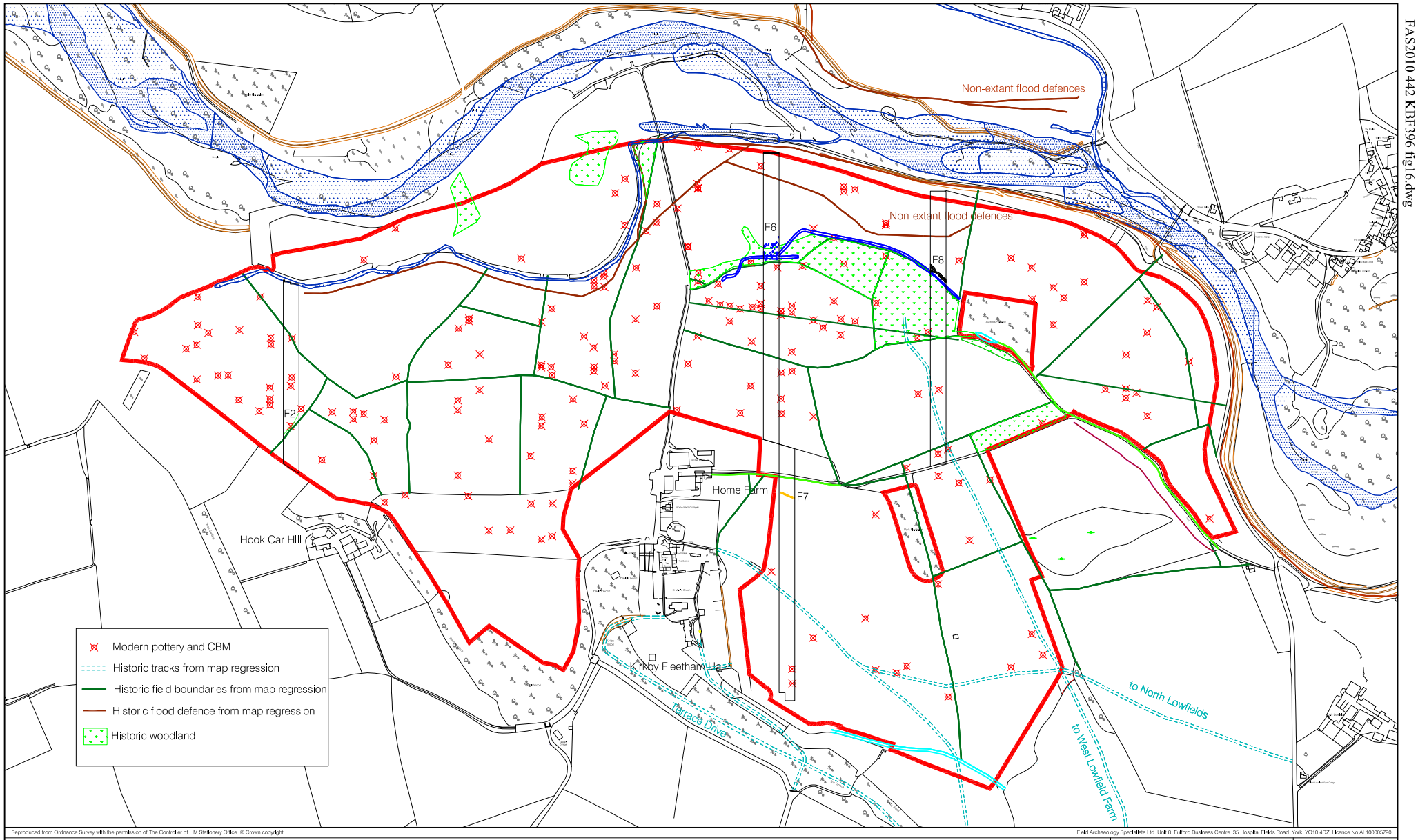
Fiveof 90 boreholecore sun dertakend uringStag e1 encountered depositscon tainingpalae oenvironmental material. A dditional inform ation regarding the presence of p alaeoenvironmental d eposits at the site w as



Distribution of post-medieval pottery showing medieval finds

Scale 1:10000

Figure 15



Distribution of modern finds and possible modern features

Scale 1:10000

Figure 16

recoveredd uringa flight auger surveyof 42 co resun dertakenin 20 07(M inshall20 07).T ogetherth esu rveys representw idespreadco verageof thesite representing over 130 cores (Figure1 7). A total ofsix of theflig ht augerc oresp roduced depositsw hichd eviated inm ake-up froms and and gravel.Th e datalo ggedf orth ese six boreholesh asb een includedw ithinA ppendixH . Togetherth eco resde monstrate thatp alaeoenvironmental depositsare present atthe site, buta ppear toex istw ithin discrete pocketsan dare no tapp arentlyw idespread.

Itisin terestingto note thatt hep alaeochannels digitised fromaerial photographydu ringg eomorphological modellingo f the site do not always correspondw ith the locationo f known palaeoenvironmentalr emains.Th is suggeststha t some of thev ariations visiblein aerial photographyrelate tothe m ake-up ofsterile riveror glacial gravels and notn ecessarilyd eposits with palaeoenvironmentalp otential.

Thepalaeo environmentalrem ainsencoun teredwithinB oreholes10,1 1and15correspond broadly w ithan area ofm appeda nomalies w hich mayreflect aseries of palaeochannels inthe no rthern halfo fZ one B and the southerna rea ofZ one C. By contrast, Borehole 83 lies in an area devoid of suchf eatures,b utb elongs within a groupo f boreholes whichm ayh ave encountered a zoneo f alluvium(Boreholes7 8,7 9,8 1-3,8 5-7).

Boreholes 10,11 and 15appearto representan areaofpalaeoen vironmentalpotential.T hed epositsencountered were alldat ed to the Bronze Age and were stratified within a sequence of sands and gravels. All ofthese deposits were found to be rich inw oodlandtax asu ggestinga woodland environmentalo ngsides omeev idence for humana ctivityin th e form o f arable w eedsa ndc harcoalw aste. Th e possiblea lluvial d epositw ithin Borehole 83 suggested deposition in slow-moving or stagnant water and relates to a wetland habitat,t hough remainsu ndated.

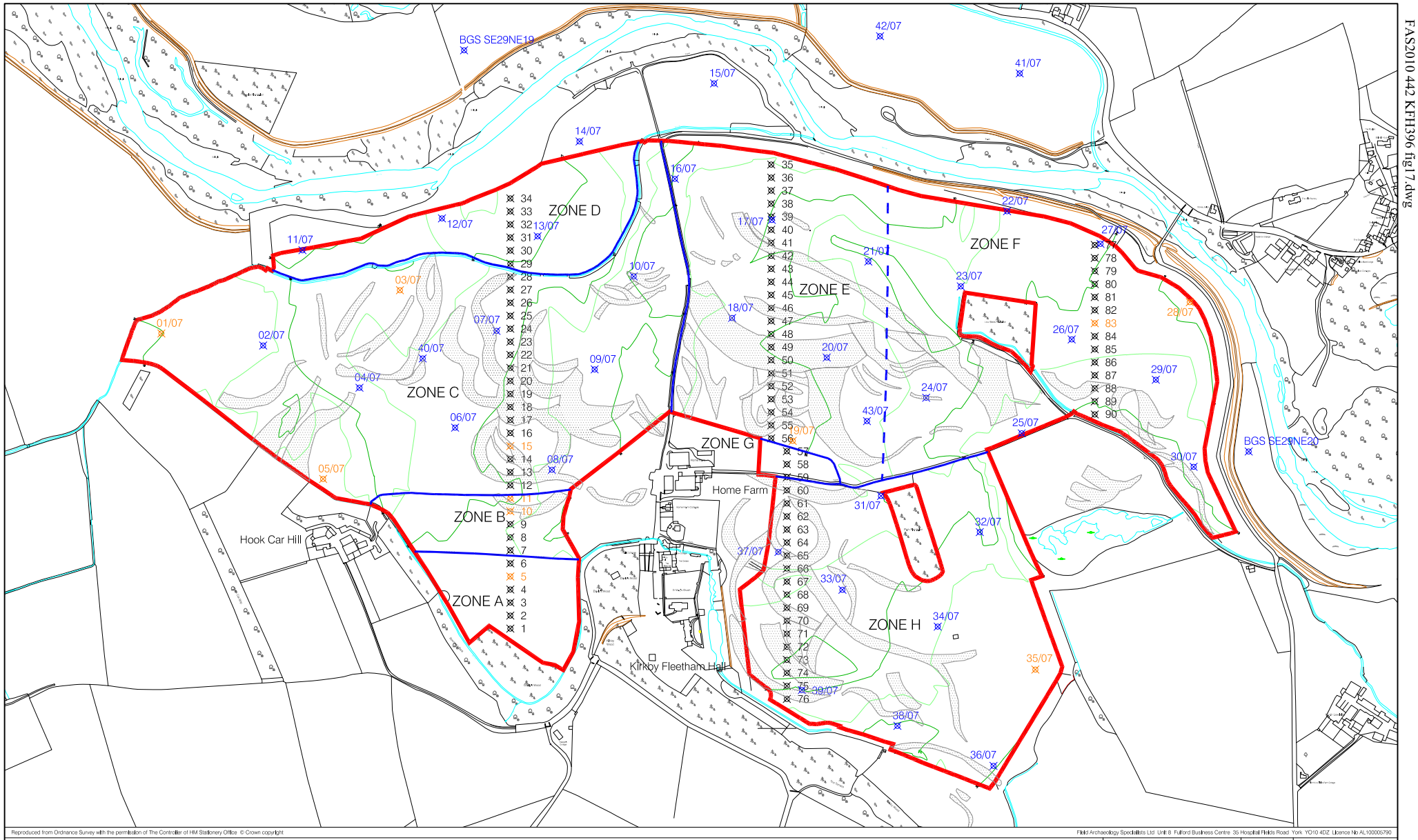
With t he exceptio n f Borehole 5 (see S ection 6 .1.2) the depositsw ithin the boreholes lie below e asily accessibleexc avation depths.

6.6 UPDATEDG EOMORPHOLOGICALA NDA RCHAEOLOGICALMO DEL

The results ofthe C HA and Stag e 1 evaluation have pro vided an o pportunity t o m odel the p resence of archaeologicalrem ainsw ithinth epro posedextrac tiona reaas well asim proveunderstand ingof siteform ation processes. Theresu ltshav ebe enu sed toco mpilean updatedg eomorphologicalan darc haeologicalm odel (Figure 18).

6.6.1 Updatedg eomorphologicalm odel

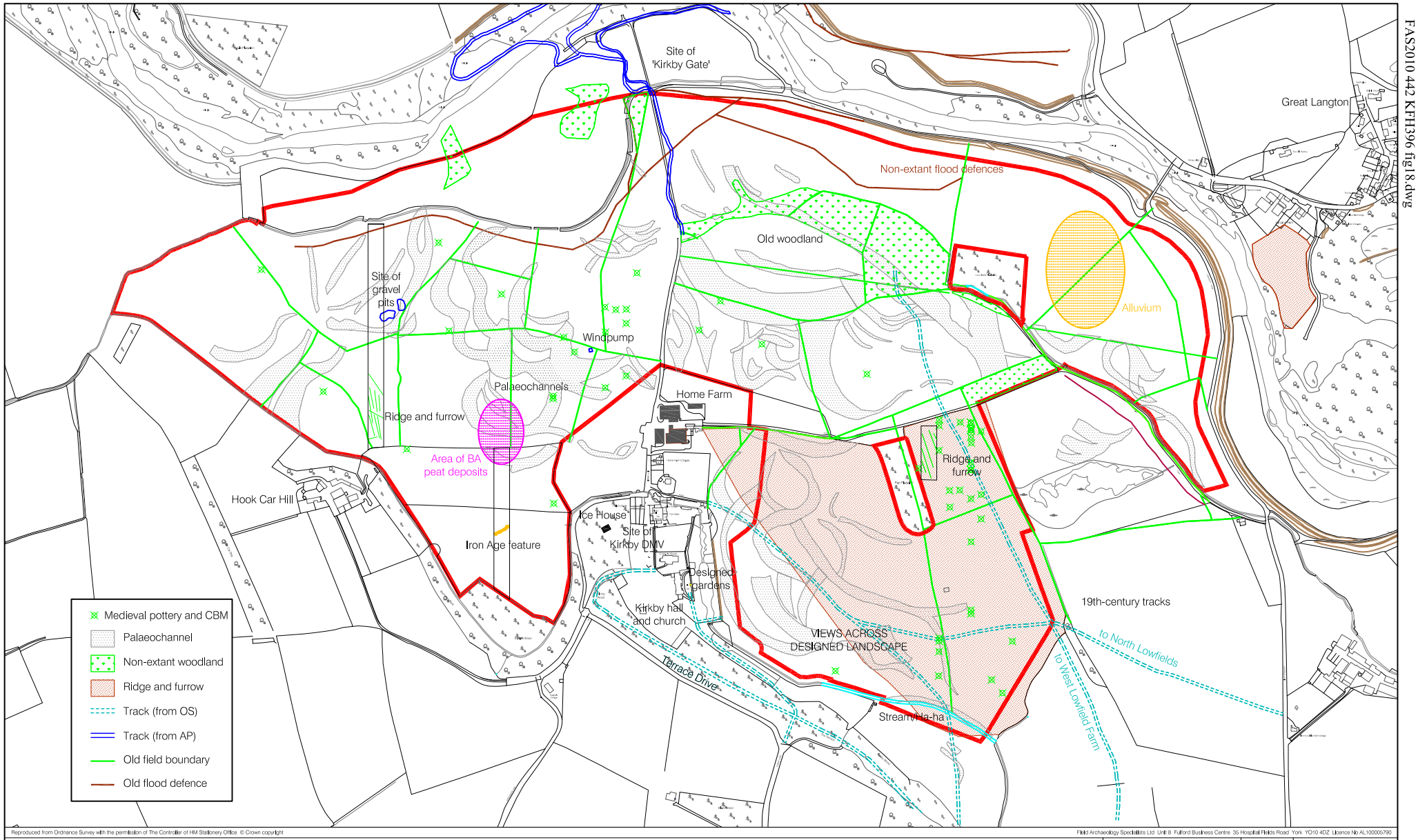
Theriv erch annel flooro fthe Swalew ithinth epro posede xtraction areaisde fined tothesou thby the rising scarp whichm ayr eflecta m eltwatere roded slope.At theb aseo fth iss lopeth e channelf loorc anb e seenin aerialp hotographs tobe m arkedw ithcharacteristicsw irlsof riverg ravelsw hich haveno w been encountered withinthe 90 boreholes. These boreholes, along with the 2007Minsha llflig htau gersurv ey,re gularlyrepo rted sequences ofs andsa ndg ravels overlying boulder clay. Theser esultsc oncordw ith the modelf ore arlyS wale riverinea ctivityas ay oungpo st-glacialriv erofhig henerg ydepositing grav elandsandsonits descentfrom the retreatingice margins.



Location of palaeoenvironmental deposits and palaeochannels

Scale 1:10000

Figure 17



Geomorphology and results of Stage 1 evaluation

Scale 1:10000

Figure 18

The presence of archaeological material, palaeoenvironmental deposits and archaeological features allows something of subsequent riverine activity to be modelled. The few lithic items of Mesolithic to Bronze Age date may have been deposited by incoming river gravels rather than representing transient occupation during these periods within the proposed extraction area. The anomalies visible within the aerial photographs may represent old braided river channels or the edges of riverine meandering. The make-up of these underlying river gravels appear to hold groundwater differentially producing the cropmark anomalies, but site formation processes seem to have resulted only in restricted deposition of palaeoenvironmental deposits.

The presence of restricted Bronze Age palaeoenvironmental deposits towards the southern limit of the proposed extraction area is noteworthy, since they imply a drier and more wooded environment. The deposits encountered contained woodland taxa and detritus suggesting woodland had established in the vicinity by the end of the second millennium B.C.T his is urn might suggest a decrease in high-energy river ine activity within each annel floor and that the stabilisation of the river channel had begun by that time. Nonetheless, the Bronze Age peat deposits were overlain by further deposits of sand s and gravels of up to 3m suggesting the river channel continued to meander over the southern margins of the proposed extraction area read depositing gravel and sand.

The presence of Iron Age to medieval activity encountered during Stage 1 evaluation suggests the channel floor became increasingly stable, moving gradually northwards, eventually stabilising as a single channel incised into the channel floor and meandering within a more restricted corridor. The presence of a possible Iron Age boundary feature close to the rising ground suggests this area of the gravel terrace was stable enough to support human activity by the 5th century B.C, although the range of plant and insect taxa suggest ground conditions remained wet. Moving northwards within the proposed extraction area, and no withstanding a low possible sherd of Roman ceramic, a reason for medieval manuring suggests the channel floor had become increasingly stable sufficient to support agriculture from the 12th century onwards. The range of field walking ceramics suggest this reclamation for agriculture forms a continuum from the medieval period culminating in 18th- and 19th-century land drainage within the immediate margins of the S wale commingunderc ultivation within the last 150 years.

6.6.2 Updated archaeological model

The results of Stage 1 largely corroborate the archaeological potential of the proposed extraction area or reflect the archaeological model for the surrounding area. Activity from the Mesolithic period is hinted at by the presence of a few pieces of lithic waste and a later Neolithic or Bronze Age tool. These finds may have been imported to the proposed extraction area through riverine activity but reflect wider exploitation of the landscape. The Bronze Age palaeoenvironmental deposits also provide hints of increasing human activity within the vicinity, in this case indicated by arable weeds, ruderal and eurytopic plants and charcoal fire waste.

The earliest archaeological features encountered during Stage 1 is identified as a possible Iron Age boundary feature and represents direct human activity within the proposed extraction site. With the exception of a single sherd of possible Roman ceramic a hiatus in activity at the site is interrupted in the 12th century by the establishment of medieval fields. The principal area of medieval and early post-medieval ceramic was within Zone H which had been modelled as an area of medieval cultivation using ridge and furrow visible on aerial

photographs.Two other possible areas ofm edievalcul tivation were identified tothe w estof KirkbyLa nea nd were encountered asline arm agnetica nomalies which may reflect ridge and furrowand a lesserc oncentration ofm edievalce ramicre spectively.

Post-medievalto modernactiv ity,re presentedby m agneticano maliesan dsp reads ofm aterial, was foundto be widespread withthefieldsclosesttotheS wale and northof FiddaleB eckperh aps havingcom eun derc ultivation mostrec ently.TheStag e1 resultstendtoprov ideco rroborativeev idence ofthe form and natu reof exploitation ofthe riv erch annel forfarm ingsince 18 00.

7.0 STAGE2 E VALUATION

Theresults ofS tage1 evaluation haveiden tifiedbe low-groundarch aeologicalr emainsa nd palaeoenvironmental deposits w ithinth e pro posed area ofex traction. S tage2 willb e de signed with theaim of gaining furthe r information regardingth e character,p reservationan d extento f these remains.Th e sequenceo f Stage 2 activity willa lsob eun dertakeninp hasesw ith thein tention that theres ultso ffurthe rno n-invasivearea g eophysical surveyand inten sivefieldw alkingw illfurther guide the designan dtarg etsfor evaluationtrenching . Ground penetratingrada rw illbe usedtocharacterisedeeperpala eoenvironmentaldepositswh erethey hav ebe enp roven bythe boreholetran sectsa nd alsodefinethepotentialareaofalluv iumin thenortheastcorner ofthe pro posed extraction s ite. The results of the G PR surv ey will th en b e us ed to des ign fu rther p roving of palaeoenvironmentaldepos itsusi ng boreholecore sto recovermater ialsu fficientt oass aythem akeupand idea lly thed ateof thed eposits.

7.1 TOPOGRAPHIC SURVEY

A general topographic survey of the site has been produced usingthe 3-D surveydata captureddu ringsetting outa nd locatingfieldw alkingfinds . Inad dition,a detailed contour survey of Zone A will be undertakenin ord er tom odelth e areao f uneveng round immediatelyb elowth e scarpa nd whereth e possibleI ron Age feature is located.

7.2 GEOPHYSICALA REA SURVEY

The siteh assh ownitselfto be susceptibleto magnetometersu rveyand the techniquei sc onsidered tobe effective inidentify ingbelo w-groundano maliesw hichcan be interpretedw ithco nfidenceas archaeological remains.Ac cordingly,mor eex tensivea reas of magnetometer survey willbe an in tegralel ementof th eSt age 2 ev aluation and will b e us ed to targ et con tinuation of line ar an omalies an d are as of d iscrete ano malies encountered withinthe reconnaissance transe cts. I n addition, areas w hich have y ielded concentrations of medievala ndto a le sserd egree post-medievala rtefactsw illb e targetedto tes tth ehy pothesisth atth e artefacts derive from manuring within former medieval fields or whether they derive from discrete no n-agricultural below-groundrem ains.

Theseexten ded areaso fm agnetometersu rveywill beund ertakenwitha v iew toide ntifyingtarg etfeatu resan d

groups offeatu resw hich willb ethe subjectoffu rther investigation inthe form of evaluation excavation.

Thev ariations withinsom ereconnaissa ncetransectsbeliev edtoreflect underlyinggeo logicalorsubso ilm ake-up are relativ ely few . It i s no teworthy that these anomalies d o n ot co rrespond eith er w ith area s of palaeoenvironmentalp otential orw ithpo ssiblepalaeoch annels identified on aerialp hotography. Thetechn ique isno tcon sidered toha vebe enfru itfulin identifyingpa laeochannels orp alaeoenvironmentald eposits.

7.3 INTENSIVEFI ELDWALKING

Thereare concentrations of cultural material identified by Stage 1 reconnaissance fieldwalkingresults sufficient tow arrantfurther and morec omprehensivetarg etedfie ldwalking. Neitherthe distributionof theq uantityof lithicm aterialreco vered duringStag e1 iscon sideredsu fficienttowarrantinten sivefieldw alking. Instead areas ofinte nsivefieldw alkingw illbe targetedo verthe concentrationsof medievalandpo st-medievalceram icand ceramicb uilding material. The model for the origin of this cultural material proposes that the materialw as depositedo riginallywi thinman urean dh asbe end isturbedf romth em ake-up of earthwork furrows,wh ichh ave been levelleda nd truncatedby m odernplou ghingactiv ity. Ifcorrec t,ap artfrom the base offurro ws whichm ay lieintact beneaththe plou ghh orizon, these archaeological features now exist only as distributionsof material within the ploughsoil.

Intensivef ieldwalkingw illco nsistof la rgea reasove rlyingco ncentrationsof m aterialre coveredd uringt heSt age 1rec onnaissance fieldwalking. Eacharea will be dividedinto 25mx 25mg ridsw hich willb ew alkeda long2m transects with thew alkerscanning the entireareaof thecorrido r.Thisappro ach aimsto achievereco veryof allfi ndsposi tionedonthe surf aceofth eplo ughsoil.Eachfi ndwil lbeba ggedan dloc atedin 3- D.

While the distribution of material is not c onsidered s ignificant b eyond ide ntifying bro ad a reas o f form er medievalf ields itm ightb e possibleto id entifyli neartr endso f distributionw ithin intensivelyw alkeda reasto aid them odellingof therid gean dfu rrow cultivation scheme. Them aterialreco vered consistedprim arilyof potteryw hich has intrinsicv alueo frepres entingan aspect of the economy of the settlement which used acquired andus edi tpr iorto it sdi sposal,p robablyth em edieval villageo fK irkby.

7.4 EVALUATIONEXCAV ATION

Evaluation excavation trencheswi llbe used atthe site toloc ate, characteriseand sam pleth ebe low ground archaeologicalfeatu resde fined byg eophysicalsu rvey. It has been assumedth atthe features willn otex ceed safeex cavation depths.Thedepthof palaeoenvironmentaldepositsencoun teredwithinBore holes 10,11 and 15 exceed safe excavation d epths a nd will n ot the refore be the targ et of evaluation excavation; d ifferent techniques willb eus edto assay these dep osits.

In mostc asese valuatione xcavation trenches will be positionedw ith a specifico bjective.H owever,th ere are somez ones ofthe site which to date appear to be devoid of archaeological potential. Theseareas willb etested toa ssess their potential.

7.5 GROUNDPENETRAT INGRADAR

Groundp enetratingr adar(GPR) wi llb eu sedt o t argeta reas h ighlighted d uringS tage1 a s h avings ome palaeoenvironmentalp otential.The areao fB oreholes10, 11 and 15 w illbe surveyedto pro duce am odel of underlyingstrata whichw illbe used toen hanceun derstandingof siteform ation processesan dthe exten tand profile ofth e peatd eposits.Th e areao f possiblea lluviume ncounteredin termittentlyw ithin Boreholes7 8 to 87 willa lsob ethe subjectofG PRsurv eyto model thedepth ,profileandsom elateral extentofthe dep ositan d toreco verm aterialsu itablefo rradio carbondatin g. If the GPR surveydefines anyprev iouslyun identified palaeoenvironmentald eposits,furthe rbo reholes willb eun dertakento asses sthes ede posits.

7.6 BOREHOLE SURVEY

Targetedb orehole surveyw illb e undertakeno f the possibled eposito f alluviume ncounteredin termittently withinB oreholes78 to 87.A sam pleo fthe depositenc ounteredw ithinB orehole83 failed toproduce material suitable forrad iocarbonas say. Theaim of furtherb oreholesw illbe tothe reco veryof further samplesfo r radiocarbon dating. Any previously unidentified deposits definedby the GPR surveyw illalso bes ampled for assessmentan dd ating.

8.0 ARCHIVE

An assemblage of 228 sherds of ceramic was recovered during Stage 1 of which 165 have been identifiedas modern and ofli ttleorno r esearch potentiala ndw illb ed iscarded.A to talo f 60s herds ofp re-modern ceramic havebe enth esu bject ofspecialistassessm ent.Nofurther workisre quired and retention ofthe seass emblages isreco mmended.

An assemblageof 11 lithic items was submitted for specialist assessment. Fiv ew ereide ntifieda sna turalan d therem ainingsix willb eretainedfor archive;the scraperFindno15is recommendedforillustration forarch ive, butn oo therw orkisre commended.

An assemblageof 39 fragmentso fceram icbu ildingm aterial werer ecovered,29 of whichw ereide ntifieda s modernor undiagnostic and therefore oflim itedo rno researc hv aluea nd shouldno tbe retained withinthe archive. Tenfrag mentsw ereide ntifieda sm edievalor pro bablym edievaland shoul d ber etained withinthe archivesh ould further comparativem aterialbe reco veredatth esite orw ithinth ereg ion, butrequiren ofu rther workatth isstag e.

Twolead ob jectsh avebe enid entified asm edievalfish ingw eights. Theitem sha vebe enp hotographedand shouldbe draw nfo rarchiv e. Theob jectswillbe storedwithoutm icro-climatecontrolandin stable acid- free packaging(Watkinson and Neal1 998,4 3).

References

CartographicS ources

1811Es tatem ap

1838Es tatem ap

1857O rdnanceS urvey

1909O rdnanceS urvey

1913O rdnanceS urvey

1919O rdnanceS urvey

Secondary sources

A.H oward, M.G .Mac klinan dD .G .P assmore. 2003. *AlluvialArc haeology inE urope, proceedingsof the alluvial archaeologyof north-westE uropean d Mediterranean*

Beresford, M.W. 19 55.'The lostv illageso fY orkshire:Part IV', *YorkshireA rchaeologicalJou rnal*3 8:

Beresford, M.W. 19 83. *The lostvillag eso fEn gland*,S troud

Burgess, C.19 95.'A B ronzeA gerap ierfrom C atterickB ridge', *YorkshireA rchaeologicalJou rnal*6 7:1 -5

Burl, A . 1 991. ' The D evil's A rrows, B oroughbridge, Nor th Y orkshire: th e archaeology o f a stone row', *YorkshireA rchaeologicalJou rnal*63 :1- 24

Busby,P ., Evans,J.,H untley,J.P ., Wilson, P. R.19 96. 'TheCatterick po tteryk iln', *Britannia*27 :283 -297

Chandler,J.199 3. *JohnLe land's Itinerary: travels in TudorE ngland*,S troud

Chetwynd-Stapylton, H. E. 1889. 'The Stapletonso fR ichmondshire', *YorkshireA rchaeologicalJou rnal*8: 65-116

Church,M.andRy der,J. M.1972. 'Parag lacialsedim entation:aconsideration offluv ialpro cesses conditioned byg laciation', *Bulletin ofthe G eologicalSo ciety ofA merica*8 3:3 059-7

Cooper, L. P. 2003.'H emingtonQ uarry,C astleD onington, Leicestershire, UK:a decadebe neath theallu vium in the con fluence zone', in *Alluvial Arc haeology in Europe*, A . H oward, M.G.Macklin an d D.G.Passmore(ed s)

Dymond,D .P .1 961.'R omanb ridgeso nD ereS treet, CountyD urham,w ithag eneral appendixo nthe ev idence forbrid gesin RomanB ritain', *Archaeological Journal*11 8, 136-164

EnglishH eritage. 2008. *Mineralex traction and theH istoricEn vironment*

Eyres, P. 1981. *MrAislab ie'sG ardens:Th reeN orth YorkshireG ardenslan dscapedd uring the1 8thc entury byJ ohn Aislabie(1670-1742)an dh isson ,W illiam(1700-1781)*(B radford)

FAS. 1997. 'Archaeological I nvestigations, Sc orton Quarry, R ichmondshire: P ost-Excavation Assessment Report'(unpublished archaeologicalr eport)

FAS. 2005a.'A rchaeologicalwa tchingb rief:Nos terfieldQu arry,No rthYo rkshire'(u npublisheda rchaeological report,a vailableon lineat www .archaeologicalplanningconsultancy.co.uk)

FAS. 2005b. 'A rchaeological ev aluation: Ladybridge F arm, N osterfield, N orth Y orkshire' (u npublished archaeologicalre port,a vailableon lineat www. archaeologicalplanningconsultancy.co.uk)

Frodsham,P .1 996.'N eolithic studies inN oMan 'slan d', *Northern Pasts*:13/1 4

G.L.Good,R .H.JonesM.W. Ponsford(eds)1991. WaterfrontArchaeo logy,proceed ingsof the3 rdI nternational conferenceo fw aterfront archaeology, *CBAR esearch Report*74

Harding,J. 1 998.' Recentfie ldworkatth eN eolithicm onumentco mplexof Thornborough,N orthY orkshire',

*Northern Archaeology*1 5/16:2 7-8

Harding,J.2 000.'From coasttov ale, moor toda le:pat ternsin later prehistory',in J.Ha rdingand B .Johnso n *Northern Pasts*:1- 14

Harding,J. and Johnson, B.20 00.N orthern Pasts: Interpretations ofthe later prehistoryof northernEn gland and southernS cotland, *BritishA rchaeologicalR eports*(O xford)

Harding,J. a ndJoh nson,B .2 003.' TheMe solithic,N eolithic and Bronze Age archaeologyo f the Swale-Ure catchment'(unp ublishedreport, Univ ersityofN ewcastle)

Howard, A.J., Keen,D .H., Mighall, T.,F ield, M.H.,C oope,G .R., Griffiths,H .I.a nd Macklin, M.G.20 00. 'EarlyH olocenee en vironments o fthe RiverU rene arR ipon,N orthY orkshire', *Proceedings ofth e YorkshireG eologicalS ociety*53 (1): 31-42

l'Anson, W. 1929. 'The medievalm ilitaryeffig iesof Yorkshire', *YorkshireArcha eologicalJo urnal*29 :1- 67

Mineralsan dH istoricE nvironmentF orum.2 007. *Planning form ineral extractionan da rchaeology; Practice Guide*

Minshall, C. 2007. 'Kirkby Fleetham: Geological report on the sand and gravel deposit followingthe 2007 Drillingp rogramme'(unpublished report)

Moloney,C .1 996.'C atterickR acecourse', *CurrentA rchaeology*14 8:128-132

Moloney,C ., Hobrey,R ., Whitehouse, P.,and R oberts, I.2 003. *CatterickR acecourse,N orth Yorkshire:re -use and adaptation inthe land scapefrom pre historicto Angliantim es*(unpublished report)

Page, W.(ed .)1 914. *VictoriaH istoryo fthe Countyo fYork: NorthR iding*(Lo ndon):Volum e1

Rivet,A .L.F. and Smith, C.19 79. *Thep lace-nameso f RomanB ritain*(B atsford)

Rutherford,M. 2003.'S wale/Ure w ashlands pro ject: Site 1 :R ipon Racecourse; Pollen repo rt: May 20 03' (unpublishedr eport)

Steane,J.Mand Fo reman, M.1 988.'The archaeology of medieval fishingtack le',in G .L.Good, R.H.Jones and M.W.Ponsford(eds), *WaterfrontArc haeology*

Tavener, N. 19 96.'Ev idence for N eolithic activity near M arton-le-Moor, North Y orkshire', *Northern Archaeology*1 3/14:1 83-8

Taylor,M. P. andMack lin.M.1997. 'Holocenealluv ialsedim entationandv alleyfloor development:the River Swale,Catterick ,North Yorkshire, UK', *Proceedings ofth e YorkshireG eologicalS ociety*Vo l.5 1,P art 4:31 7-327

TheLa ndscapePr actice.19 90.' KiplinHa ll- ALa ndscapeSt rategy'

Topping,P .1 982.' Excavation atth e cursusa tS corton,N orth Yorkshire,1 978' *YorkshireA rchaeological Journal* 54:7 -21

Waddington, C.and Pa ssmore,D .2006. *Planning for thefu ture, Guidance form anagingth ear chaeological and palaeoenvironmentalr esourceint heTi ll-TweedVall eys,Nort humberland,UK* (A rchaeological Research ServicesL tdan dE nglishH eritage)

Watkinson,D .E .a nd Neal,V.1 998. *FirstAidfo rFin ds*(3rd Edition)

Whellan,T.18 59. *Historyan dg eography ofthe C ityo fYorkan dthe N orth Riding*(B everley)

Wilson, P. 2002. *Caractonium: Roman Catterick and its hinterland. Excavationsan dre search,1 958-1997: PartI a ndI I*

Wilson, P.,C ardwell, P.,C ramp, R.J., Evans,J.,Tay lor-Wilson, R.H.,Thom pson,A .a nd Wacher,J.199 6. 'EarlyA nglianC atterickand *Catraeth*'. *MedievalArc haeology*40 :1- 61

Young,A .1 771. *As ixm onth tour ofthe no rtho fEn gland,17 71*

APPENDIXA PROJECTDE SIGN

1.0 INTRODUCTION

Thisdocument r epresentsaProje ctD esign(PD)f orSt age1of aprogr ammeo farch aeologicaleval uationt o beun dertaken tos upport a planning application for mineral extraction at Home Farm, Kirkby Fleetham, NorthY orkshire.T he PDha sbeen prepared in c onsultation w ith L ucie H awkins, D evelopment C ontrol Archaeologist, North Y orkshire C ounty C ouncil (NYCC)a ndD rA ndy Hammon, EnglishH eritage,o nb ehalf ofA ggregateIn dustriesU KL td.T hep roposede xtractionsite hasbeen t he subject ofades k-basedC ulturalH eritageAss essmentwh ich hasal soi nformedt he preparationof t he proposed evaluations trategy (FAS2 009).

1.1 LOCATIONAN DLAN DU SE

The p roposed ex tractionsit e li es *c*.1km t o t he northof t he village ofK irkbyFl eetham,t o th e southeastof t he townof Catterick(F igure1 ;N GR:S E2 7999 625).T hep roposede xtractionsiteo ccupieslo w-lyinggr ound,slo pingve ryg radually from39 mA ODt ot hewest ,t o32 mA ODt ot heeast . The southern boundary of thesi tei s markedbyas teeps lope,ri sing to50 mA OD.A s mallcl usterof buil dings,i ncludingK irkbyFleet hamH all,St Mary's church,and ass ociatedco ttagesand residenceso ccupythe lo werre aches of thisslo pe, where it forms a small spurno rthwards. Theno rthernp arto ft hesite,to the northof t he river,i sbou nded bya f loodba nkt ot he southa ndt he road tot he north,l yingi mmediatelyt ot he southof theho useof Lo wK iplin.

Thes itei sex ploiteda sa griculturall and(Grade2a nd3) ,a ndi sc urrentlyu nderc rop,i nterspersed withs tandsof w oodland. Ace ntralt rackwayconn ectst he buildingsof H omeFar mwi th the river, and a numberof dra inagedi tchesan df loooddef ences cross the area (Figure 2). Home Farmi tself is currently unoccupied, although the outbuildings remain ina griculturalus e. Landt ot he northof t he Swale isg rassland.

Thesitelies w ithinthe Y orkshireO useb asin,ad jacentt othe R iverS walea sit flowsso utheastto wards thec onfluencew ith the R iverU re, somed istancea way. T hep roposede xtractionsiteo ccupiesg ravelt erracesinth eva lleyb ottom,an d is situatedal mostent irelyont hef latal luvialf loodplai n.

1.1.1 Geologyand t opography

Theund erlyinggeo logyhas been mapped by the British Geological Survey and is publishedasSheet E42(N orthallerton), andi nm oredetai lonS heetSE 29NE(1 :10,000). Alla vailablegeo logicalinf ormationi ndicatest hatt heund erlyinggeo logy oft hesitec omprisesU pperP ermianM arl(RoxbyF ormation)to the w est,an dT riassicS herwoodS andstoneto the e ast. TheUppe rPe rmianM arlc onsistsofas equenceof r edmu dstonesan ds andstones,w ithg ypsuma nda nhydrite,w hichbe come mores andybef ore passing toi ntot he overlyingSher woodSands tone,wh ich consistof r edbrown fine-t om edium-grained sandstoneswit hm udstonep artings.

TheM arland Sand stoneare over lainby R iverSwaleG ravels,t hed epths ofwhi chhaveb eend efinedduri ngadri lling programme(Minshall200 7).T he sanda ndgr avelwas ge nerallyf oundt obebet ween1 to 3mi ndep th,wi tha much deeper basinof gr avelad jacentt o HomeFarm, reac hinga thicknessof 8 m. Overlyingt he gravel,over burdenh asbeen des cribed ast opsoiland s andycl ayeys ubsoil,vary ingi nde pthf rom0. 2mt o2.4m . T hed epthof overburdenwasgr eatestat t he westerna nde asternl imitsof t he site,w here ite xceeded1. 5m.

1.2 SUMMARYOF P ROPOSEDW ORKS

The siteco nsists of an irregular parcel of land, measuringa maximum2 .1kmea st-westb y1.6 kmno rth-south. T hel argest proportionof t he site liest ot he southof t he RiverSw ale,w ith a smaller field to north. The proposed extraction wouldbe confinedt ot he southof t he river;t he area tot he northi spropos ed asanar ea forpl antan dt he twoar easwoul dbeconne cted byat emporarybri dge.T raffict oand f romt heq uarrywo uldb eal ongt heB 6271t ot heno rth.

Ino rderto evaluate the archaeological and palaeoenvironmental potential of the sitein greaterd etail andto a llowa ppropriate mitigations trategiest obe pr oposed,a t wo-stage reconnaissancea nde valuationa pproachh asbe ende signed.

Stage1 (R econnaissance)w illc onsisto f:

- rapids urfacecol lectionover t he wholea rea;
- borehole/augert ransectsac rosst he site;
- geophysical(m agnetometer)a reasurve yt ransects.

Stage2(Furtherev aluation)wi llbedes ignedf ollowingcompl etionof St age1, but i san ticipatedt oi nclude:

- targetedi ntensivef ieldwalking;
- targetedpa laeoenvironmentals ampling;
- targetedge ophysicalsur vey;
- targetedt rialt renching.

1.3 AIMSA NDOB JECTIVES

The aim of t he evaluation i s t o g ather s ufficient i nformation to e stablish t he extent, c ondition, c haracter a nd da te of archaeologicaland pa laeoenvironmentalremains t hatm ay beadve rselya ffectedb ythepro posedm ineralext raction.T he informationgai nedwi llal lowf orani nformedde cisiont obe mad eregardi ngt he planninga pplication,and t heneed f orany archaeologicalm itigationd uringthep roposedwo rks.

Stage1(R econnaissance)i s proposedwit ht heai mof assessing:

- thed eptha ndc haractero fd epositsa crossthe site
- the presenceof an yar easof hi thertouni dentifiedar chaeologicalpot ential
- the characteran ddep thof pal aeochannels,an dt heirpal aeoenvironmentalpot ential
- theef fectivenessof differenteval uativem ethods withint his specificl andscapeco ntext

1.4 ARCHAEOLOGICALA NDHI STORICALBA CKGROUND

The CHAi dentified evidencef romp rehistoryt o thepres entday ,at testingt o avar ietyo fhumanact ivityi nt he wider area (FAS2009, 19-36). The earliest evidence from the wider landscape is represented by palaeoenvironmental evidencef rom Ripon,whi chshowed t hatduri ngt heP alaeolithict heareaof theSwale- Urewas largelycharact erisedb yf loodplain. D uring theM esolithica rise in herbaceous plants was detected, suggesting heathland expansion associated typicallywi thwo odland clearance. T hisp rovidesreasonab lys ecureevi dencef ort hef irsthum anact ivityi nt hewi derl andscape. A lthoughno Neolithic orB ronzeAg es itesorf indsar ek nownwi thint hei mmediate hinterlandof t he site,t he areai ss ituated close toa prehistoricri tuall andscapewi thint heSw ale-Ureval ley.A mong Neolithic monuments known locally, the Scortoncurs us layto the no rtho ft hea rea,w hileth ehe ngec omplexo fT hornborougho ccupiesla ndso med istanceto the so uth.T umuli, andf indsof me talworkf romg ravels,i ndicate activityof B ronzeAg e date in the environs of the Swale.T he IronAg e isn ot represented int he wider area, but this reflects other regional patterns; there is evidence from the wider landscape thatI ron

Agese ttlementwo uldha veo ccurredo nth eg ravelte rraces withinth er iver valleys.E videncefo rth eR omanlan dscapeis providedb ythe ro uteo f Dere Street, which passes thesiteso med istanceto the so uthwest,an dthe im mediatea reaw ould havebeen i nfluenced by settlementf ocussedat t he townof Cat terick.H istoricalan dar chaeologicals ourcesi ndicatet hat settlementc ontinued int he areai ntot he earlyme dievalpe riod;An glo-Scandinavians ettlementi nt he widera reama ybe suggestedb ythe S candinavianp lace-nameo fK irkby.

The settlementpat ternsan dl andu seof t he medievalper ioda remore evidenti nt he landscape;m anyo ft hevi llageswh ich existwi thint hewi derareahavet heirori gins in them edievalperi od,and aeri alpho tographsal lowext ensiveareas ofri dge and fu rrow to b e id entified. A num ber of de serted m edieval vi llages are known whi ch, wi th evi dence f or cas tles and ecclesiastical fo undations, al low t he m edieval l andscape of t he area t o be reconst ructed. T he m edieval church, and contemporaryp recursorto K irkbyF leethamH all would havef ormed the focalp ointfo rth ese ttlemento fK irkby,w hichis knownt ohaveb eend eserted duri ngt hep ost-medievalpe riod.T he lack offur therevidence f orr idgeand f urrowf romt he proposede xtractions itema ybe t her esultof t hemo redo minantc ropmarksof pa laeochannelsf romt hes ite,a lthoughi ts eems more likelyt hatt hiss uggestst hatt hisa reaw asma rginal,w aterlogged land.

Duringt hep ost-medieval period, the rural character of the landscape continued, and them ainl andscapechangespert inent tothe p roposede xtractionsite wouldh aveb eenth ec reationo fth ed esignedlan dscapesu rroundingK irkbyF leethamH all by John Aislabie in the 18th century. Aislabie used the natural terrace tot he south of the site as a vantage pointf orv iews acrosst he area tot he river.T he draining of the land wouldh ave made more land available for agriculture. Withint he wider landscape,f urtheri nvestmenti nt heest ates of Kiplin, and Killerby sawt hecreat ionof gardens andpa rks.I nt he1 9thand 20thc enturies,e lementsof t hese designed landscapesf elli ntodi suse,a ndat K irkbyFl eetham,t hef ocust urned tor estoration oft he church.T he developmentof f lood defenceswo uld havese cured thel andt o thes outhof t he Swalef ora griculture; the changingf ieldbou ndaries,an ddev elopmentof l argeropen f ieldsca nbet racedon ca rtographics ourcesf rom the mid-19thc enturyo nwards.

Fewkn ownsites of archaeological significance (relating directly tohu manse ttlementan da ctivity)w ereid entifiedw ithin thep roposedext ractions ite,other t hano nep ossibleareaof ridgeand f urrow,and t hel andscapef eaturesm arkedont he OrdnanceS urveye ditions of1 857a ndla ter. T hea reao fhigh esta rchaeologicalp otentialw ouldb etha tre gionc losestto KirkbyFlee thamH all, andw illb esub jectt oev aluationto asce rtainw hethert hecro pmarkso fp alaeochannelsi nfactm ask morere centac tivity.

1.4.1 Depositmo del

The P D ha s a lso b een info rmed b y d epositm odels d eriving f rom re search w ithin the b roader z one o f t he R iver S wale floodplain and two borehole surveysc ommissioned toe valuate the mineralc ontentof t he quarry,bu tw hicha lsopr ovide usefulinfo rmationo ft heli kelyd eptho falluv ialgr avelan di nterburdensw ithinit .

RiverS wale

The landscapes ettingof t he proposedex tractions itei sdom inated byt heR iverSwal e,an df luvialac tivitywi llha ve affected thewayt hatt hel andscapehas been exploiteda ndo ccupied.R esearchundert akent ot heno rthwestof theD SA,at C atterick, has al lowed a broad mo del f or a ctivity i n t he river va lley t o be propo sed (Taylor a nd M acklin 19 97). T he research incorporateda c ombinedp rogramme ofge omorphologicalm apping,gro undp enetratingrad ar,ge ochemicalanal ysis and radiocarbonda ting.

TaylorandM acklinco ncludedt hatduri ngt heearl yH olocene,t heR iverSwalef loodplainwasaggr ading,but thatduri ng thel ateH olocene, thef loodplaind evelopmentsawco nsiderablevari ation(19 97,32 6).A pe riodof aggradationi s thought toh ave terminated shortlya fter2330- 1960c alB P,w henv alleyf loori ncisionoc curred andbr aided/divided channelsf ormed.

Af urtherphas eof gravel deposition occurred, in the contextof an av ulsingan dm eanderings ingle-threadch annel,wh ich endedi nt he 15thc entury,wh en the channelswer ef oundt oha ve been sealedby f ine-graineds ediments. Af tert hisdat e, andpa rticularlyi nt he last120y ears,a ne ntrenched stable meanderingc hannels ystem formed.

These quence identified at Catterick can be applied broadly to the proposede xtractionsite.N umerousp alaeochannels,b oth wideand narr ow,canb eseenonaeri alpho tographsof thesi te,e xtendingfr omthecurrent ri vercha nnelto the footof the scarpsl opesug gestingt hatt hewh oleo ft hesi tefo rmedp arto ft hech annelo ft he river. The morerec entm eanderingco urse oft heri veri s evidenton ca rtographic s ource;t heco urse d epictedon O rdnance S urveyed itions fromt he1 9thcent ury onwards demonstratest he continuallych angingna tureof t hel andscape.

Researchundert akenwi thint heT ill-TweedV alleys,N orthumberlandhas identified a varietyof site-typess ubjectt odif ferent geomorphologicalp rocessesw ithinthe c ontexto ft her iver valley(W addingtona ndP assmore2 006,6).T houghsp ecific tot heT ill-TweedV alleys,t hegeo morphological landformcl assification can be applied tori verval leysm oregeneral lyand the pro posed ext raction s ite can b e i dentified as Type 2 b - pre- 19th-century H olocene all uvial t erraces and f loodplain surfaces.A lluvialact ivityat t hesi te willha ve erodedand reworked ,orb uried,archaeo logicalremains and eart hworksand artefacts can b e ant icipated wi thin t he p loughzone. As such t he si te wo uld be s usceptible t o t he range of eval uative techniquesn ormally usedd uringp re-determinatione valuations includingfie ldwalking,g eophysics,tr ial renching,d eposit modellingand envi ronmentalass essment. This range of techniques will be applied to the proposedext ractions ite,al though ina ca refullyt argetedmanne rduet ot he naturea ndl owar chaeologicalpot entialof t he site.

Palaeoenvironmentalev idence

Thenat ure of the landscape has been shownt o have considerable palaeoenvironmental potential. W orkundert akeni nt he widerl andscape,byt heSw ale-UreW ashlandsP roject,ha sp rovidede vidence fort hed evelopmentof thel andscapeduri ng the earlyan dl ateH olocene.

Aspar tof t hisr esearch,t hrees ampleswere t akenf romt hewi der area,at K illerby,K iplina ndG reatLan gton.T he samples fromK iplinw eren otan alysedas t heycomp risedonl ys tiffs iltsan dcl ays. Thep reliminarywor ka tK illerbyan dG reat Langtonproducedpol len profiles believedt obe of early and late Holocene date respectively, but weren ots ubjectt of urther analysis (DrJi mInnes pe rs.co mm.).

Recenti nvestigationsa tW ykeham Quarry, over 70kmt ot he north,h ave demonstrated the potentialr esearchdi videndsf rom investigationof s edimentswi thina q uarryco ntext. The mineraldepo sitswer eove rlainby 2- 3mof s edimentwh ich provided apa laeoenvironmentals equenceda tingf rom *c*.12,000BPt ot he Mesolithic(*NorthY orkshireHi storicEnv ironmentNe ws* February20 08).

Boreholes urvey

The deposits wi thin t he area of i nvestigation ha ve been the s ubjectof t wo l arge borehole s urveys. A t otal of f ifteen boreholeswer eu ndertakeni n1968 an daf urther,mo red etailed,b oreholes urveycons istingof 43b oreholeswer eu ndertaken in2 007.T hesu rveys providedu seful informationr egardingth ed epth ofu nderlyingb asalb oulderc layo rb edrock,t hed epth oft he overlyings andandgr aveldepo sitas wel las over burden depths(Minshall200 7).Adepo sitof s anda ndgr avelwas recorded at thicknesses of between 0.90m and8 .0m,t helatter no tablea sa d eepb asinc entredne arH omeF arm;ge nerally thicknessesof s andand gr avelb etween2 .5t o3.5m aremo ret ypicalacross thesi te.C lay interburdens,cl ay seams,and interleavedsa nda ndc layw ereno tedin frequentlya crossth esit einb oreholesd uring2 007,as w ell asa sing lere cordo fp eat. Overburden c overage averaged *c*.0.8m, al though area of gre ater overb urden d epths were r ecorded t owards the east ern boundaryo f the proposedext raction site (upt o 1.6m) with areas of localisedi ncreaseddep th close to the western(u pto 2.4m). G enerallyt heb oreholesre portedac leansan dan dgrav eld epositwit ho nlyo ccasionali nterruptions.

2.0 METHODOLOGY

2.1 FIELDWORKP ROCEDURE

The Stage1eva luationwi llbenon- invasive,cons istingof r econnaissancef ieldwalkingover al lr ecentlypl oughedar eas withint he areaof i nvestigation,depos itm odellingan dpal aeoenvironmentals amplingan dag eophysicala reas urveypi lot study.T he programmeof ev aluationha sbeen pre paredwi thr eferencet ot he *StandardandG uidancef orAr chaeological FieldEval uation*(I nstitutef orFi eldA rchaeologists 2008).

Priort oany f ieldworkbei ngun dertaken,an ar rayof s emi-permanents urveys tationswi llbes et out around the siteper imeter usingdif ferentialG PStof acilitatearchaeo logicalrecord ing.

2.1.1 Fieldwalking

Giventhe siz eo f thep roposede xtractionsite,a ndthe ge nerall acko fsur facefi ndso bservedd uringthe w alkoversu rvey, iti sproposedt hatt he reconnaissancepha seof s urfacecol lectionbeun dertakenon abr oadsc ale,us ingt ransectsl ocatedat intervals of20 m(Fi gure3). Shouldthi sp rove effective,a seco nd,hi gherr esolutionpro grammeo fi ntensivef ieldwalking wouldbe c arried outi nSt age 2.

Thiss tructuredp rogramme ofre connaissance fieldwalking willb e undertakena longn orth-south transects,at2 0mi ntervals, overal lf ields withint he area ofi nvestigation. T he proposede xtractions itewi llbedi videdi ntot ransectsus ingaT otal Station T heodolite b ased o n t he s ite s urvey sta tions a nd m arked o ut alo ng the ir c ourse us ing ra nging p oles. A ll archaeologicalf indswi llber ecoveredwi thina 2m cor ridorce ntredon each transect.Eachf indwi llbebagg edan df lagged att hel ocationi twasi dentified.Fi nds will then be locatedus ingaT otalStat ionT heodoliteand al locatedaf inds number. Distributionmapsof f indsan dapp ropriatec ategoriesof f indswi llbepre paredus ingAcces san dA utoCADs oftware.

FindsRec overy andTr eatment
Anyf indse ncounteredd uringfi eldwalkingw illb eha nd-collecteda ndp rocessed. F indstre atmentwillb eun dertakenin accordance wi th gui delines s et do wn i n *First Aid for Finds* (W atkinson and N eal 1998) . Ar chive preparation w illbe undertakeni nacco rdancewi th *Guidelines for the preparationof excavationar chivesf or long-terms torage* (Walker19 90).

2.1.2 Depositm odellingand pa laeoenvironmentals ampling

At otalof threeno rth-southtr ansects(B oreholeT ransect1 to3), t otalling *c*.95b oreholes,ha veb eend esignedus ingd eposit modellingi nformationf romt he2 007bo reholes urvey(seeF igure3).B oreholeswi llbe unde rtakenat 25 mi ntervals using atra ckedsm all-corew indowsa mplingrig (102mmd iameter reducingw ith depth)to the d eptho fb oulderc layw iththe a im ofde tectingpa laeochannelss houldt hey bep resent.O pen-coreswi llbe ret rieved,a ndap propriatereco rding ands ediment samplingunde rtaken.

Writtenand drawnreco rdswi llbe m adeo fbo reholesunde rtakenduri ngtheco urse oftheevaluat ion.A rchaeologicaland palaeoenvironmentald epositsand f eatureswil lb ere cordedusi ngastand ardsy stemo fco ntextf orms.A se rieso fi ndexes, capableo fi nterrogation,w illb e maintainedfo rsit e records. These recordsw illb eu sedt oco mpiled epositp rofilesa cross thesi tetranse cts.

Borehole Transect1i ss ituatedt oas sesst heg eomorphologicalan dpa laeoenvironmentalma ke-upof t he westernz one of the sitei npr oximityt oa200 7bo reholewhi chr ecorded ase amo fcl ayat 2 .8mb elow groundl evelan dt raversingan ar ea ofin creasedove rburden. B oreholeT ransect2i s designedt ocharact eriset hed eposits withint heeast ernzone and w ill

traversethe deep basin of sand and gravel close to Home Farm. Thisa lsotra nsectsthe a reac loseto K irkbyF leethamH all and t herefore an ar ea co nsidered t o be of higher archaeologi cal po tential. A n i ntercalated cl ay laminated wi th s and measuring0.2m t hickwasenco unteredat 2.9m be lowground l eveland t heb oreholel ogs uggests differentialgeo morphology inth isa rea.B oreholeT ransect3 isd esignedto e valuatethe na ture of deep overburden at thee asternm argino ft hesitein thevic inityo fa2 007b oreholew hichre cordeda ye llowsa ndlam inatedw ithb rownc lay.

EnvironmentalEval uationSt rategy

The principal a im of t he environmental e valuation s trategy w illbe t o a ssess t he value, r ange, qu alityan d pot ential of palaeoenvironmentalre mainsw ithinthe sediments encountered. Itisa nticipatedtha tt hep roposedb oreholetra nsectsw ill encounterh orizonsof c laya nds and,a ndp ossiblype atw ithint he gravelde posit. As amplings trategyw illt herefore be undertakento c haracteriseth en atureo fd eposits,a ndto a ssess thep lantm acrofossils andin sectr emainsp reservedw ithin them.

Theenvi ronmentaleval uations trategy willbe i mplementedin a ccordancewi th *EnvironmentalAr chaeology:Agui de tot he theory andpr acticeof m ethodsf roms amplingandr ecovery topos t-excavation* (English Heritage,C entref orArchaeo logy Guidelines2002) a nd *EnvironmentalAr chaeology andAr chaeologicalEval uations: Rec ommendationsc oncerningt he environmental ar chaeology component of ar chaeological e valuations i n Engl and* (Association of E nvironmental Archaeology19 95).

Bulks amplesf ort her ecoveryo fp alaeoenvironmentalremai nswi llb ecol lected fromt heop encore san dwi llbes ubmitted fors pecialistass essment. Assessmentwi llai m to identifyt hepr esenceo rab senceo fp reservedp lantmacr ofossilsan di nsect remains aswel lasm aterialsui table forrel iable radiocarbond eterminations. Once materials uitablef orr adiocarbonda ting hasbeeni dentifiedand ass essedapro grammeo fda tingde signedt obro adlycharact eriset hesequenc eo fde positiona tt he sitewi llbeun dertaken.I na ddition,t he presencewi thint he depositsof pol lenan d diatomsand theirsu itabilityf orf urther analysis and recove ry wi ll al so b e ass essed ag ainst i nformation gai ned regardi ng t he geo morphological co ntext of the deposits.

Allwe t-preservedartefactswil lb etrea tedi na ccordancewit h *FirstA idf orF inds* (W atkinsona ndN eal1 998), *Guidelines for thecar eof wa terloggeda rchaeologicall eather*(1 995)o r *Waterlogged wood,gui delinesont he recording,s ampling, conservationandc urationof s tructuralwood* (1990).

2.1.3 Geophysicalpi lots urvey

A pilotm agnetometera reasurve yi sp roposed, inli newit hE nglishH eritage's *Geophysicalsu rveyin A rchaeologicalF ield Evaluation*(Section10 - 'extremely large areas')(2008). A total of seven 30m-wide magnetometert ransectsa re proposed, orientedno rth-south,thr eeo fwh ichw illc orrespondw ith theb orehole/auger transectso utlineda bove(se eF igure3).T his wouldenc ompassa t otalar ea of15hect ares,r epresentingove r10% of t he proposedex tractions ite. T he magnetometer surveywi llbeun dertakenus ingaf luxgateg radiometeran dby t akingre adingsat 0. 25m intervalsont raverses1m apa rton as etgr id30 mwi de.

This approach would allow the effectiveness of the survey method tob ea ssessedi nt hisp articularg eologicalc ontext.By orientatingt he traversesnor th-south,an umber ofmapp edpal aeochannels willbecr ossed,an dt heirl ayoutan dext entca n bec onfirmedinre lationto the m appedc ropmarks. A reaso far chaeological potential wouldb esa mpleda sp arto ft his process,sp ecifically thea reato the e asto fK irkbyF leethamH all,a ndthe re giono f' KirkbyG ate'.

2.2 REPORTINGPRO CEDURE

2.2.1 Reporting

Onco mpletionof theStage1 fi eldwork,a rep ortw illb e prepared,incl udingd istributionm apso fa rtefactsreco veredduri ng fieldwalkingsu pportedb ysp ecialist reportsa sa ppropriate.T her eport willa lsoin cludew rittend escriptionso fsed iments encounteredwi thint he boreholet ransectss upportedby t he resultsof pal aeoenvironmentalas sessment and a profile ormod el ofde posits acrosst hesi te.T heres ults oft hegeo physicalpil ots tudywi llal sob ep resentedwi tha n umbero fs upporting appendices. T he report wi ll us e t he results of t he Stage 1 ev aluation t o desi gn t he wo rks for S tage 2; t his proposed programme o f f urther eval uation wi ll f orm p art of the repo rt. St age 2 i s anticipated t o i nclude t argeted i ntensive fieldwalking, palaeoenvironmental sampling, geophysical survey and trial trenching, designedcaref ullyand t argetedont he resultsof St age 1.I na reasof n egative resultsf romSt age 1s ome targeted trialt renchingw illbe e mployed.

2.2.2 Archive

Archivepr eparation
Onco mpletionof thef ieldi nvestigation(St age1 and 2)al lr ecordsand m aterialw illb e indexed,o rdered,q uantifiedand checkedf orc onsistency. Context, finds, sample and other paper-based records will be transferred toani ntegratedcomp uter baseds ystem. Thedr awnr ecordw illbe di gitisedi na na ppropriatef ormatt hatw illpe rmitt heou tputof s tandardA utoCAD typeD XFf iles.

Thearchi valrecord wi lli ncludeal lm ateriali ncludingc orrespondence,wri tten,d rawna ndc omputerisedreco rds.A s part of t he p reparation f or t he p ost-excavation pro gramme, t he art efactual, eco factual and s amples wi ll be qua ntified and described.

The digitala rchive willbe pr ovided ina n on-magnetic storage mediumu singg eneric file formatsi ncludingPD F.

Preliminaryc onservation and stabilisation of objectsw illbe u ndertakenpr iort oa na ssessmentof l ong-termc onservation andst oragen eeds.

Archivede position
A p apera nd e lectronic(P DF) v ersion o f t he fi nal ev aluation re portw illb e su bmitted t o the N orth Y orkshire H istoric Environment(N YHER) andto th eC onservationO fficer,H ambletonD istrictC ouncil.A d igitalco pyw illb esu bmittedto DrAnd yH ammon,E nglish HeritageR egionalScienceA dvisor.

Thep aper,phys icaland digi talarchi verel atingt ot heeval uationwi llbe de positedwi thanap propriatem useum,wi tha furtherc opyo ft here port.

3.0 PUBLICATIONA NDD ISSEMINATION

Anotewil lb e prepared ontheresul tso ftheevaluat ionforp ublicationinl ocaljo urnala sap propriate.If t heres ults oft he workm eritit ,afu ll paperw illb ep roposedfo rp ublicationinthe re levantjo urnal.

An *OnlineA ccesstoIn dexo fA rchaeologicalIn vestigations* (OASIS)fo rmw illb esu bmittedfo rth ep roject.

4.0 PROJECTSPECI ALISTS

AllanH allan dH arryK enward(E nvironmentalC onsultants)
KrishS eetah(Z ooarchaeology)
JaneY ounga ndIa nR owlandson(P ottery)
KarenB arker(Conservation)
CecilySp all(S mallF inds)
HughW illmott(G lass)

5.0 MONITORINGA RRANGEMENTS

The work will be monitored byt he HeritageSect ion,N orthYo rkshireCo untyCo uncil,wh owi llbenot ifiedpri ort oeach stageo fwo rk.

6.0 HEALTH& S AFETY

FASwi lloperat ewi thdue r egard forH ealthandSaf etyr egulations,an dwi llen suret hatal lr elevantr equirementsar emet with regardb othto sitep ersonnelan dto m emberso ft hep ublic.A R iskA ssessmentwillb ep repared,i na ccordancew ith theH ealthand Safet yat W orkRe gulations priort ot hest artof t hesi tei nvestigation.

7.0 INSURANCE

FASca rriesap propriateleve lso fP ublicL iability,E mployersLiab ilityand P rofessionalInd emnityi nsurances.

References

Association for Environmental Archaeology. 1995. 'Environmental Archaeology and Archaeological Evaluations, Recommendations Concerning the Environmental Archaeology Component of Archaeological Evaluations in England', *Working Papers of the Association for Environmental Archaeology, Number 2* (http://www.envarch.net/publications/papers/evaluations.html)

English Heritage. 1995. *Guidelines for the Care of Waterlogged Archaeological Leather* (EHS scientific and Technical Guidelines No4)

English Heritage. 1996. *Waterlogged Wood: Guidelines on the Recording, Sampling, Conservation and Curation of Archaeological Wood*

English Heritage. 2002. *Environmental Archaeology: A Guide to the Theory and Practice of Methods, from Sampling and Recovery to Post-Excavation* (Centre for Archaeology Guidelines)

English Heritage. 2008. *Geophysical survey in Archaeological Field Evaluation*

Institute for Field Archaeologists. 2008. *Standard and Guidance for Archaeological Field Evaluation*

FAS. 2009. *Cultural Heritage Assessment, Home Farm, Kirkby Fleetham* (unpublished technical report)

Minshall, C. 2007. 'Kirkby Fleetham: Geological report on the sand and gravel deposit following the 2007 Drilling programme' (unpublished report)

Taylor, M.P. and Macklin. M. 1997. 'Holocene alluvial sedimentation and valley floor development: the River Swale, Catterick, North Yorkshire, UK', *Proceedings of the Yorkshire Geological Society* Vol. 51, Part 4: 317-327

Waddington, C. and Passmore, D. 2006. *Planning for the future, Guidance for managing the archaeological and palaeoenvironmental resource in the Till-Tweed Valleys, Northumberland, UK* (Archaeological Research Services Ltd and English Heritage)

Walker, K. 1990. *Guidelines for the preparation of excavation archives for long-term storage*

Watkinson, D.E. and Neal, V. 1998. *First Aid for Finds* (3rd Edition), (RESCUE and the Archaeological Section of UK IC)

APPENDIXB GEOPHYSICALPI LOTS URVEYREPORT

T.Samuel H arrison,W estY orkshireArc haeologySer vices

ARCHAEOLOGICAL
SERVICES
WYAS

□ □□□□

[illegible]

[illegible]

[illegible]; [illegible]
[illegible]
& [illegible]) [illegible]

[illegible] [illegible]
[illegible] % [illegible] %) [illegible]
3 [illegible] % [illegible]
[illegible]
[illegible]
[illegible]
[illegible]

[illegible]

[illegible]
[illegible] %@ [illegible]) [illegible]
[illegible] %@ [illegible]) [illegible]
[illegible] %@, [illegible] 3 [illegible]

, [illegible]

- [illegible]

[illegible] [illegible] 7 - [illegible] 8
[illegible] [illegible] % [illegible] 7 A- [illegible] 8
, 6 [illegible] % [illegible] % E2 [illegible] F 2 [illegible] 7 [illegible] 8
/ G [illegible]) [illegible] % [illegible] % E2 [illegible] F 2 [illegible] 7 [illegible] 8
- ; [illegible] % E2 [illegible] F 2 [illegible] 7 [illegible] 8
5 6 [illegible] % [illegible] % E2 [illegible] F 2 [illegible]) [illegible] 7 [illegible] 8
A G [illegible]) [illegible] % [illegible] % E2 F 2 [illegible]) [illegible] 7 [illegible] 8
(; [illegible] % E2 F 2 [illegible]) [illegible] 7 [illegible] 8
[illegible] 6 [illegible] % [illegible] % E2 , F 2 / [illegible] 7 [illegible] 8
[illegible] G [illegible]) [illegible] % [illegible] % E2 , F 2 / [illegible] 7 [illegible] 8
[illegible] ; [illegible] % E2 , F 2 / [illegible] 7 [illegible] 8
[illegible] 6 [illegible] % [illegible] % E2 , F 2 / [illegible]) [illegible] 7 [illegible] 8
, G [illegible]) [illegible] % [illegible] % E2 , F 2 / [illegible]) [illegible] 7 [illegible] 8
/ ; [illegible] % E2 , F 2 / [illegible]) [illegible] 7 [illegible] 8
- 6 [illegible] % [illegible] % E2 , [illegible]) [illegible] 7 [illegible] 8
5 G [illegible]) [illegible] % [illegible] % E2 , [illegible]) [illegible] 7 [illegible] 8
A ; [illegible] % E2 , [illegible]) [illegible] 7 [illegible] 8
(6 [illegible] % [illegible] % E2 - [illegible] 7 [illegible] 8
[illegible] G [illegible]) [illegible] % [illegible] % E2 - [illegible] 7 [illegible] 8
[illegible] ; [illegible] % [illegible] 2 - [illegible] 7 [illegible] 8
[illegible] 6 [illegible] % [illegible] % E2 - [illegible] 7 [illegible] 8
[illegible] G [illegible]) [illegible] % [illegible] % E2 - [illegible] 7 [illegible] 8
, ; [illegible] % [illegible] 2 - [illegible] 7 [illegible] 8
/ 6 [illegible] % [illegible] % E2 - [illegible]) [illegible] 7 [illegible] 8
- G [illegible]) [illegible] % [illegible] % E2 - [illegible]) [illegible] 7 [illegible] 8
5 ; [illegible] % E2 - [illegible]) [illegible] 7 [illegible] 8
A 6 [illegible] % [illegible] % E2 5 [illegible] 7 [illegible] 8
(G [illegible]) [illegible] % [illegible] % E2 5 [illegible] 7 [illegible] 8
[illegible] ; [illegible] % E2 5 [illegible] 7 [illegible] 8
, 6 [illegible] % [illegible] % E2 5 [illegible] 7 [illegible] 8
, G [illegible]) [illegible] % [illegible] % E2 5 [illegible] 7 [illegible] 8
, ; [illegible] % E2 5 [illegible] 7 [illegible] 8
, , 6 [illegible] % [illegible] % E2 5 [illegible]) [illegible] 7 [illegible] 8
, / G [illegible]) [illegible] % [illegible] % E2 5 [illegible]) [illegible] 7 [illegible] 8
, - ; [illegible] % E2 5 [illegible]) [illegible] 7 [illegible] 8
, 5 6 [illegible] % [illegible] % E2 A7 [illegible] 8
, A G [illegible]) [illegible] % [illegible] % E2 A7 [illegible] 8
, (; [illegible] % E2 A7 [illegible] 8

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

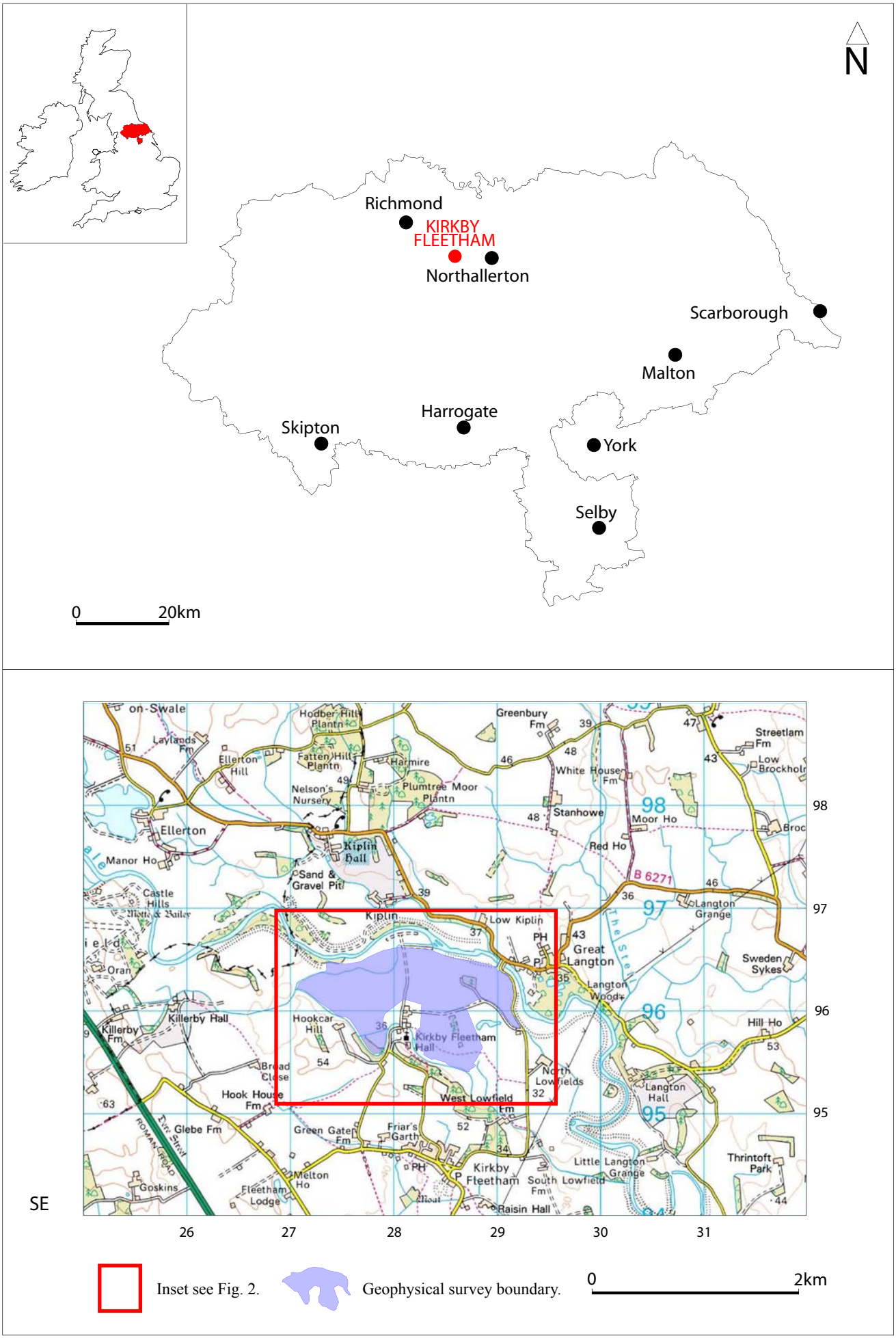


Fig. 1. Site location

SITE BOUNDARY
ASWYAS REFERENCE OBJECT
UNSUITABLE FOR SURVEY
TRANSECT BOUNDARY

1857 RIVER DEFENCE
1857 FIELD BOUNDARY
1857 PLANTATION
1857 TRACK

N

T1, north see Figs. 3-5
T1, south see Figs. 6-8
T2, north see Figs. 3-5
T2, south see Figs. 6-8
T3, north see Figs. 9-11
T3, centre see Figs. 12-14
T3, south see Figs. 15-17
T4, north see Figs. 9-11
T4, south see Figs. 12-14
T5, north see Figs. 18-20
T5, centre see Figs. 21-23
T5, south see Figs. 24-26
T6, centre see Figs. 27-29
T6, centre see Figs. 30-32
T6, south see Figs. 33-35
T7 see Figs. 36-38

RIVER SWALE
RIVER SWALE
HOME FARM
HOOK CAR HILL
KIRKBY FLEETHAM HALL
GREAT LANGTON
Terrace Drive
to North Lowfields
to West Lowfield Farm

A B C D E F G H J K L M N O P Q R S T U V

4968 00
4963 00
4958 00
4953 00
4269 00
4274 00
4279 00
4284 00
4289 00
4294 00

Archaeological Services W Y A S
PO Box 30, Nepshaw Lane South, Morley, LS27 0UG
Tel: 0113 383 7500 Fax:0113 383 7501

0 200m

Fig. 2. Site location showing greyscale magnetometer data (1:7500 @ A3)

N

4964 00

4962 00

2.0

-1.0

nT

4274 00

4276 00

0 50m

Archaeological Services W Y A S
PO Box 30, Nepshaw Lane South, Morley, LS27 0UG
Tel: 0113 383 7500 Fax:0113 383 7501

Fig. 3. Processed greyscale magnetometer data; T1, north & T2, north (1:1000 @ A3)

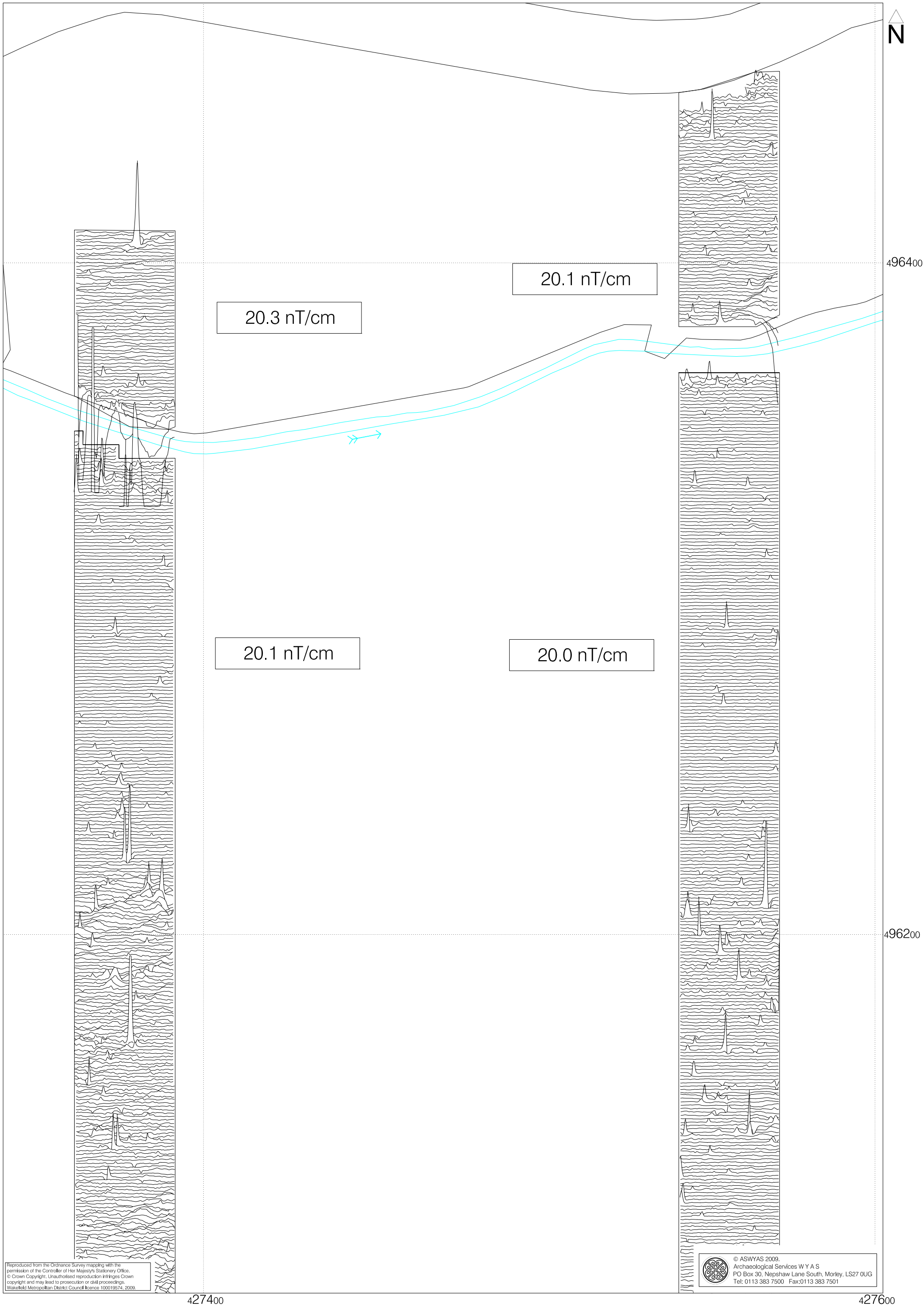


Fig. 4. XY trace plot of magnetometer data; T1, north & T2, north (1:1000 @ A3)

TYPE OF ANOMALY		INTERPRETATION
•	DIPOLAR ISOLATED	FERROUS MATERIAL
	MAGNETIC DISTURBANCE	FERROUS MATERIAL
	LINEAR TREND	AGRICULTURAL
	MAGNETIC ENHANCEMENT	GEOLOGY?
	MAGNETIC ENHANCEMENT	ARCHAEOLOGY?/GEOLOGY?

N

496400

496200

427400

427600

E

A

0 50m

© ASWYAS 2009,
Archaeological Services W Y A S
PO Box 30, Nepshaw Lane South, Morley, LS27 0UG
Tel: 0113 383 7500 Fax:0113 383 7501

Fig. 5. Interpretation of magnetometer data; T1, north & T2, north (1:1000 @ A3)

N

4960 00

2.0

-1.0

nT

Archaeological Services W Y A S
PO Box 30, Nepshaw Lane South, Morley, LS27 0UG
Tel: 0113 383 7500 Fax:0113 383 7501

4274 00

4276 00

0 50m

Fig. 6. Processed greyscale magnetometer data; T1, south & T2, south (1:1000 @ A3)

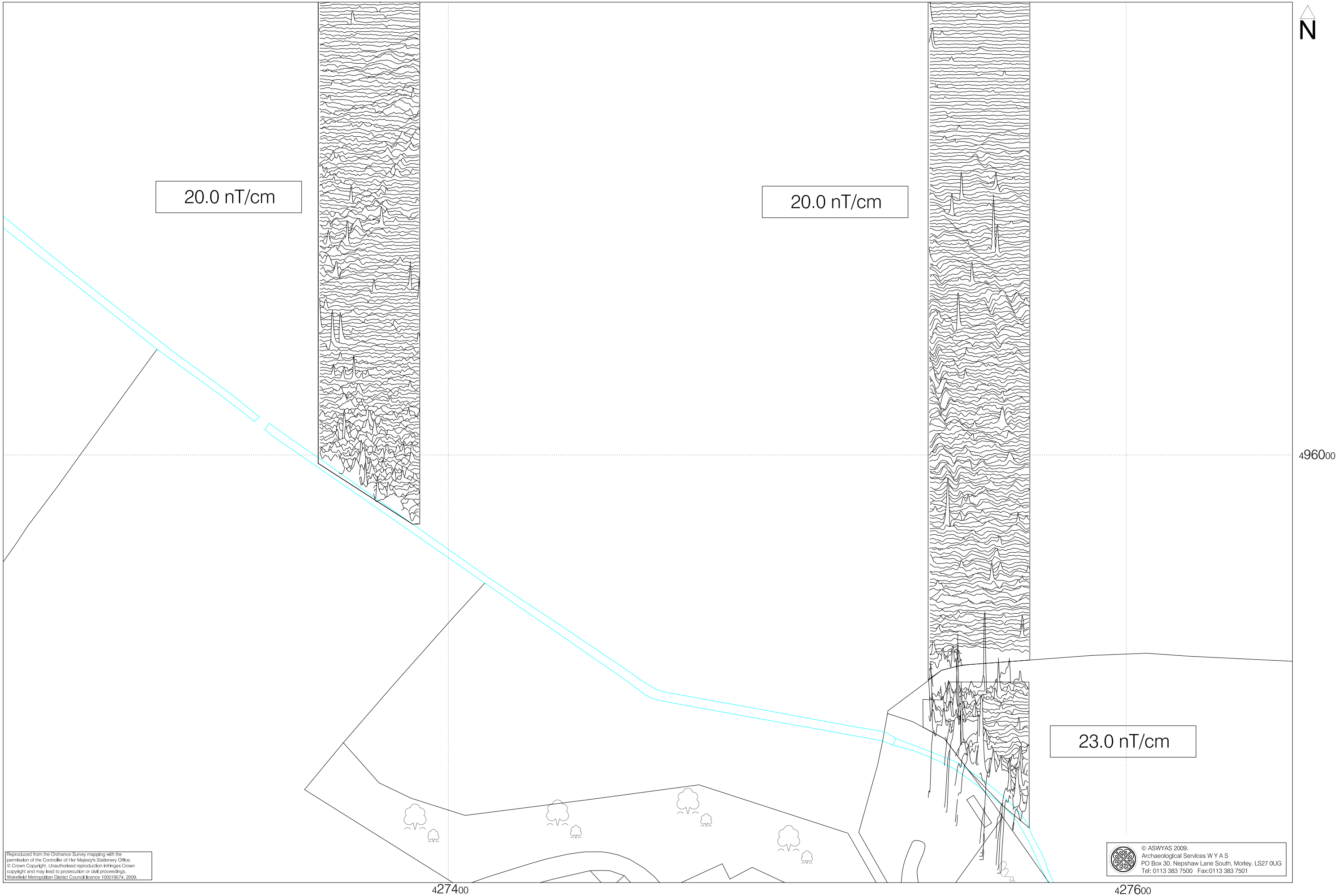
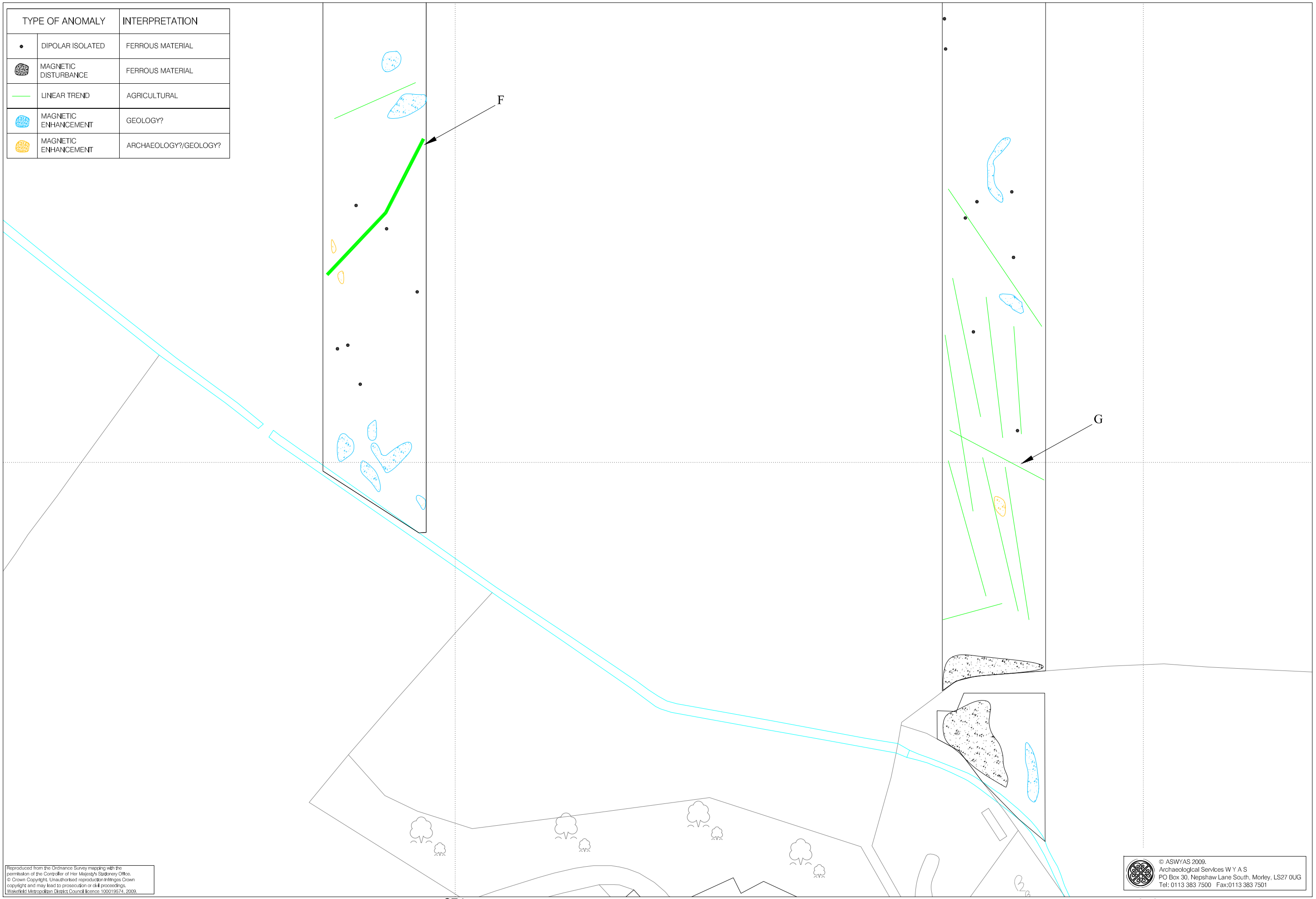


Fig. 7. XY trace plot of magnetometer data; T1, south & T2, south (1:1000 @ A3)

TYPE OF ANOMALY		INTERPRETATION
•	DIPOLAR ISOLATED	FERROUS MATERIAL
	MAGNETIC DISTURBANCE	FERROUS MATERIAL
	LINEAR TREND	AGRICULTURAL
	MAGNETIC ENHANCEMENT	GEOLOGY?
	MAGNETIC ENHANCEMENT	ARCHAEOLOGY?/GEOLOGY?



Archaeological Services W Y A S
PO Box 30, Nepshaw Lane South, Morley, LS27 0UG
Tel: 0113 383 7500 Fax:0113 383 7501

Fig. 8. Interpretation of magnetometer data; T1, south & T2, south (1:1000 @ A3)

N

4966 00

4964 00

4278 00

4280 00

2.0

-1.0

nT

0 50m

Archaeological Services W Y A S
PO Box 30, Nepshaw Lane South, Morley, LS27 0UG
Tel: 0113 383 7500 Fax:0113 383 7501

Fig. 9. Processed greyscale magnetometer data; T3, north & T4, north (1:1000 @ A3)

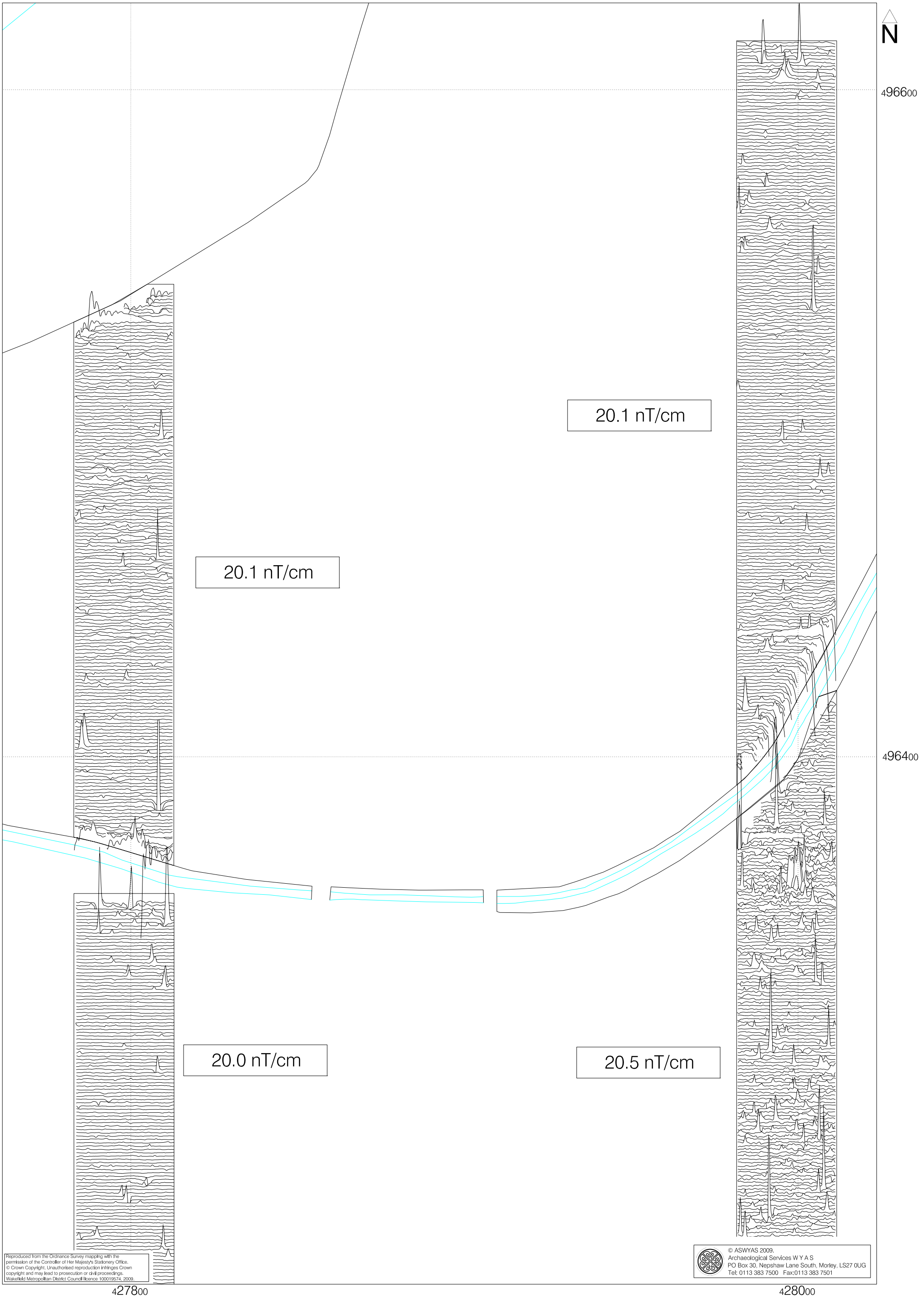


Fig. 10. XY trace plot of magnetometer data; T3, north & T4, north (1:1000 @ A3)

TYPE OF ANOMALY		INTERPRETATION
•	DIPOLAR ISOLATED	FERROUS MATERIAL
	MAGNETIC DISTURBANCE	FERROUS MATERIAL
	MAGNETIC ENHANCEMENT	GEOLOGY?
	LINEAR TREND	AGRICULTURAL
	MAGNETIC ENHANCEMENT	MODERN
	MAGNETIC ENHANCEMENT	ARCHAEOLOGY?/GEOLOGY?

N

496600

496400

J1

Archaeological Services W Y A S
PO Box 30, Nepshaw Lane South, Morley, LS27 0UG
Tel: 0113 383 7500 Fax:0113 383 7501

427800

428000

0 50m

Fig. 11. Interpretation of magnetometer data; T3, north & T4, north (1:1000 @ A3)

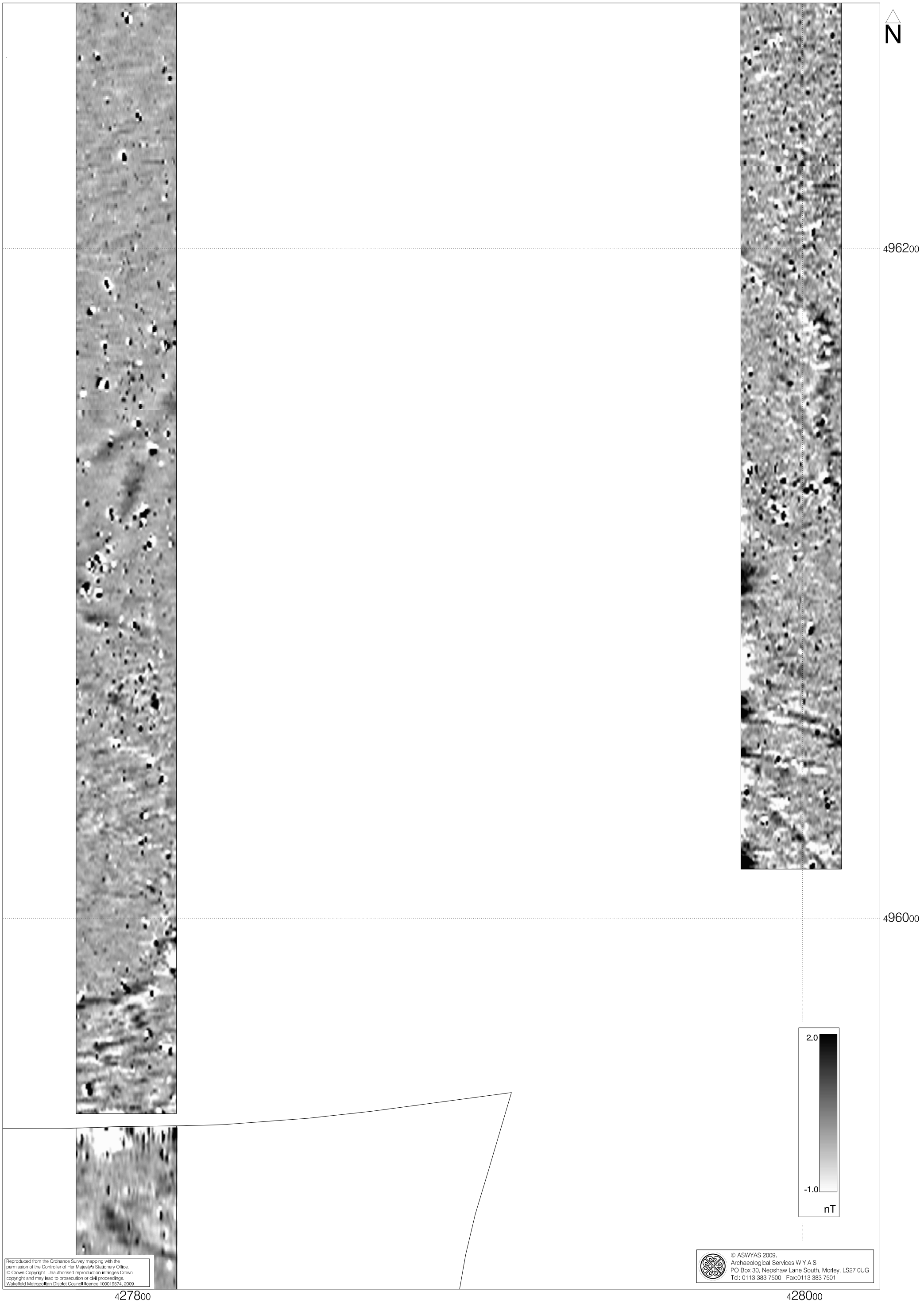


Fig. 12. Processed greyscale magnetometer data; T3, centre & T4, south (1:1000 @ A3)

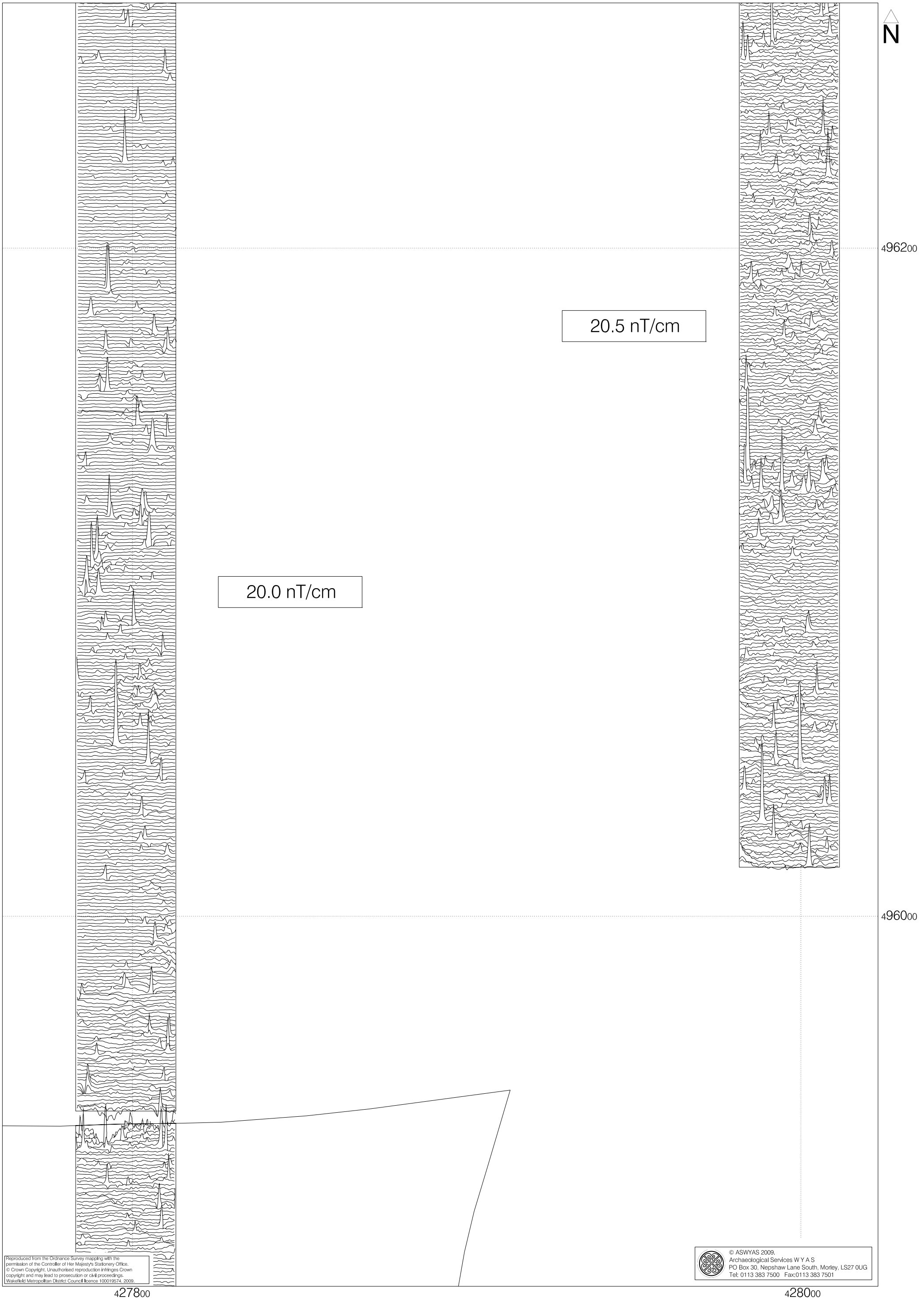


Fig. 13. XY trace plot of magnetometer data; T3, centre & T4, south (1:1000 @ A3)

N

4962 00

H

K

4960 00

4278 00

4280 00

TYPE OF ANOMALY		INTERPRETATION
•	DIPOLAR ISOLATED	FERROUS MATERIAL
	MAGNETIC DISTURBANCE	FERROUS MATERIAL
	MAGNETIC ENHANCEMENT	GEOLOGY?
	LINEAR TREND	AGRICULTURAL
	MAGNETIC ENHANCEMENT	ARCHAEOLOGY?/GEOLOGY?

Archaeological Services W Y A S
PO Box 30, Nepshaw Lane South, Morley, LS27 0UG
Tel: 0113 383 7500 Fax:0113 383 7501

0 50m

Fig. 14. Interpretation of magnetometer data; T3, centre & T4, south (1:1000 @ A3)

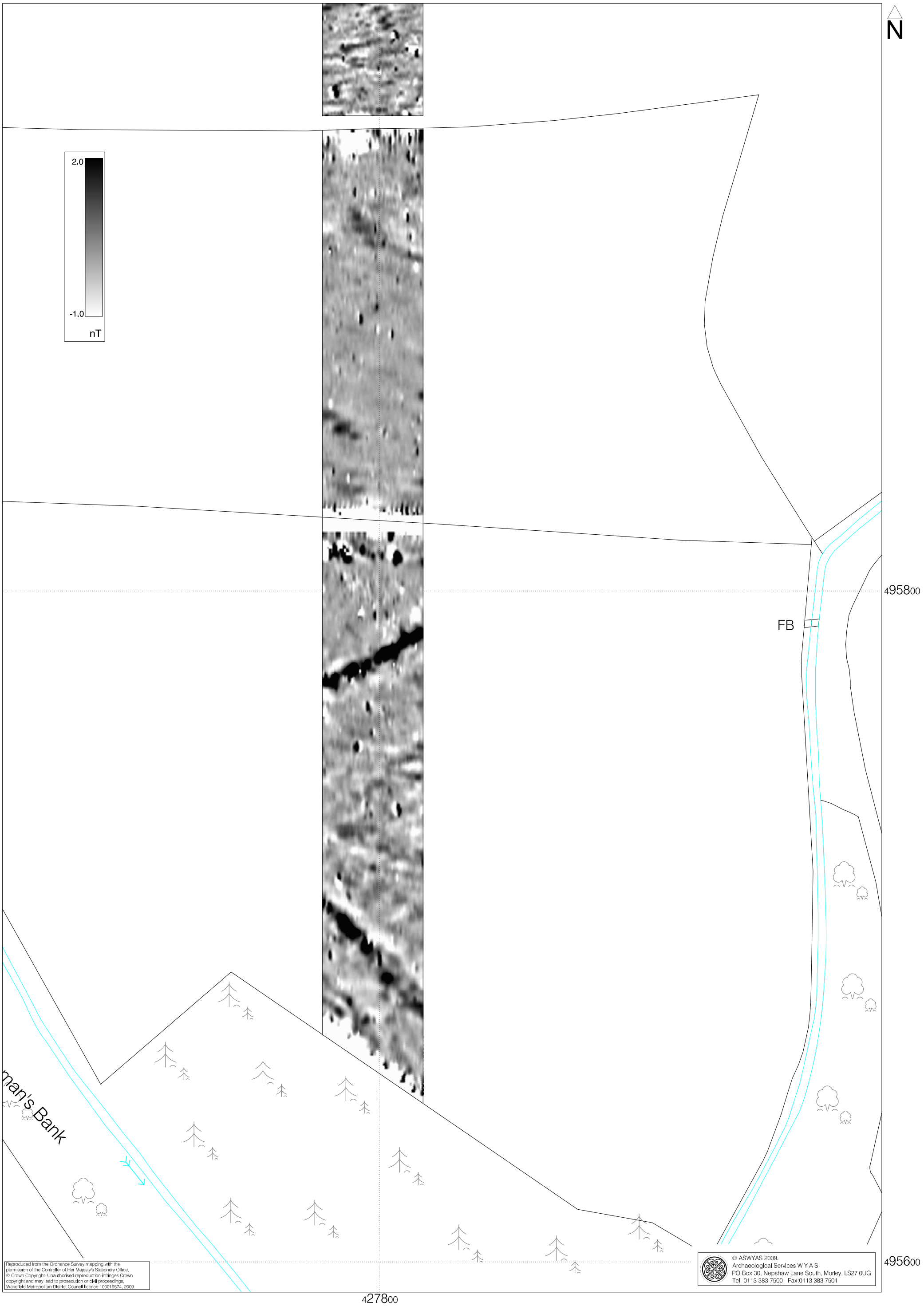


Fig. 15. Processed greyscale magnetometer data; T3, south (1:1000 @ A3)

Fig. 16. XY trace plot of magnetometer data; T3, south (1:1000 @ A3)

TYPE OF ANOMALY		INTERPRETATION
•	DIPOLAR ISOLATED	FERROUS MATERIAL
	MAGNETIC DISTURBANCE	FERROUS MATERIAL
	LINEAR TREND	AGRICULTURAL
	MAGNETIC ENHANCEMENT	GEOLOGY?
	MAGNETIC ENHANCEMENT	ARCHAEOLOGY?/GEOLOGY?

N

4958 00

FB

I

man's Bank

4956 00

4278 00

0 50m

Archaeological Services W Y A S
PO Box 30, Nepshaw Lane South, Morley, LS27 0UG
Tel: 0113 383 7500 Fax:0113 383 7501

Fig. 17. Interpretation of magnetometer data; T3, south (1:1000 @ A3)

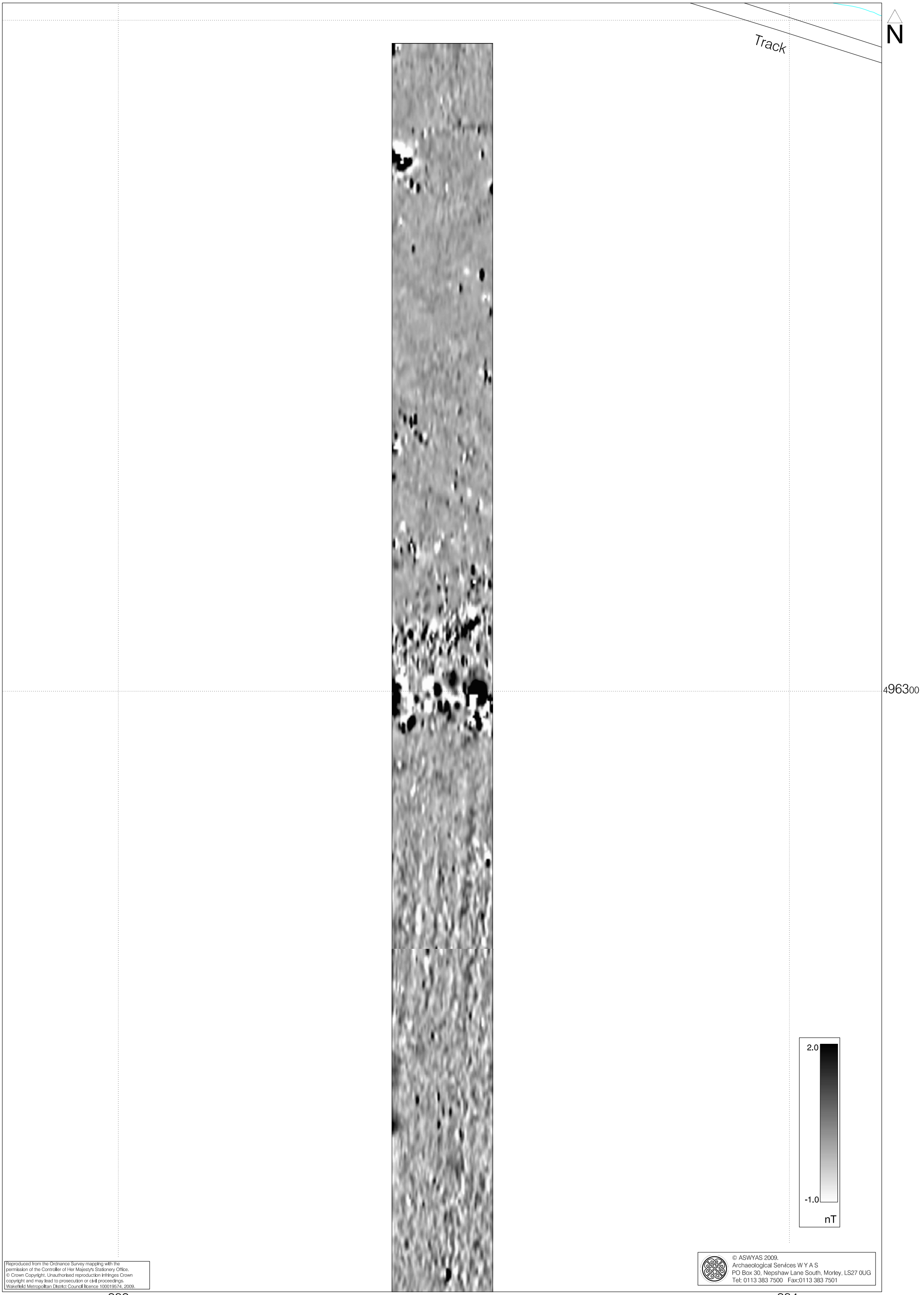


Fig. 18. Processed greyscale magnetometer data; T5, north (1:1000 @ A3)

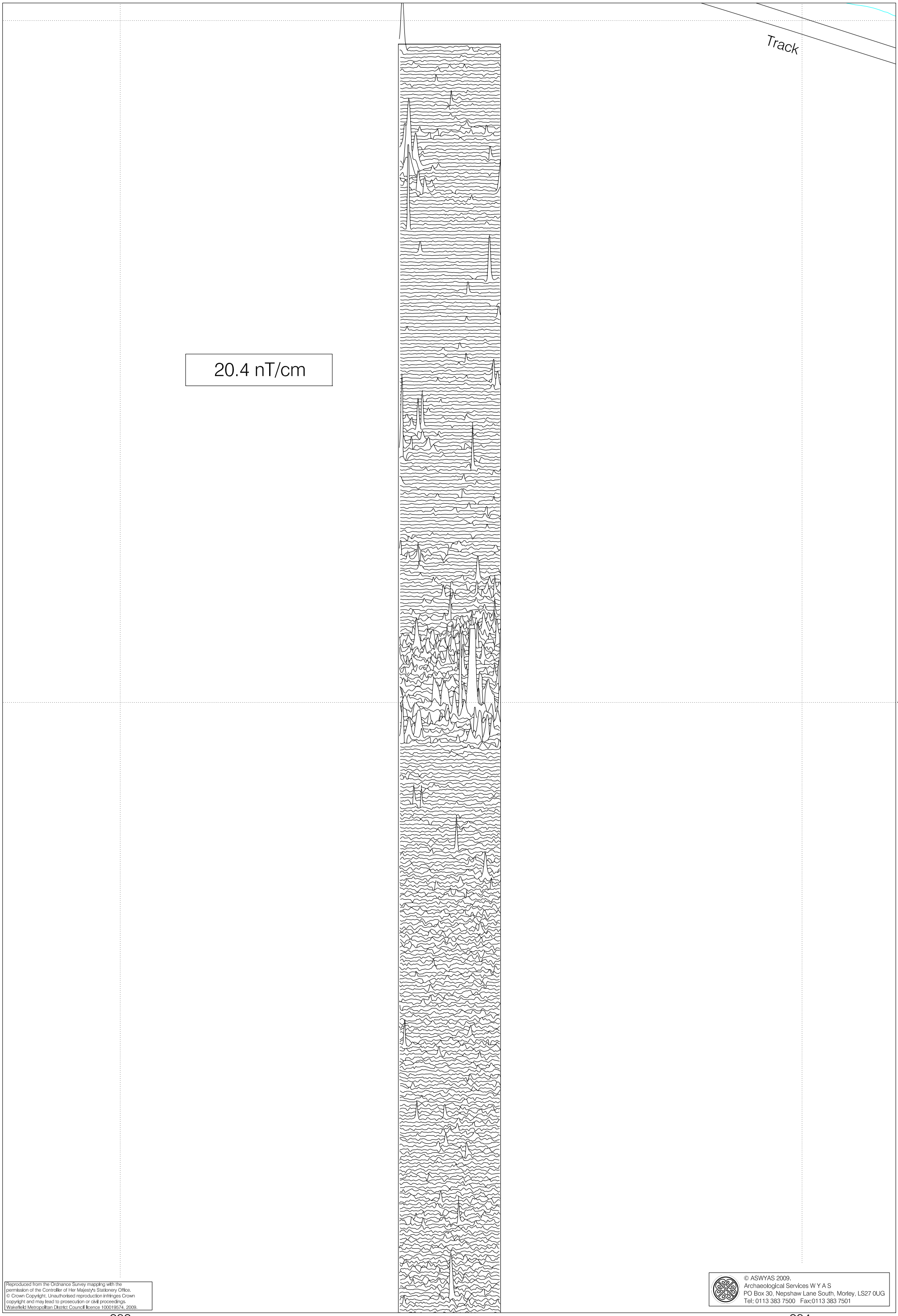


Fig. 19. XY trace plot of magnetometer data; T5, north (1:1000 @ A3)

TYPE OF ANOMALY		INTERPRETATION
•	DIPOLAR ISOLATED	FERROUS MATERIAL
——	LINEAR TREND	AGRICULTURAL
	MAGNETIC ENHANCEMENT	MODERN?

Track

N

L

4963 00

4282 00

4284 00

0 50m

Archaeological Services W Y A S
PO Box 30, Nepshaw Lane South, Morley, LS27 0UG
Tel: 0113 383 7500 Fax:0113 383 7501

Fig. 20. Interpretation of magnetometer data; T5, north (1:1000 @ A3)

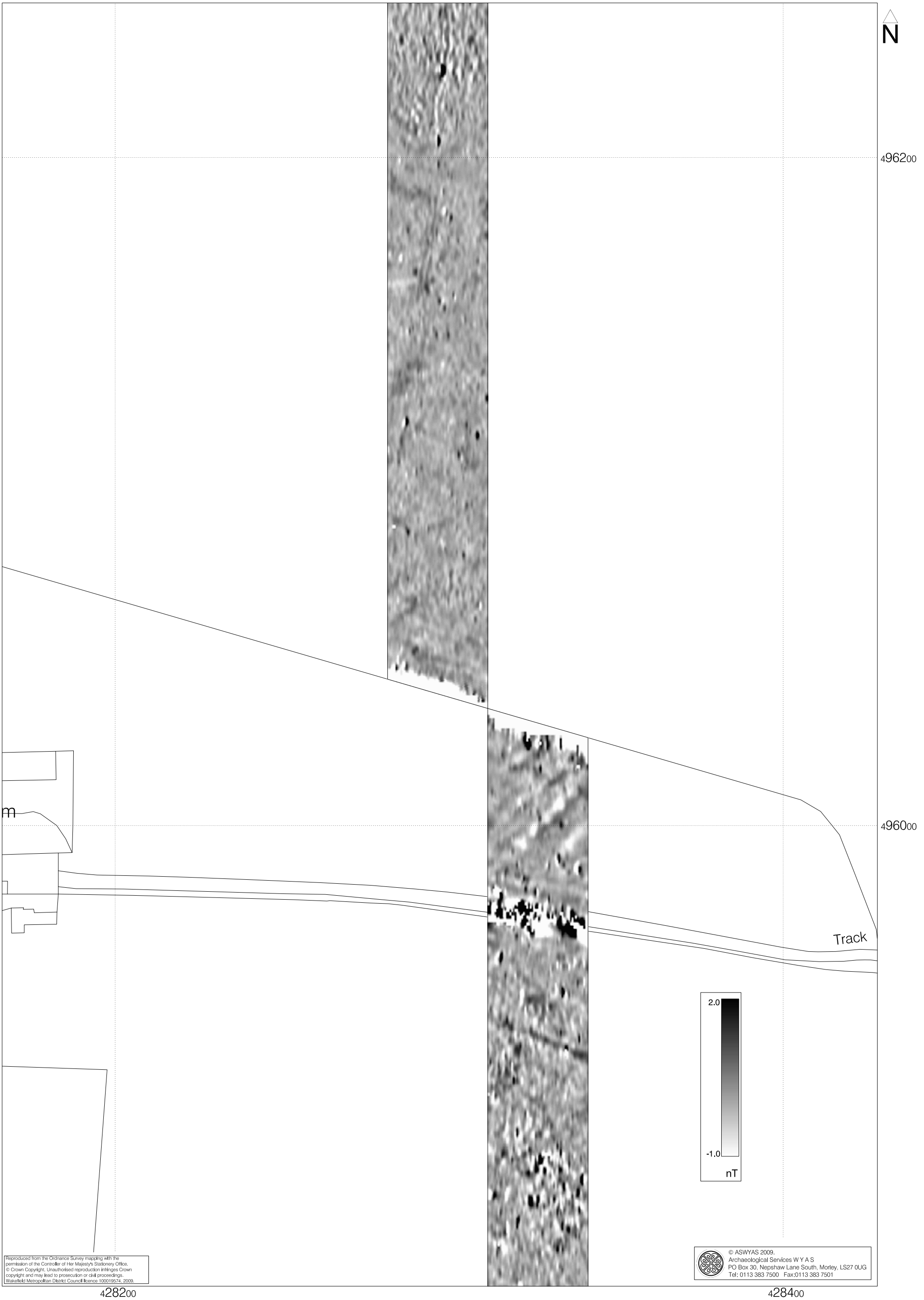


Fig. 21. Processed greyscale magnetometer data; T5, centre (1:1000 @ A3)

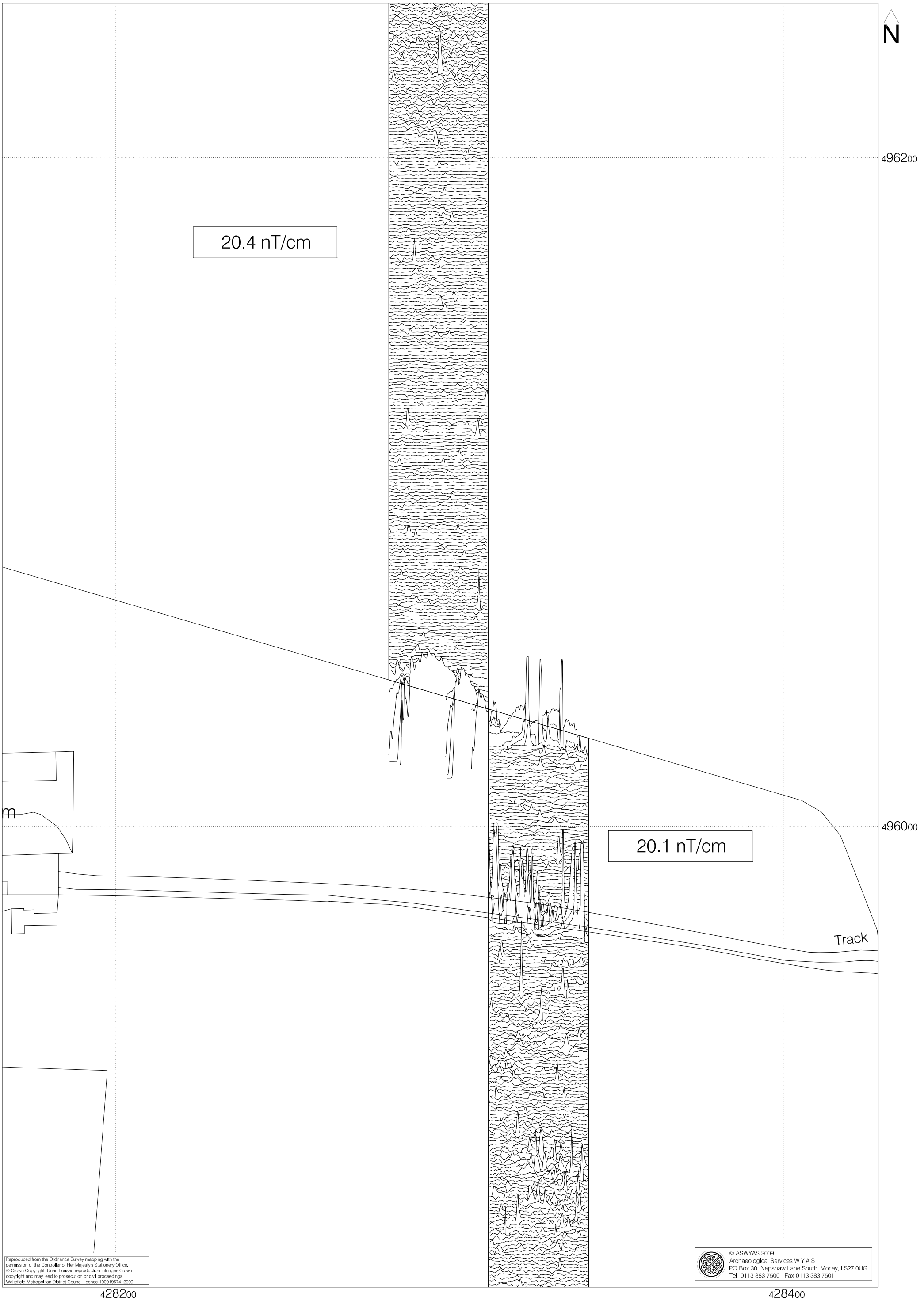


Fig. 22. XY trace plot of magnetometer data; T5, centre (1:1000 @ A3)

TYPE OF ANOMALY		INTERPRETATION
•	DIPOLAR ISOLATED	FERROUS MATERIAL
	MAGNETIC DISTURBANCE	FERROUS MATERIAL
	LINEAR TREND	AGRICULTURAL
	MAGNETIC ENHANCEMENT	ARCHAEOLOGY?

N

496200

496000

Track

M

428200

428400

0 50m

Archaeological Services W Y A S
PO Box 30, Nepshaw Lane South, Morley, LS27 0UG
Tel: 0113 383 7500 Fax:0113 383 7501

Fig. 23. Interpretation of magnetometer data; T5, centre (1:1000 @ A3)

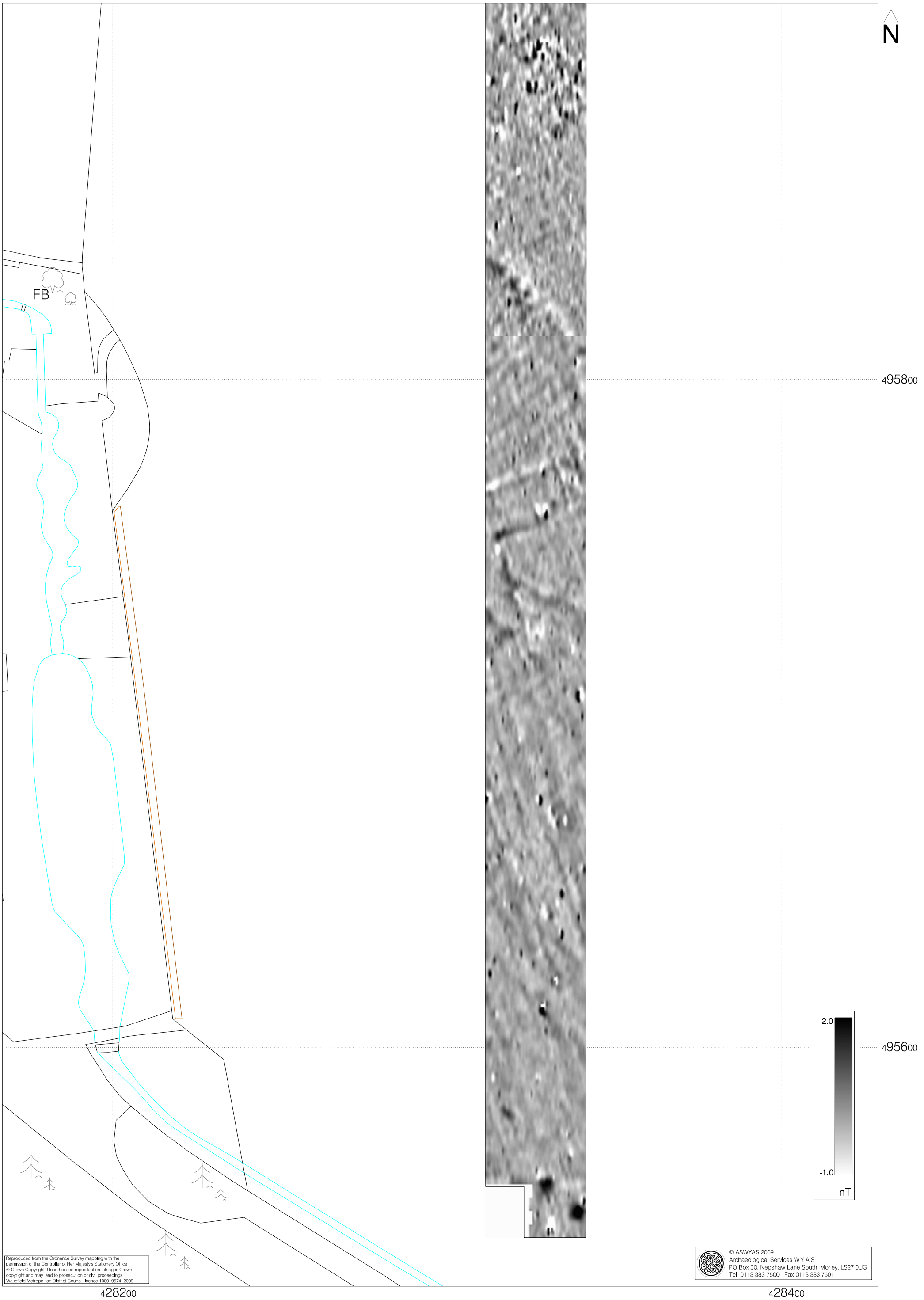


Fig. 24. Processed greyscale magnetometer data; T5, south (1:1000 @ A3)

Fig. 25. XY trace plot of magnetometer data; T5, south (1:1000 @ A3)

TYPE OF ANOMALY		INTERPRETATION
•	DIPOLAR ISOLATED	FERROUS MATERIAL
	LINEAR TREND	AGRICULTURAL
	MAGNETIC ENHANCEMENT	GEOLOGY?
	MAGNETIC ENHANCEMENT	ARCHAEOLOGY?/GEOLOGY?

Fig. 26. Interpretation of magnetometer data; T5, south (1:1000 @ A3)

Fig. 27. Processed greyscale magnetometer data; T6, north (1:1000 @ A3)

N

20.2 nT/cm

4964 00

Low Beds Plantation

4962 00

4286 00

Archaeological Services W Y A S
PO Box 30, Nepshaw Lane South, Morley, LS27 0UG
Tel: 0113 383 7500 Fax:0113 383 7501

0 50m

Fig. 28. XY trace plot of magnetometer data; T6, north (1:1000 @ A3)

TYPE OF ANOMALY		INTERPRETATION
•	DIPOLAR ISOLATED	FERROUS MATERIAL
	MAGNETIC DISTURBANCE	FERROUS MATERIAL
	LINEAR TREND	AGRICULTURAL
	MAGNETIC ENHANCEMENT	MODERN?
	MAGNETIC ENHANCEMENT	ARCHAEOLOGY?/GEOLOGY?

N

J2

B

Low Beds Plantation

4964 00

4962 00

4286 00

Archaeological Services W Y A S
PO Box 30, Nepshaw Lane South, Morley, LS27 0UG
Tel: 0113 383 7500 Fax:0113 383 7501

0 50m

Fig. 29. Interpretation of magnetometer data; T6, north (1:1000 @ A3)

N

4962 00

4960 00

4286 00

Park Plantation

2.0

-1.0

nT

Archaeological Services W Y A S
PO Box 30, Nepshaw Lane South, Morley, LS27 0UG
Tel: 0113 383 7500 Fax:0113 383 7501

0 50m

Fig. 30. Processed greyscale magnetometer data; T6, centre (1:1000 @ A3)

N

20.2 nT/cm

20.2 nT/cm

Park Plantation

4962 00

4960 00

4286 00

Archaeological Services W Y A S
PO Box 30, Nepshaw Lane South, Morley, LS27 0UG
Tel: 0113 383 7500 Fax:0113 383 7501

0 50m

Fig. 31. XY trace plot of magnetometer data; T6, centre (1:1000 @ A3)

TYPE OF ANOMALY		INTERPRETATION
•	DIPOLAR ISOLATED	FERROUS MATERIAL
—	LINEAR TREND	AGRICULTURAL
	MAGNETIC ENHANCEMENT	GEOLOGY?
	MAGNETIC ENHANCEMENT	ARCHAEOLOGY?/GEOLOGY?

N

496200

C1

496000

Park Plantation

428600

Archaeological Services W Y A S
PO Box 30, Nepshaw Lane South, Morley, LS27 0UG
Tel: 0113 383 7500 Fax:0113 383 7501

0 50m

Fig. 32. Interpretation of magnetometer data; T6, centre (1:1000 @ A3)

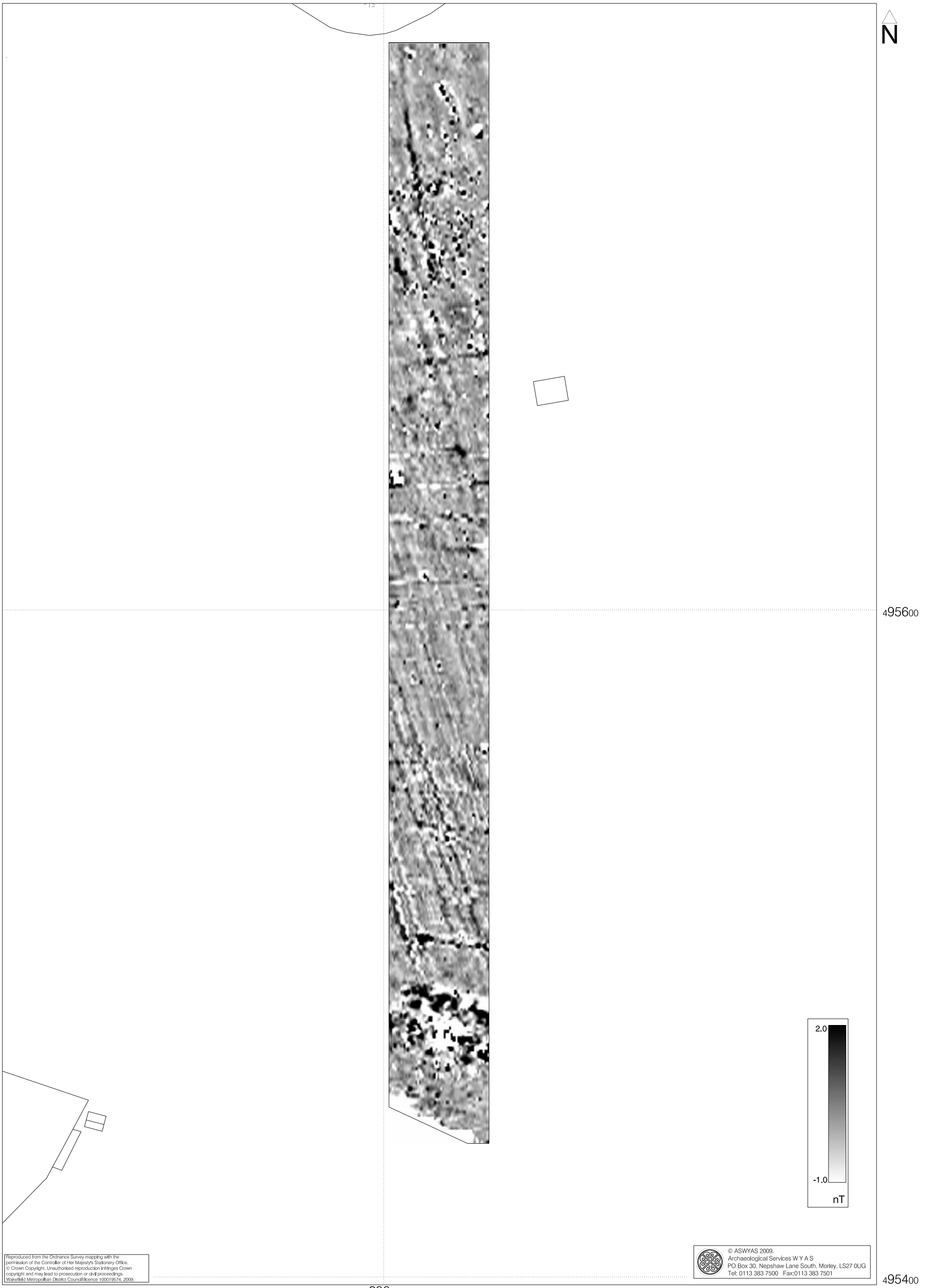
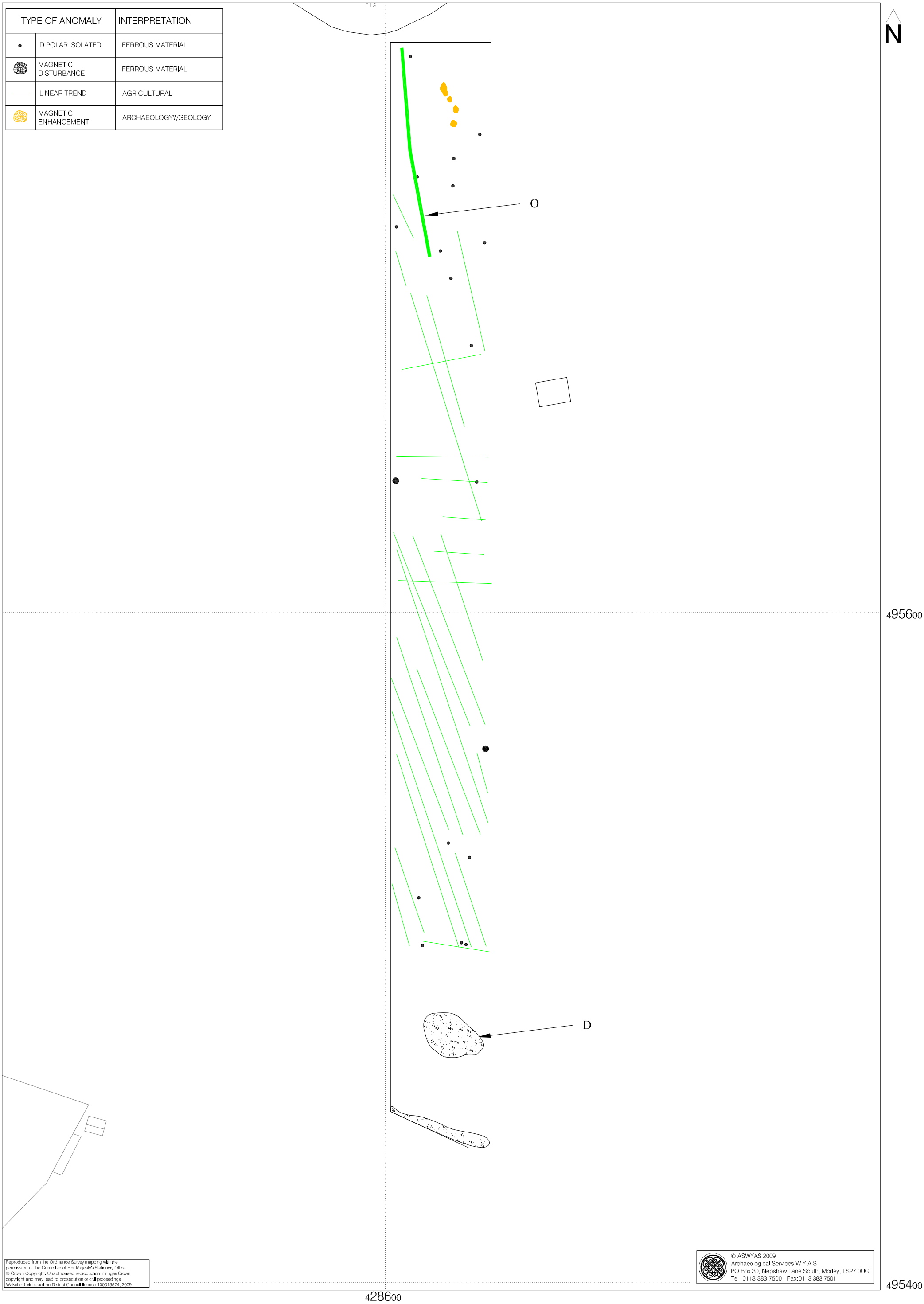


Fig. 33. Processed greyscale magnetometer data; T6, south (1:1000 @ A3)

Fig. 34. XY trace plot of magnetometer data; T6, south (1:1000 @ A3)

TYPE OF ANOMALY		INTERPRETATION
•	DIPOLAR ISOLATED	FERROUS MATERIAL
	MAGNETIC DISTURBANCE	FERROUS MATERIAL
	LINEAR TREND	AGRICULTURAL
	MAGNETIC ENHANCEMENT	ARCHAEOLOGY?/GEOLOGY



Archaeological Services W Y A S
PO Box 30, Nepshaw Lane South, Morley, LS27 0UG
Tel: 0113 383 7500 Fax:0113 383 7501

Fig. 35. Interpretation of magnetometer data; T6, south (1:1000 @ A3)

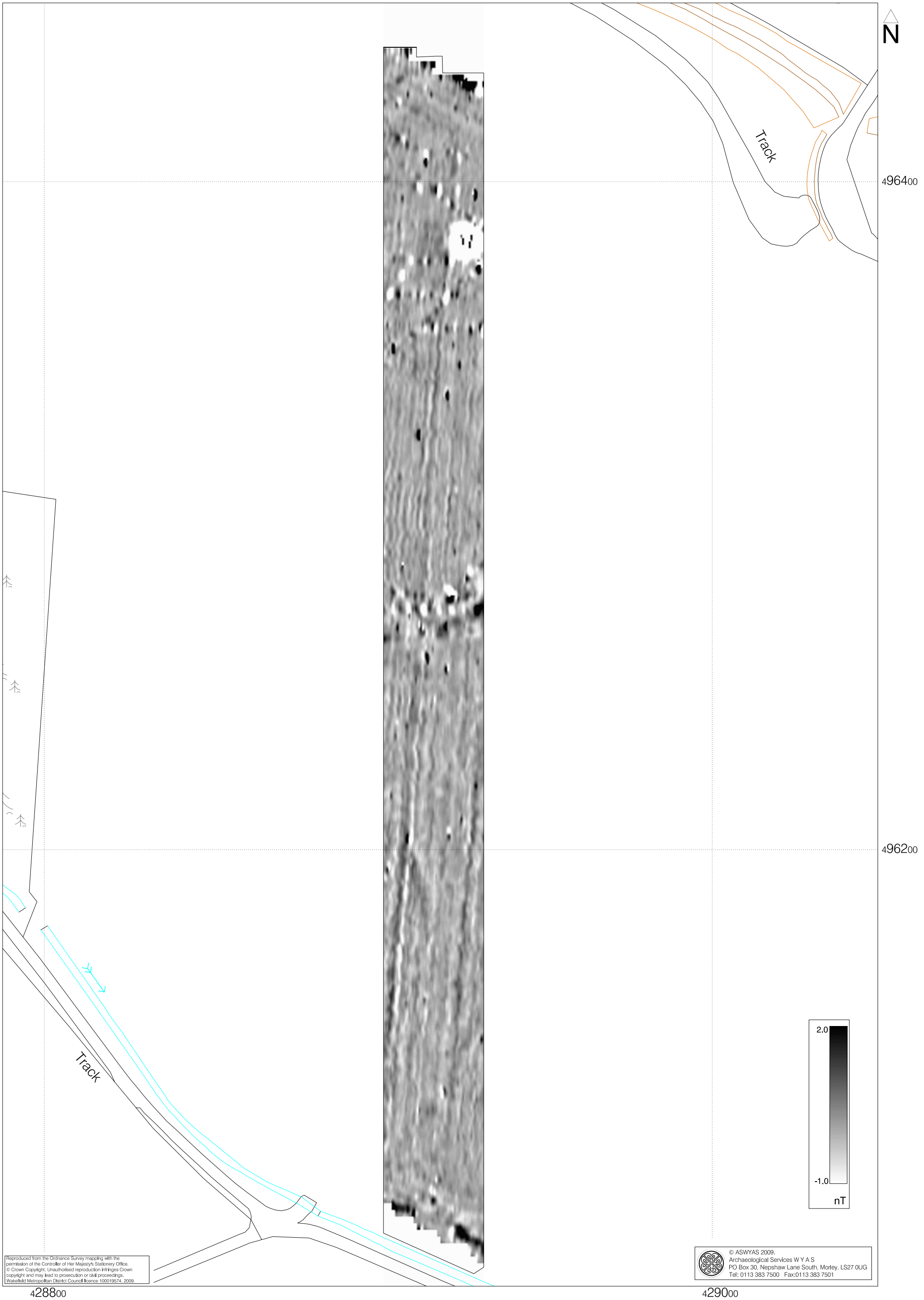


Fig. 36. Processed greyscale magnetometer data; T7 (1:1000 @ A3)

Fig. 37. XY trace plot of magnetometer data; T7 (1:1000 @ A3)

TYPE OF ANOMALY		INTERPRETATION
•	DIPOLAR ISOLATED	FERROUS MATERIAL
	MAGNETIC DISTURBANCE	FERROUS MATERIAL
	LINEAR TREND	AGRICULTURAL
	MAGNETIC ENHANCEMENT	GEOLOGY?
	MAGNETIC ENHANCEMENT	MODERN?

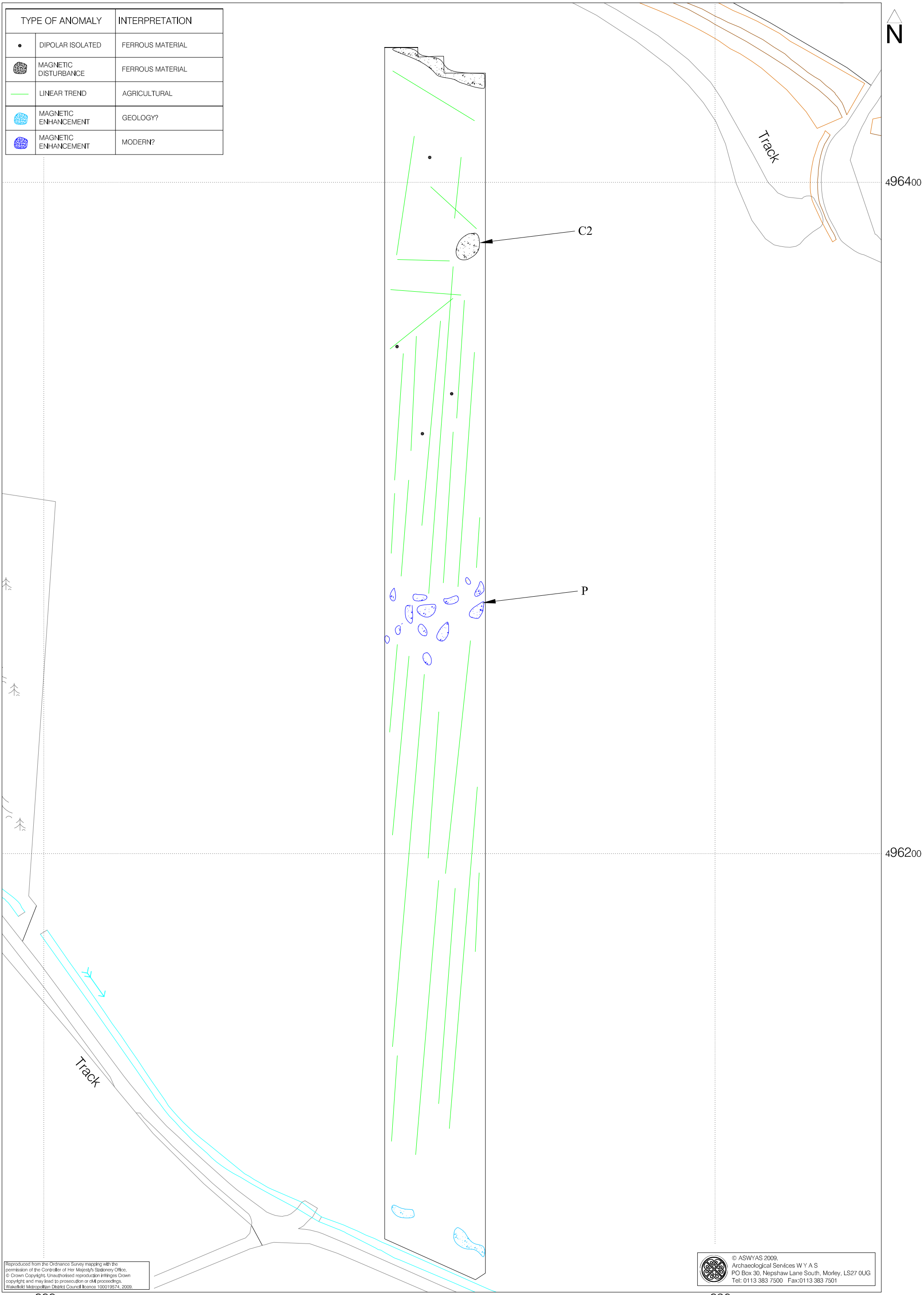


Fig. 38. Interpretation of magnetometer data; T7 (1:1000 @ A3)

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible] 3 4 [illegible]

[illegible]

[illegible]

[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

C	/ ((/ (	/ - - / - 55,
[illegible]	/ (A A(-	/ - A (5
[illegible]	/ (, A5- A	/ 5- (/
2	/ A/ A/ 5	/ 5/ / - (
[illegible]	/ A- - , -	/ 5, (- ,
Q	/ A5 A -	/ 5/ / , ,

[illegible]

[illegible] 3 [illegible] 4 [illegible]

2 [illegible]

[illegible] % [illegible] %7 [illegible] 1 [illegible] (8 [illegible] % [illegible] @ 7 [illegible] % [illegible] 8 [illegible] % [illegible] 7 % [illegible] ;) [illegible] %) [illegible] 0 [illegible] (8 [illegible]

[illegible]) [illegible]

[illegible] % [illegible]) [illegible] % [illegible]) [illegible] % % [illegible] 0 [illegible] 7 0 8 [illegible] % [illegible] % % [illegible]) [illegible] 4 [illegible] 3 [illegible]) [illegible] 0 [illegible] % [illegible] % [illegible]) [illegible] % [illegible] 7 [illegible]) [illegible] % [illegible]) [illegible] %. [illegible] 8 [illegible]

APPENDIX C FINDS INDEX

Findn o	Easting	Northing	Height	Material	Identity	Type	Box	Curation
1	427095.314	496199.675	38.978	Ceramic	Potbody	Modern		D
2	427145.492	496251.771	38.946	Flint	Flake	Meso-Neo	Q1	K
3	427173.343	496217.905	38.986	CBM	Undiagnostic			D
4	427187.274	496225.554	39	CBM	Pantile	Modern		D
5	427193.077	496159.126	38.786	CBM	Undiagnostic			D
6	427004.083	496249.824	39.027	Ceramic	Potbody	Modern		D
7	427231.175	496166.486	38.7	CBM	Pantile	Modern		D
8	427254.977	496166.857	38.616	Ceramic	Potbody	Modern		D
9	427204.299	496263.089	38.865	Ceramic	Potbas e	Modern		D
10	427224.71	496248.462	38.972	CBM	Brick	Undiagnostic		D
11	427199.105	496317.134	38.723	CBM	Undiagnostic			D
12	427239.922	496293.935	38.675	Ceramic	Potb ase	Post-medieval		K
13	427319.823	496317.381	38.643	Ceramic	Potbody	Modern		D
15	427357.821	496334.85	38.393	Flint	Scraper	Neo-BA	Q1	K
16	427341.724	496279.865	38.621	Ceramic	Potb ody	Medieval	Q1	K
17	427361.076	496264.93	38.21	Flint	Natural			D
18	427383.162	496237.624	37.813	Ceramic	Plate	Modern		D
19	427344.061	496226.241	38.598	CBM	Undiagnostic			D
20	427343.285	496238.702	38.486	Ceramic	Potbody	Modern		D
21	427285.437	496253.729	38.815	Ceramic	Potbody	Modern		D
22	427273.286	496119.768	38.156	Ceramic	Potbody	Modern		D
23	427313.605	496098.329	38.478	Ceramic	Plate	Modern		D
24	427331.552	496110.149	38.287	Ceramic	Potbody	Modern		D
25	427331.304	496121.692	38.093	Ceramic	Potb ody	Mosspo st-medieval	Q1	K
26	427329.903	496143.401	38.079	CBM	Posspa ntile	Modern		D
27	427368.241	496146.575	38.089	Ceramic	Potrim	Modern		D
28	427386.128	496162.606	38.1	Ceramic	Plate	Modern		D
29	427388.549	496102.553	37.912	Ceramic	Claypip e	Modern	Q1	K
30	427372.998	496069.548	37.851	Ceramic	Potbody	Modern		D
31	427433.498	496004.883	38.913	CBM	Brick	Modern		D
32	427534.472	495974.329	38.005	Flint	Waste	Meso-Neo		K
33	427534.451	495974.174	38.025	Ceramic	Plate	Modern		D
34	427531.265	496042.027	37.807	Ceramic	Potbody	Modern		D
35	427549.467	496081.745	37.719	Ceramic	Claypip e	Modern	Q1	K
36	427508.322	496093.304	38.003	Ceramic	Potbody	Modern		D
37	427489.284	496097.187	38.036	Ceramic	Claypip e	Modern	Q1	K
38	427489.649	496082.693	38.073	CBM	Undiagnostic			D
39	427449.271	496096.39	38.985	CBM	Undiagnostic			D
40	427450.857	496045.923	38.971	CBM	Plaintile	Possm edieval	Q1	K
42	427679.049	496331.495	37.674	CBM	Plaintile	Medieval	Q1	K
43	427720.319	496275.733	37.079	Ceramic	Potbody	Modern		D

Findn o	Easting	Northing	Height	Material	Identity	Type	Box	Curation
44	427720.641	496270.558	37.092	Ceramic	Potbas e angle	Modern		D
45	427701.277	496256.817	37.335	CBM	Drainpipe	Modern		D
46	427603.243	496184.201	37.454	Flint	Natural			D
47	427584.264	496164.072	37.179	Ceramic	Potbody	Modern		D
48	427627.145	496079.334	37.455	Ceramic	Potb ody	Unidentified	Q1	K
49	427650.427	495955.592	37.131	Flint	Natural			D
50	427690.924	495974.817	37.188	CBM	Undiagnostic			D
51	427748.784	496044.08	36.881	Ceramic	Potbody	Modern		D
52	427687.276	496099.826	37.405	Ceramic	Potbas e	Modern		D
53	427686.171	496118.537	37.432	CBM	Pantile	Modern		D
54	427743.987	496138.593	37.222	Ceramic	Potbody	Modern		D
55	427704.479	496162.138	37.451	Ceramic	Potb ody	Medieval	Q1	K
56	427684.039	496187.132	37.467	Ceramic	Potbody	Modern		D
57	427743.07	496207.099	36.945	Ceramic	Potbody	Modern		D
58	427801.077	496232.734	37.122	CBM	Plaintile	Possm edieval	Q1	K
59	427856.5	496269.58	36.703	Ceramic	Potbody	Modern		D
60	427872.963	496294.694	36.455	Ceramic	Plate	Modern		D
61	427855.807	496193.971	36.61	Ceramic	Potb ody	Unidentified	Q1	K
62	427856.169	496186.618	36.719	Ceramic	Claypip e	Modern	Q1	K
63	427855.871	496182.015	36.74	Ceramic	Claypip e	Modern	Q1	K
64	427874.873	496182.465	36.54	Ceramic	Potbody	Modern		D
65	427876.617	496166.849	36.516	Ceramic	Potrim	Modern		D
66	427856.943	496086.333	36.588	Ceramic	Potrim	Modern		D
67	427856.24	496069.928	36.72	Ceramic	Potbas e	Modern		D
68	427829.286	496012.337	36.64	Ceramic	Potbas e	Modern		D
69	428096.324	496249.18	36.088	Ceramic	Claypip e	Post-medieval	Q1	K
70	428116.826	496264.801	36.064	Ceramic	Claypip e	Post-medieval	Q1	K
71	428077.251	496299.221	35.935	Ceramic	Cup	Modern		D
72	428076.662	496460.172	35.785	Ceramic	Potbody	Modern		D
74	428077.196	496495.6	36.307	Ceramic	Insulator	Modern		D
75	428057.255	496443.581	35.9	Ceramic	Potbody	Modern		D
76	428037.78	496373.08	35.87	Ceramic	Plate	Modern		D
77	428058.447	496273.264	36.02	Ceramic	Potb ody	Medieval		K
78	428036.465	496274.442	36.218	Ceramic	Potrim	Modern		K
79	428036.906	496266.881	36.219	Ceramic	Claypip e	Post-medieval	Q1	K
80	428016.481	496203.03	35.95	CBM	Nibtile	Medieval	Q1	K
81	428036.595	496203.672	35.812	Ceramic	Potb ody	Medieval	Q1	K
82	428036.286	496176.628	35.874	Ceramic	Potb ody	Medieval	Q1	K
83	428036.27	496170.824	35.886	Ceramic	Potbas e	Modern		D
84	428036.376	496076.135	35.706	CBM	Plaintile	Possm edieval	Q1	K
85	428036.566	496060.666	35.741	Ceramic	Poth andle	Post-medieval	Q1	K
86	427996.282	496053.402	36.096	CBM	Plaintile	Possm edieval	Q1	K
87	427555.425	495923.315	37.641	Ceramic	Potbody	Modern		D

Findn o	Easting	Northing	Height	Material	Identity	Type	Box	Curation
88	427592.995	495937.792	37.503	CBM	Pantile	Modern		D
89	427612.838	495935.572	37.345	CBM	Plaintile	Possm edieval	Q1	K
90	427635.594	495880.281	37.086	Ceramic	Potrim	PossRom an	Q1	K
91	427714.711	495935.439	37.034	Ceramic	Insulator	Modern		D
92	427754.986	495869.064	36.717	Ceramic	Potbody	Modern		D
93	427796.625	495869.843	36.442	Ceramic	Potbody	Modern		D
94	427856.191	495852.229	36.022	CBM	Brick	Undiagnostic		D
95	427876.765	495858.218	35.913	CBM	Brick	Possm odern		D
96	427897.472	495831.282	36.498	Ceramic	Potb ody	Medieval	Q1	K
97	427877.509	495921.098	36.299	Ceramic	Potlid	Modern		D
98	427836.482	495920.589	36.675	Ceramic	Claypip e	Modern	Q1	K
99	427915.741	495959.695	36.034	CBM	Tile	Modern		D
100	427915.955	495983.538	36.35	CBM	Undiagnostic			D
101	427916.211	496002.139	36.43	Flint	Natural			D
102	427896.447	496032.309	36.584	Ceramic	Potb ody	Medieval	Q1	K
103	427896.245	496037.183	36.592	Ceramic	Potrim	Medieval	Q1	K
104	427937.935	496073.966	36.341	CBM	Tile	Modern		D
105	427937.199	496121.994	35.958	CBM	Plaintile	Medieval	Q1	K
106	427916.677	496120.886	36.17	Ceramic	Potbody	Modern		D
107	427916.616	496149.703	36.189	CBM	Possridgetile	Medieval	Q1	K
109	427937.674	496241.346	36.42	Ceramic	Potbody	Modern		K
110	427957.519	496337.447	36.579	Ceramic	Potbody	Modern		D
111	427957.281	496349.531	37.067	Ceramic	Plate	Modern		D
112	427976.427	496363.853	37.217	Ceramic	Potbas e	Modern		D
113	427975.229	496356.06	36.824	Ceramic	Potbody	Modern		D
114	427976.798	496335.956	36.326	Ceramic	Potbas e	Modern		D
115	427997.514	496270.518	36.132	Flint	Flake	Meso-Neo	Q1	K
116	427995.684	496207.817	35.997	Ceramic	Potb ody	Medieval	Q1	K
117	427995.511	496207.186	35.968	Ceramic	Potbas e	Modern		D
118	427996.021	496193.951	36.039	Ceramic	Potbody	Modern		D
119	427956.113	496220.081	36.341	CBM	Pantile	Modern		D
120	427956.857	496208.016	36.341	Ceramic	Potrim	Medieval	Q1	K
121	427957.125	496182.721	36.337	Ceramic	Potbody	Modern		D
122	427956.518	496174.955	36.3	Ceramic	Potbas e	Modern		D
123	427977.845	496147.005	36.096	Ceramic	Plate	Modern		D
124	427996.658	496159.42	36.075	CBM	Plaintile	Possm edieval		D
125	427976.251	496092.492	36.09	Ceramic	Potb ody	Post-medieval	Q1	K
126	427576.227	496448.626	37.572	Ceramic	Potbas e	Modern		D
127	427515.742	496388.567	37.621	Ceramic	Plate	Modern		D
128	427818.592	496390.741	37.084	Ceramic	Potbody	Modern		D
129	428015.78	496455.235	36.36	Ceramic	Potbody	Modern		D
130	428000.153	496515.893	36.708	Ceramic	Potbody	Modern		D
131	428016.451	496543.51	36.428	Ceramic	Potbas e angle	Modern		D

Findn o	Easting	Northing	Height	Material	Identity	Type	Box	Curation
132	428156.37	496604.397	35.944	Ceramic	Plate	Modern		D
133	428155.19	496533.881	35.216	Ceramic	Plate	Modern		D
134	428156.213	496526.077	35.1	Ceramic	Potbody	Modern		D
135	428156.401	496524.807	35.089	Ceramic	Potbody	Modern		D
136	428117.014	496486.63	35.746	Ceramic	Potbody	Modern		D
137	428137.621	496413.843	35.267	Ceramic	Potbas e	Modern		D
138	428136.354	496413.254	35.352	Ceramic	Potbody	Modern		D
139	428156.875	496363.189	35.093	Ceramic	Potbody	Modern		D
140	428156.253	496347.029	35.101	Ceramic	Potbody	Modern		D
141	428176.67	496309.528	35.608	Ceramic	Claypip e	Modern	Q1	K
142	428154.557	496241.571	35.404	Ceramic	Plate	Modern		D
143	428143.109	496188.878	35.596	Ceramic	Potbody	Modern		D
144	428115.566	496100.684	35.637	Ceramic	Plate	Modern		D
145	428176.277	496163.635	35.299	Ceramic	Potb ody	Medieval	Q1	D
146	428216.71	496193.047	35.509	Flint	Flake	Meso-Neo	Q1	K
147	428217.122	496219.316	35.334	Ceramic	Potb ody	Medieval	Q1	K
148	428216.78	496270.459	35.364	Ceramic	Potbody	Modern		D
149	428217.033	496299.436	35.471	Ceramic	Potbody	Modern		D
150	428198.731	496301.901	35.594	Ceramic	Plate	Modern		D
151	428194.887	496342.241	35.355	Ceramic	Potbody	Modern		D
152	428216.461	496600.495	35.929	Ceramic	Plate	Modern		D
153	428276.601	496567.874	35.333	CBM	Undiagnostic			D
154	428257.218	496382.921	34.999	Ceramic	Potbody	Modern		D
155	428276.314	496338.277	35.517	Ceramic	Potbody	Modern		D
156	428276.178	496304.085	35.218	Ceramic	Potbody	Modern		D
157	428275.925	496294.385	35.296	Ceramic	Plate	Modern		D
158	428260.486	496297.557	35.341	Ceramic	Plate	Modern		D
159	428236.608	496294.443	35.487	Ceramic	Potrim	Modern		D
160	428259.08	496231.772	35.068	Ceramic	Plate	Modern		D
161	428262.907	496147.064	35.391	Ceramic	Potbody	Modern		D
162	428237.248	496094.462	35.049	Ceramic	Potbody	Modern		D
163	428310.473	496093.396	35.284	Ceramic	Potb ody	Modern	Q1	K
164	428311.584	496121.941	35.345	CBM	Undiagnostic			D
165	428296.52	496136.566	35.281	Ceramic	Potrim	Medieval	Q1	D
166	428312.415	496172.182	35.243	Ceramic	Potbody	Modern		D
167	428336.695	496174.415	35.235	Ceramic	Potrim	Modern		D
168	428336.048	496212.039	34.749	Ceramic	Potbody	Modern		D
169	428335.783	496287.617	35.089	Ceramic	Plate	Modern		D
170	428336.404	496300.505	35.12	Ceramic	Potbody	Modern		D
171	428314.797	496282.748	35.108	Ceramic	Potbas e	Modern		D
172	428315.658	496290.413	35.126	Ceramic	Potbody	Modern		D
173	428308.383	496373.736	35.342	Ceramic	Potbody	Modern		D
174	428431.955	496528.498	35.245	Ceramic	Potbody	Modern		D

Findn o	Easting	Northing	Height	Material	Identity	Type	Box	Curation
175	428432.981	496519.105	35.119	Ceramic	Plate	Modern		D
176	428456.845	496523.194	35.128	Ceramic	Plate	Modern		D
177	428379.081	496448.377	34.519	Ceramic	Plate	Modern		D
178	428416.3	496430.761	33.94	Ceramic	Potbas e angle	Modern		D
179	428433.005	496381.175	34.635	Ceramic	Plate	Modern		D
180	428356.294	496376.458	34.633	Ceramic	Potbody	Modern		D
181	428377.491	496272.606	34.946	Ceramic	Potbas e	Modern		D
182	428396.136	496258.393	34.983	Ceramic	Plate	Modern		D
184	428377.686	496087.935	35.176	Ceramic	Potrim	Modern		D
185	428429.477	496244.02	34.692	Ceramic	Potbas e	Modern		D
186	428457.053	496270.427	34.631	Ceramic	Potbody	Modern		D
187	428429.983	496274.789	34.63	Ceramic	Potbas e	Modern		D
188	428416.488	496309.042	35.079	Ceramic	Potbody	Modern		D
189	428516.354	496459.128	35.016	Ceramic	Plate	Modern		D
190	428516.233	496455.114	35.036	Ceramic	Plate	Modern		D
191	428516.467	496395.798	33.932	CBM	Undiagnostic			D
192	428499.435	496305.626	34.279	Ceramic	Potbas e	Modern		D
193	428500.216	496079.341	34.525	Ceramic	Potrim	Medieval	Q1	K
194	428556.008	495989.336	34.389	Ceramic	Plate	Modern		D
195	428616.37	496016.561	33.839	Ceramic	Potbody	Modern		D
196	428635.397	496024.571	33.66	Ceramic	Plate	Modern		D
197	428618.824	496139.227	34.384	Ceramic	Potbody	Modern		D
198	428577.994	496131.087	34.478	Ceramic	Plate	Modern		D
199	428576.994	496238.832	34.366	Ceramic	Potbody	Modern		D
200	428596.587	496249.751	33.793	CBM	Undiagnostic			D
201	428536.861	495596.219	33.921	Ceramic	Potrim	Modern		D
202	428556.336	495608.842	33.701	Ceramic	Claypipe	Modern		K
203	428536.488	495722.987	33.8	Ceramic	Potb ase	Post-medieval		K
204	428496.564	495899.837	34.681	Ceramic	Potbas e	Modern		D
205	428392.574	495792.355	34.489	Ceramic	Potb ody	Post-medieval	Q1	K
206	428476.98	495700.693	34.44	Ceramic	Potrim	Modern		D
207	428496.684	495602.053	34.04	Ceramic	Claypip e	Modern	Q1	K
208	428437.342	495510.221	33.726	Ceramic	Potb ody	Medieval	Q1	K
209	428344.31	495576.056	34.083	Ceramic	Potbody	Modern		D
210	428344.87	495603.632	33.868	Ceramic	Claypip e	Modern	Q1	K
211	428376.912	495663.324	33.98	Ceramic	Potbody	Modern		D
212	428396.407	495683.4	34.088	Metal(pb)	Weight	Medieval	Q1	K
213	428376.845	495695.318	34.162	Flint	Flake	Meso-Neo	Q1	K
214	428317.024	495744.654	34.532	Flint	Natural			D
215	428296.879	495790.599	34.481	CBM	Tile	Undiagnostic		D
216	428656.418	496386.88	34.619	Ceramic	Plate	Modern		D
217	428756.083	496391.571	34.136	Ceramic	Plate	Modern		D
218	428795.685	496373.499	34.061	Ceramic	Plate	Modern		D

Findn o	Easting	Northing	Height	Material	Identity	Type	Box	Curation
219	428796.64	496313.027	33.909	Ceramic	Plate	Modern		D
220	428838.659	496264.135	33.802	Ceramic	Potbody	Modern		D
221	428857.13	496315.517	34.142	Ceramic	Potbody	Modern		D
222	428837.415	496335.28	34.205	Ceramic	Potbas e	Modern		D
223	428896.447	496345.676	34.039	Ceramic	Potbody	Modern		D
224	428896.52	496436.347	34.142	Ceramic	Potbody	Modern		D
225	428896.742	496437.182	34.164	Ceramic	Potbas e	Modern		D
226	429017.856	496310.615	33.816	Ceramic	Potbody	Modern		D
227	429035.741	496297.34	33.783	Ceramic	Potbas e angle	Modern		D
228	429016.757	496248.891	33.737	Ceramic	Plate	Modern		D
229	428976.859	496206.559	33.501	Ceramic	Potbody	Modern		D
230	428937.036	496140.283	33.257	Ceramic	Plate	Modern		D
231	428976.419	496141.572	33.301	Ceramic	Potbody	Modern		D
232	428976.143	496123.432	33.295	Ceramic	Potrim	Modern		D
233	428996.478	496133.402	33.363	Ceramic	Plate	Modern		D
234	429017.283	496089.005	33.302	Ceramic	Plate	Modern		D
235	429097.272	496193.253	33.437	Ceramic	Potbody	Modern		D
236	429136.817	495891.911	32.847	Ceramic	Potbody	Modern		D
237	428616.517	495766.153	33.67	Ceramic	Plate	Modern		D
238	428702.577	495757.621	33.171	Ceramic	Potb ody	Medieval	Q1	K
239	428716.553	495789.42	33.431	Ceramic	Potb ody	Medieval	Q1	K
240	428716.637	495801.534	33.46	Ceramic	Potb ase	Medieval	Q1	K
241	428716.668	495848.282	34.089	Ceramic	Potb ody	Medieval	Q1	K
242	428703.47	495840.277	33.997	Ceramic	Potb ody	Medieval	Q1	K
243	428656.758	495824.17	33.872	Ceramic	Potb ody	Medieval	Q1	K
244	428676.578	495850.594	33.754	Ceramic	Claypip e	Modern	Q1	K
245	428675.665	495856.746	33.754	Ceramic	Potb ody	Medieval	Q1	K
246	428656.032	495856.113	33.831	Ceramic	Potb ase	Medieval	Q1	K
247	428676.794	495895.831	33.95	Ceramic	Potb ody	Unidentified	Q1	K
248	428676.796	495899.329	33.97	Ceramic	Potb ody	Post-medieval	Q1	K
249	428633.097	495915.675	34.249	Ceramic	Potb ody	Post-medieval	Q1	K
250	428598.213	495898.53	34.224	Ceramic	Potb ase angle	Medieval	Q1	K
251	428633.624	495932.911	34.3	Ceramic	Potb ody	Medieval	Q1	K
252	428633.38	495943.707	34.314	Metal(pb)	Weight	Medieval	Q1	K
253	428616.856	495973.934	34.426	CBM	Undiagnostic			D
254	428635.084	495980.458	34.553	Ceramic	Potb ody	Medieval	Q1	K
255	428636.458	495991.792	34.597	Ceramic	Potb ody	Medieval	Q1	K
256	428656.499	495960.808	34.26	CBM	Undiagnostic			D
257	428816.15	496075.09	33.454	Ceramic	Potbody	Modern		D
258	428820.134	495630.88	33.309	Ceramic	Pothandl e	Modern		D
259	428776.535	495566.868	33.008	Ceramic	Potb ody	Medieval	Q1	K
260	428757.481	495467.759	33.267	Ceramic	Poth andle	Medieval	Q1	K
261	428736.603	495493.143	33.336	Ceramic	Potb ody	Medieval	Q1	K

Findn o	Easting	Northing	Height	Material	Identity	Type	Box	Curation
262	428635.267	495500.709	33.266	Ceramic	Potb ody	Medieval	Q1	K
263	428635.99	495547.236	33.4	Ceramic	Potrim	Medieval	Q1	K
264	428636.217	495550.243	33.39	Ceramic	Potbody	Modern		D
265	428636.267	495567.071	33.508	Ceramic	Potb ody	Medieval	Q1	K
266	428636.383	495573.04	33.512	Ceramic	Potb ody	Medieval	Q1	K
267	428706.967	495626.695	33.041	Ceramic	Potb ody	Medieval	Q1	K
268	428707.231	495619.795	33.128	Ceramic	Potb ody	Medieval	Q1	K
269	428755.997	495606.783	33.3	Ceramic	Potbody	Modern		D
270	428793.652	495670.845	33.242	Ceramic	Potbody	Modern		D
271	428701.714	495895.515	34.143	Ceramic	Potb ody	Medieval	Q1	K
272	428700.976	495896.002	34.099	Ceramic	Potb ody	Medieval	Q1	K
273	428701.201	495909.663	34.183	Ceramic	Potb ody	Medieval	Q1	K
274	428698.853	495947.062	34.384	Ceramic	Potb ody	Medieval	Q1	K
275	428698.336	495958.61	34.3	Ceramic	Potb ody	Medieval	Q1	K
276	428698.569	495971.276	34.207	Ceramic	Potb ody	Medieval	Q1	K
277	428698.315	495971.516	34.12	Ceramic	Potb ody	Unidentified	Q1	K
278	428698.42	495972.124	34.115	Ceramic	Potb ody	Medieval	Q1	K
279	428698.368	495975.687	34.09	Ceramic	Potb ase	Medieval	Q1	K
280	428698.506	495986.098	33.751	Ceramic	Potbody	Modern		D
281	428698.18	495985.935	33.789	Ceramic	Potb ody	Medieval	Q1	K
282	428697.829	495986.714	33.775	Ceramic	Potb ody	Medieval	Q1	K
283	428676.517	495986.763	34.19	Ceramic	Potb ase	Medieval	Q1	K
284	428716.635	495969.433	33.099	Ceramic	Potrim	Medieval	Q1	K
285	428716.355	495966.54	33.115	CBM	Brick	Modern		D

APPENDIXD FLINTA SSESSMENT

PeterRo we

1.0 INTRODUCTION

Thisre portsu mmarisesa na ssemblageo f1 1fl intsc ollectedd uringfie ldwalkinga tH omeF arm,K irkbyF leetham,N orth Yorkshirein2 009. G iventhe sm all sizeo ft hea ssemblagead escriptivec atalogue,ra therth ana tab ulatedc atalogue,i s presentedbel ow.

2.0 CATALOGUE

Naturalf ragments(SmallFi nds17, 46, 49, 101& 214)

Almost50 %of theass emblageco nsists of small sub-angular pebblesof f lint.T heseare generallyheavi lypa tinated,have smootheds urfacesand noevidence of knapping.T hey may haveb eend epositedi nt heareabygl acialoral luvialact ion.

Angularwas te (SmallFi nd32)

Thisisap ieceo fsub -angulark nappingd ebris.T hereise videncefo rfo rmerp latformp reparationsu ggestiveo faM esolithic ore arlyN eolithicdat e.

Flakes(SmallFi nds2, 115, 146& 213)

Theass emblagei ncludesf ours mallf lakes(includingo ne plough damagedf ragmentf romani ncompletef lake).T heseare all soft hammerstru cka ndha vee videncefo rp reviousflak eo rb ladere movalo nthe ird orsalsu rfaces. T heus eo faso ft hammersug gestsaM esolithico rea rlyN eolithicd atefor t hesep ieces.

Scraper(SmallFi nd15)

Thisi sac rudee ndan dedges craper formed on a very squatf lintf lake.T he retouch extendsal ongt he enda ndl eftl ateral edgeo ft hei tem.T heri ghtl ateraled gehasmo dificationby invasive pressure flaking which is cut byt hest eepret ouch.T he pressurefl akingsu ggestsa d ateo ft heN eolithico r BronzeA ge. It isp ossibleth atth isw as oncea la rger itemw itha kn ife likeed get hathas beenrecy cledt of ormascraper.

3.0 RAWM ATERIAL

The rawmat erialha sah omogenousch aracter,cons istingof light brown, fine grained flints withr educedcort ex.T he source oft hefl intisli kelyt ob esm all pebblesd erivedfro mlo calgra veld epositso rth eY orkshirec oast.

4.0 CONCLUSION

Theknap pedf lints fromt his phaseof archaeo logicalwo rks uggestaba ckgroundl evelofp rehistoric activityi nt heareabut haveno tbe enf oundi nas ignificantco ncentration.

Thekn appingtre nds,inc ludingus eo fso ft hammersa ndp latformp reparationi ndicatetha tM esolithico re arlyN eolithic materiali s present.T hescr aperwi thi ts pressuref lakeded gei s likelyt obe l ater.

5.0 RECOMMENDATIONS

Considerations houldbegi vent ot he illustrationof t he scraper.Co nsiderations houldbegi vent odi scardingt he natural piecesf romt he collectiont os treamline the sitea rchive.

Appendix1 Catalogue

MatC ol= Ma terialc olour;Cor tC ol=Cor texc olour;Pat Col= Pati naCol our; RedSe q= Re ductions equence;L = Length; B=Br eadth; W=width;I nterp=In terpretation;Wo rk=wor king;Dge =Damage

Find	Mat Col	Cortex %	Cort Col	Patina %	Pat Col	Type	Red Seq	Hamm er	L	B	W	Interp	Work	Dge	Period	Notes
2	Br	0		0		Flake frag	Sec	Shatter						Y	Prehistoric	Plough damaged flake
15	Br	5	Cr	20	Bl/W	Scraper	Tert	Hard	26	46	7	Retouch	End& edge	N	Neolithic	
17	Br	5	Cr	60	Bl/W	Natural	N/A	N/A						N	N/A	
32	Br	5	Cr	0		Debitage	Soft	Soft						N	Meso-Neo	
46	Br	0		95	Cr	Natural	N/A	N/A						N	N/A	
49	?	0		100	W	Natural	N/A	N/A						N	N/A	
101	?	0		100	Cr	Natural	N/A	N/A						N	N/A	
115	Br	0		0		Flake	Sec	Soft	15	15	3			N	Prehistoric	Plough damaged flake
146	Br	0		70	Cr	Flake	Sec	Soft	20	17	2			Y	Prehistoric	
213	Br	0		100	W	Flake	Sec	Soft	18	17	3			N	Meso-Neo	
214	?	10	Cr	100	Cr	Natural	N/A	N/A						N	N/A	

APPENDIXE CERAMICA SSESSMENT

JaneY oungwi thJenny Mann

1.0 INTRODUCTION

Asmal lgr oupof s ixtys herds,of poss ibleRo mant oear lypost -medievaldat e,was s ubmittedf ore xamination.T he material wasr ecovereddur ingr econnaissancef ieldwalking undertakenal ong20m t ransects.T he assemblagewas quan tifiedby t hree measures: numbero f sherds, weight and vessel count within each context. The ceramicd atawa s entered ona nA ccess databaseus ingf abric codenames (see Table 1). Recording of the assemblage was inacco rdancewi tht hegui delinesl aidout inS lowikowski, *eta l.*(20 01).

2.0 CONDITION

The assemblagecons istsof smal lt o medium-sizedsh erds(between1 an d47 gr ams)i na s lightlyabr adedt over yabr aded conditionw itha llof t he vesselsbe ingr epresented bya s ingles herd.

3.0 THEP OTTERY

In t otal f ifty-five i dentifiable p ost-Roman vess els in t welve po ttery ware ty pes, one po tential R oman vess el and f our miscellaneous sherds werep resentedf oras sessment (Table1).Fo urs malland l ow-firedsherdsareabrad edt os uchanext ent itis imp ossible toidenti fythem (MISC). Thesesherdscouldbe of Roman,orp ost-Romand ate.T herei s anarrowrange off ormt ypes present withmost ve sselsbei ngva rioust ypesof bowl s,j ugsor jars,al thoughe xamplesof ot herve sselt ypes includingdr inkingj ugs,pos setpot sa nda c upw ere alsof ound.

Table1 Potterytyp esw ithto talq uantitiesb ysh erdc ountan dve sselco unt

Codenam e	Fullnam e	Earliestdate	Latestdate	Totalsher ds
BERTH	Browng lazede arthenware	1550	1800	1
BL	Black-glazede arthenware	1550	1750	1
CIST	Cistercian-type ware	1480	1650	1
FREC	Frechens toneware	1530	1680	2
GRE	GlazedRe dEa rthenware	1500	1650	2
MEDLOC	Medievalloc alf abrics	1150	1450	15
MEDX	Non-localm edievalf abrics	1150	1450	7
MISC	Unidentifiedty pes	400	1900	4
NGR	NorthernG rittyw are	1180	1450	15
PMLOC	Post-medievalloc alf abrics	1450	1700	1
R	Romanpo ttery	40	400	1
RYEDALE	Ryedalew are	1550	1700	1
SCAR	Scarboroughw are	1150	1350	1
TVW	Tees Valleyw are	1250	1450	7

3.1 POSSIBLE ROMAN

As inglea bradedr imsh erd(Fi nd90)i na noxi disedmi caceousf abrici sposs iblyf romas mallf lagon ofRo mandat e.

3.2 MEDIEVAL

Forty-sixv esselsre coveredfro mthe sitep re-datethe m id-16thc entury. Thee arliesttw os herds arefro mN orthernG ritty ware(NYG)j ars,oneof wh ich isi nW etherbyFabri c4. This fabric was found at Inganthorpe Manor, near Wetherby(Vince andY oung2 007)wh ere it wast hought tod ateto b etweent hem id-12tha ndm id-13thc enturies. Theo therea rlyjaris also of1 2th-t o1 3th-centuryt ype. T hirteeno therN orthernG rittyware ve ssels ofl ate1 2th-t o1 5th-centuryd atew ere also recoveredf romt he site. Five of these vessels are jugs and include a Tees Valley copy (Ibid.,W etherbyFabri c6) .T he other identifiablesh erdsa rem ainlyfro mja rs,b utt hereiso neb owl.

Sixteenv esselsa re inqu artz-tempered fabrics,t houghtt obe ma de int he region,bu tn otf allingw ithint he definitionof NorthernG rittyware (M EDLOC). Almost all of the vessels arejug s,alt houghtwo jarsw ithe xternall id-seatingare also present.Si xof t hej ugscanb ei dentified asl 3th-t o 14th-centuryt ypes,t heot herves selsca nonl ybedat edt ot he medieval period.C hemicalanal ysis ofp otteryfr omIngant horpe Manor,ne arW etherbysuggest edthat thegri ttywares (NGR)and thesand- temperedwares (MEDLOC)weres ometimesmad eat t hesamep roductioncent res(V inceand Y oung20 07).

All seven oft he TeesV alley-typewar e(TVW)ve sselsar ej ugsof mi d-13tht o14 th-centuryt ype.T eesV alleywar ewa s probablypro ducedi nt hel owerT eesV alleyb etween the mid-13tha nd1 5thcent uries(Barrett19 85and P atterson19 85)and hasa di stinctive fine red sandy body with an occasional externalw hite slipw hichi st hickesta tt he rim.T he vesselsf rom this siteco uldbe pro ducts oft heT eesV alley,ort hey couldbem orel ocalpro ducts,as copiesi nbo thN orthernG rittyware andt heLo calSand ywares (MEDLOC)ar ekno wn(V inceand Y oung 2007). A single sherd froma13 th-t o14 th-century Scarboroughwarejug(SC AR)has a b rightc opper-coloured glaze. Seveno thers herdsaref romunknow n,pro bablynon-local,medi evalproduct ions ites(MEDX).T hree oft he vesselsar ej ugsof 13t h-t o14 th-an d13 th-t o15 th-centurydat e.

3.3 POST-MEDIEVAL

Then inep ost-medievalv esselsr ecoveredf romt hes itei ncludef inewares(BERTH,BL a ndCI ST),coa rsewares(GRE, PMLOCa ndR YEDALE)a nds tonewares(FREC).A r imf roma C isterianw arep ossetp oti si na w hite-firingf abric(CIST) andda test o between the late 15th and 16th centuries. A posset poti na f ine Brown-glazed Earthenware (BERTH)a nda cupi nB lack-glazedE arthenware(B L)co uldhave been manufacturedi nStaf fordshire,but aremo rel ikelyt obe Y orkshire productsof l ate17t h-t o18 th-centurydat e.

Ab owl, ina f ineo xidisedL ocalP ost-medievalf abric(P MLOC), datestob etweent he1 5tha nd1 8thc enturies.

TwoG lazedR edE arthenwareb owls (GRE), one of which has an internal copper-colouredgl aze, are of m id-16tht o17 th-or1 8th-centuryd ate.A p robablela rgev esselin R yedalew are(RYEDALE) couldd ateto a nywhereb etweenth elate 1 5th and1 8thc enturies. Thetw oim portedG ermans tonewares herds areb oth fromF rechen-typed rinkingju gso fm id-16th-to 17th-centuryda te(FR EC).

3.4 CLAYP IPESb yJenny Mann

Fourteen f ragments wer e e xamined, o f w hich t en almost c ertainly post date 170 0. Al though i solated un marked s tem fragments arenot closelyda table,t hest embo resof the remaining four suggest a 17th or 18th century date.N os 69,70 and 244al ls howv aryingdegr eesof abr asionan da re more likely topre date170 0wher eas79d oesnot ,per hapsi ndicatingal ater datef ort hisp iece. No.2 44i sbroke na crossaw orn,s tumpys pur;howev er,s pursdonot ge nerallyoccu ronY orkshirepi pes untilt he late 18th/early 19th century. This suggests that the pipem ay notbe f romal ocals ource;s imilarlys malls purs occur onLon donpi pesof t he period *c.*1610-40(*cf*A tkinsonand O swald19 69,f ig.1,7- 8).

Context	Count	SB	Comments
1000	2	7	Stemf ragments,N o69a braded;N o244 with smalls pur, abraded
1000	2	6	Stemf ragments,No70 abraded;No79 appro achingm outhpiece

SB=s tembo re,meas uredi n64t hsof an i nch

4.0 DISCUSSION

Thisi sa s mallg roupof ma inlyme dievalt oe arlypos t-medievalpot teryi na c onditiont ypicalof m aterialr ecovered from fieldw alking. As ingle sherdc ant entativelybe i dentified asof Roman d ate. The presenceof f orty-sixme dievals herds suggestsnea rbysett lemento f1 2th-t o1 4th-or1 5th-century date,p ossiblywhe rea sm allco ncentrationo ccurstothe ea st ofH omeFar m. As mallernu mberof ve sselsbel ongt ot he earlypost -medievalper iodbet weent he 16tha nd17t hc enturies andi ncludet woi mportedG ermans tonewaresan daCi stercianposs etpot amongs tt he smallas semblage.

This assemblagegi vesabasi ci deao ft hel ocalc eramic sequence fromthe1 2thto 16thc enturies,b uti s notl argeeno ugh tof ormaclear i mpressionof thest atus oft hereco veredpo ttery. It i s possible,how ever,t onotet hatanunus uallyhi gh proportiono ft hem edievalvesse lsare i dentifiablea sjugs.

Nof urtherworki s recommendedont hep ottery,but theass emblageshoul dbe ret ained for inclusion in any survey ofpo ttery int he area.

References

Atkinson,D a ndO swald,A , LondonC layT obaccoP ipes, *JournalBr itishAr chaeologicalAs sociation*,23, 171- 227

Barrett, K 1985 Medieval pottery inD HE vansa ndD HH eslop,T wom edievalsit esinY arm, *YorkshireA rchaeol,* **57**,61- 68

Patterson, H, 1985M edievalp otteryinD HE vansa ndD HH eslop,T wom edievalsit esinY arm, *YorkshireA rchaeol,* **57**, 68-72

Slowikowski, A.M., N enk, B . an d P earce, J. 2 001. *Minimum s tandards f or t he processing, reco rding, anal ysis and publicationof post -Romance ramics*.O ccasionalpap er **2**.Lon don:M edievalPot teryRes earchG roup.

Vince,A .G .a ndY oung,J .2 007.T he Medievala ndP ost-medievalp otteryi n *The Archaeology of the A1(M)D arrington toDi shforthDB FOR oadS cheme*.L ancasterIm prints

APPENDIXF CERAMICBUI LDINGMATE RIALA SSESSMENT

Cecily Spall,F ASL td

1.0 INTRODUCTION

Anass emblageo f39 f ragments ofceram icb uildingm aterial(CBM) wass ubmittedf ori dentificationand ass essment.T he assemblage consistsof s mall,g enerallyr atherpoor lypr eservedf ragmentsda teable fromt he medieval tot he modernpe riod.

2.0 ASSESSMENT

2.1 MEDIEVALM ATERIAL

At otalof 10f ragmentswer ei dentifieda sm edievalorpr obablym edievalroof t ilef ragments(F indnos 40, 42, 58, 80, 84, 86,8 9,1 05,1 07a nd1 24).T hep ieces areg enerallyq uite poorly preserveda ndm ostlyo nlyi dentifiableb roadlyas p lain rooft ilefra gmentso ft he1 3th to1 6th century. Onep iece(Findn o8 0) appearsto r epresenta p ossiblen ibtile lug ,w hile Findno 10 7,t houghs mall,ap pears tode rivef romari dget ile.

2.2 MODERNAND UN DIAGNOSTICM ATERIAL

At otalof 11f ragments were identifiable as modern and tookt hef ormo fm achine-madeb rick,pa ntileand f ielddrai n.T he remaining 17 f ragments wer e t oo sm all and po orly pre served t o be cl early i dentified as mo dern, al though t he fabrics suggestedthe yw ereno tm edieval.

3.0 CONCLUSION

The m edieval m aterial s hould be ret ained f or s tudy wi thin l ocal regi onal ceram ic b uilding m aterial. T he m odern and undiagnosticmat erials houldbecons ideredf ordi sposalan di sof l imitedorn of urtheran alyticalva lue.

APPENDIXG SMALLF INDSA SSESSMENT

Cecily Spall,F ASL td

1.0 INTRODUCTION

Twol eadobject swer e recovered during reconnaissance fieldwalking at Home Farm, Kirkby Fleetham,N orthY orkshire. The items were submitted for identification and assessment. Following consultation with a conservator the leadi tems are beings toredwi thoutcl imatec ontroli na rchivalpl asticpack agingf orl ong-termst orage.

2.0 CATALOGUE(Plate 1)

Findno212
Sub-angular, f lat, l ead wei ght wi th l arge off -centre t apering perforation, w idth 42mm, h eight 33mm, t hickness 13mm, weight96 .3g.

Findno252
Sub-biconical l ead w eight m ade fro m ro lled sh eet, length 42mm;di ameter25mm; w eight115. 7g

Plate1 F indn o2 12 and Find no 252

3.0 DISCUSSIONANDAS SESSMENT

Findno 25 2 is similar in formt o a series of lead fishing weights recorded fromm edievalSo mersetand t hel essuni formF ind no212 s imilart o examplesf romt heT hamesf oreshore(St eaneand Foreman19 88,9 7,F ig.1 2.8). Bothar egoo dexa mples ofm edievalf ishingw eightso flike ly1 3th- to1 4th-centuryd ate. Theyr epresente videncefo rin landfi shingo ft heS wale andm ayha veb eenuse dt owe ightb asket-workfi shtrap s.

References

Steane, J. M and Fo reman, M . 19 88. ‘ The archaeo logy of m edieval f ishing t ackle’, i n G .L.Good, R .H.Jones and M.W.Ponsford(e ds), *WaterfrontAr chaeology*

G.L.Good,R. H.JonesM .W.Ponsford(eds)199 1.W aterfrontAr chaeology,procee dingsof t he 3rd Internationalconf erence ofwa terfrontar chaeology, *CBAR esearchR eport*74

APPENDIXH BOREHOLE LOG

Borehole1

From	To	Thick	ContextNo	Description
0	0.2	0.2	1000	Stiff,g rey(10Y R4 /1) claytops oil
0.2	3+	2.8+	1001	Sterile,brow n(10 YR4/6) s and and gravel,be comingda rkg rey(10Y R4/ 1)

Borehole2

From	To	Thick	ContextNo	Description
0	0.5	0.5	1002	Darky ellowish-brown(10YR4/6),silty clay
0.5	3.0+	2.5+	1003	Greyish-brown(2.5Y5/2),sandy clay andgrav el

Borehole3

From	To	Thick	ContextNo	Description
0	0.6	0.6	1004	Yellowish-brown(10YR5/6),sandy clay
0.6	2.2	1.5	1005	Yellowish-brown(10YR5/8)coarse sandand gra vel
2.2	3.0+	0.8+	1006	Greyish-brown(10YR5/2),coarses andand gra vel

Borehole4

From	To	Thick	ContextNo	Description
0	0.5	0.5	1007	Yellowish-brown(10YR5/4) ,f riablec layeys ilt
0.5	2	1.5	1008	Banded yellowish-brown(10Y R5/ 8), orange (10YR5/ 8)a ndg rey(10Y R5/ 2) coarses andand la rge roundedgrav el
2	2.2	0.2	1009	Yellowish-brown(10YR5/4) ,c oarses and
2.2	3.0+	0.8+	1010	Yellowish-brown(10YR5/4) ,r ounded gravelin sand

Borehole5

From	To	Thick	ContextNo	Description
0	0.4	0.4	1011	Darkg reyish-brown(10Y R4/ 2), stiffc laytops oil
0.4	1	0.6	1012	Black(10YR2 /1),peaty soil-sam pled
1	1.9	9	1013	Darkgre y(10YR4/1),organicclay -sa mpled
1.9	2	0.1	1014	Waterloggedw ood-reta ined
2	2.1+	0.1+	1015	Darkgre y(10YR4/1),sandand gra vel

Borehole6

From	To	Thick	ContextNo	Description
0	0.3	0.3	1016	Darkg rey(10Y R4 /1),s andyc laytops oil

From	To	Thick	ContextNo	Description
0.3	2	0.7	1017	Bandedyel lowish-brown(1 0YR5 /6),d arkgr ey(10YR4 /1)an dgr eyish-brown (10YR5/ 2)g ravela nds and
2	2.4	0.4	1018	Greyish-brown(10 YR5/2) ,c oarse,s ofts and
2.4	3.0+	0.6+	1019	Greyish-brown(10 YR5/2) rounde dg ravelin sand

Borehole7

From	To	Thick	ContextNo	Description
0	0.5	0.5	1020	Darkg reyish-brown(10Y R4/2), claploug hsoil
0.5	1.2	0.7	1021	Greyish-brown(2.5Y5/2),sterilesa ndandgrav el
1.2	1.5	0.3	1022	Greyish-brown(10Y5/2),clean,steriles andand gra vel
1.5	3.8	2.3	1023	Darkgre y(2.5 Y4/1)sandand gra vel
3.8	4.0+	0.2+	1024	Darkg rey(2. 5Y 4/1), steriles iltys and

Borehole8

From	To	Thick	ContextNo	Description
0	0.5	0.5	1025	Darkg reyish-brown(10Y R4/2), claploug hsoil
0.5	3.6	3.1	1026	Greyish-brown(2.5Y5/2),sterilesa ndandgrav el
3.6	4.0+	0.4+	1027	Greyish-brown(10Y5/2),com pactsteriles andand gra vel

Borehole9

From	To	Thick	ContextNo	Description
0	0.4	0.4	1028	Darkg reyish-brown(10Y R4/2), claploug hsoil
0.4	3.7	3.3	1029	Greyish-brown(2.5Y5/2),sterilesa ndandgrav el
3.7	4.0+	0.3+	1030	Greyish-brown(2.5Y5/2),com pact,clay eysandandgrave l

Borehole 10

From	To	Thick	ContextNo	Description
0	0.4	0.4	1031	Darkg reyish-brown(10Y R4/2), claploug hsoil
0.4	1.2	0.8	1032	Yellowish-brown(10YR5/6) ,c ompactc layeys and
1.2	1.3	0.1	1033	Greyish-brown(10YR5/2),coarse,cla yeysandandgrave l
1.3	1.4	0.1	1034	Greyish-brown(10 YR5/2) ,f ines and
1.4	3.2	1.8	1035	Greyish-brown(10 YR5/2) s and with some laminations
3.2	3.3	0.1	1036	Veryda rkg rey(10YR3/ 1), sterile,s oftg ranulars and
3.3	3.6	0.3	1037	Darkgre yish-brown(2. 5Y4/2)sandy siltw itho rganicm atter-s ampled
3.6	4.0+	0.4+	1038	Verydarkg rey(2.5Y3/1)sandandgrave l

Borehole 11

From	To	Thick	ContextNo	Description
0	0.3	0.3	1039	Darkg reyish-brown(10Y R4/2), claploug hsoil

From	To	Thick	ContextNo	Description
0.3	1.0	0.7	1040	Brown(10YR4/ 3)sandy clay w ithp ebbles
1.0	2.3	1.3	1041	Brownish-yellow (10YR6/6)coarse sandand gra vel
2.3	2.5	0.2	1042	Darkgre yish-brown(2. 5Y4/2)sandy siltw itho rganicm atter-s ampled
2.5	4.0+	1.5+	1043	Verydarkg reyish-brown(2. 5Y3/1)sandandgrave l

Borehole 12

From	To	Thick	ContextNo	Description
0	0.7	0.7	1044	Yellowish-brown(10YR5/4) s andyc layploug hsoil
0.7	3.0+	2.3+	1045	Yellowish-brown(10YR5/4)m ixedsa ndandgrav el

Borehole 13

From	To	Thick	ContextNo	Description
0	0.6	0.6	1046	Darky ellowish-brown(10Y R3/ 4)s andyc layploug hsoil
0.6	1.5	0.9	1047	Yellowish-brown(10YR3/4)clay overburd en
1.5	3.2	1.7	1048	Yellowish-brown(10YR5/8) m ixed gravela nds and
3.2	4.0+	0.8+	1049	Darkgre yish-brown(10 YR4/2), f irmbou lderclay

Borehole 14

From	To	Thick	ContextNo	Description
0	0.5	0.5	1050	Darky ellowish-brown(10Y R4/ 4), stiffc layploug hsoil
0.5	3.0+	2.5+	1051	Darky ellowish-brown(10YR4/4),coarses andwithgra vel

Borehole 15

From	To	Thick	ContextNo	Description
0	0.6	0.6	1052	Darky ellowish-brown(10Y R4/ 4)s andyc layploug hsoil
0.6	0.8	0.2	1053	Darky ellowish-brown(10Y R4/ 4)c oarses and
0.8	2.0	1.2	1054	Darky ellowish-brown(10Y R4/ 4)r ounded gravelin coarse sand
2.0	3.9	1.9	1055	Darkgre y(2.5 Y4/1)clay w itho rganicm atter-s ampled
3.9	4.0+	0.1+	1056	Darky ellowish-brown(10Y R4/ 4)r ounded gravela nds and

Borehole 16

From	To	Thick	ContextNo	Description
0	0.6	0.6	1057	Darky ellowish-brown(10Y R4/ 4)s andyc layploug hsoil
0.6	3.0	2.4	1058	Darky ellowish-brown(10Y R4/ 4)be comingg rey,r ounded gravelin coarse sand
3.0	3.1+	0.1+	1059	Yellowish-brown(10YR5/6)bou lderclay

Borehole 17

From	To	Thick	ContextNo	Description
0	0.6	0.6	1060	Darky ellowish-brown(10Y R4/ 4)c layeys iltploug hsoil
0.6	4.0+	3.4+	1061	Darky ellowish-brown(10Y R4/ 4)r ounded gravelin sandbe comingrunni ngs and

Borehole 18

From	To	Thick	ContextNo	Description
0	0.3	0.3	1062	Darky ellowish-brown(10Y R4/ 4), clayeys iltploug hsoil
0.3	1.2	0.9	1063	Brown(10YR4/ 3),f riablesandy siltoverburd en
1.2	3.0+	1.8+	1064	Greyish-brown(2.5Y5/2),sterilesa ndbecom ingsandand gra vel

Borehole 19

From	To	Thick	ContextNo	Description
0	0.4	0.4	1065	Darky ellowish-brown(10Y R4/ 4)c layeys iltploug hsoil
0.4	1.1	0.7	1066	Brown(10YR4/ 3),sandy siltoverburd en
1.1	3.0+	1.9+	1067	Greyish-brown(2.5Y5/2)sandandgrave l

Borehole 20

From	To	Thick	ContextNo	Description
0	0.4	0.4	1068	Darky ellowish-brown(10Y R4/ 4)c layeys iltploug hsoil
0.4	1.0	0.6	1069	Brown(10YR4/ 3),sandy siltoverburd en
1.0	3.0+	2.0+	1070	Greyish-brown(2.5Y5/2)sandandfineg ravel

Borehole 21

From	To	Thick	ContextNo	Description
0	0.4	0.4	1071	Darky ellowish-brown(10Y R4/ 4)c layeys iltploug hsoil
0.4	0.6	0.2	1072	Brown(10YR4/ 3)sandy siltoverburd en
0.6	0.4+	3.4+	1073	Lighty ellowish-brown(2.5Y6 /4)sterile,loo ses andand gra vel

Borehole 22

From	To	Thick	ContextNo	Description
0	0.4	0.4	1074	Darky ellowish-brown(10Y R4/ 4)c layeys iltploug hsoil
0.4	3.0+	2.6+	1075	Yellowish-brown(10YR5/4)sandandgrave l

Borehole 23

From	To	Thick	ContextNo	Description
0	0.3	0.3	1076	Darky ellowish-brown(10Y R4/ 4)c layeys iltploug hsoil
0.3	3.0+	2.7+	1077	Yellowish-brown(10YR5/4)sandandgrave l

Borehole 24

From	To	Thick	ContextNo	Description
0	0.4	0.4	1078	Darky ellowish-brown(10Y R4/ 4)c layeys iltploug hsoil
0.4	0.8	0.4	1079	Brown(10YR5/ 3)stick y,sandy clay overburd en
0.8	2.9	2.1	1080	Yellowish-brown(10YR5/4)sandandgrave l
2.9	3.0	0.1	1081	Greyish-brown(10 YR5/2) s oft, sterilea ndc lean sandys ilt
3.0	3.6	0.6	1082	Greyish-brown(10YR5/2)sof tsandand gra vel
3.6	4.0+	0.4+	1083	Brown(7.5 YR5/2)stif f,plasticbo uldercla y

Borehole 25

From	To	Thick	ContextNo	Description
0	0.4	0.4	1084	Darky ellowish-brown(10Y R4/ 4)c layeys iltploug hsoil
0.4	0.9	0.5	1085	Brown(10YR5/ 3)stick y,sandy clay overburd en
0.9	1.0	0.1	1086	Darky ellowish-brown(10Y R4/ 4)s oft, cleans and
1.0	3.9	2.9	1087	Darky ellowish-brown(10YR4/4)sandandgrave l
3.9	4.0+	0.1+	1088	Brown(7.5 YR5/2)stif f,plasticbo uldercla y

Borehole 26

From	To	Thick	ContextNo	Description
0	0.4	0.4	1089	Darky ellowish-brown(10Y R4/ 4)c layeys iltploug hsoil
0.4	3.9	3.5	1090	Darky ellowish-brown(10YR4/4)sandandgrave l
3.9	4.0+	0.1+	1091	Brown(7.5 YR5/2)stif fbou lderclay

Borehole 27

From	To	Thick	ContextNo	Description
0	0.5	0.5	1092	Darky ellowish-brown(10Y R4/ 4)c layeys iltploug hsoil
0.5	1.2	0.6	1093	Yellowish-brown(10YR5/4),clean,f riablesandy siltoverburd en
1.2	3.9	2.9	1094	Yellowish-brown(10YR5/6)sandandgrave l
3.9	5.0+	1.1+	1095	Brown(7.5YR4 /2),s tiff,p lastic,l aminatedb oulderc lay

Borehole 28

From	To	Thick	ContextNo	Description
0	0.5	0.5	1096	Darky ellowish-brown(10Y R4/ 4)c layeys iltploug hsoil
0.5	1.6	1.1	1097	Yellowish-brown(10YR5/4)clea n,friablesa ndysiltoverburd en
1.6	3.0+	1.4+	1098	Greyish-brown(10 YR5/2) c oarses and becomingg ravela nds and

Borehole 29

From	To	Thick	ContextNo	Description
0	0.6	0.6	1099	Darkbrow n(10Y R3/3) c layeys iltploug hsoil

From	To	Thick	ContextNo	Description
0.6	1.0	0.4	1100	Darky ellowish-brown(10YR4/4)sandy clay overburd en
1.0	1.3	0.3	1101	Darky ellowish-brown(10Y R4/ 4)g ravela nds and
1.3	1.6	0.3	1102	Darkg reyish-brown(10Y R4/ 2)s terile,s lightlyc layeys and
1.6	2.8	1.2	1103	Brown(10Y R4/ 3)g ravela nds and
2.8	3.0+	0.2+	1104	Brown(10YR4/ 3)sterileboul derclay

Borehole 30

From	To	Thick	ContextNo	Description
0	0.6	0.6	1105	Darky ellowish-brown(10Y R3/ 6), friablec layeys iltploug hsoil
0.6	1.0	0.4	1106	Yellowish-brown(10YR5/4)slightly clay eysiltoverburd en
1.0	1.3	0.3	1107	Yellowish-brown(10YR5/4) c lean,c oarses and
1.3+	3.0	1.4+	1108	Brown(10Y R4/ 3)g ravela nds and

Borehole 31

From	To	Thick	ContextNo	Description
0	0.6	0.6	1109	Darkbrown(10 YR 3/3)clay eysiltoverburd en
0.6	1.0	0.4	1110	Olive brown(2. 5Y4/4)slightl yclay eysandoverburd en
1.0	1.7	0.7	1111	Yellowish-brown(10YR5/4) c oarses and
1.7	3.0	1.3	1112	Darky ellowish-brown(10Y R4/ 4)g ravela nds and

Borehole 32

From	To	Thick	ContextNo	Description
0	0.5	0.5	1113	Darkbrow n(10Y R3/3) f riable,c layeys iltploug hsoil
0.5	1.8	1.3	1114	Darky ellowish-brown(10YR4/4)sandandgrave l
1.9	2.0	0.1	1115	Darkbrow n(10Y R3/3) a ndda rky ellowish-brown(10Y R4/ 4)ba nded coarse sand
2.0	2.8	0.8	1116	Darky ellowish-brown(10Y R4/ 4)g ravela nds and
2.8	2.9	0.1	1117	Darkbrow n(10Y R3/3) a ndda rky ellowish-brown(10Y R4/ 4)s and
2.9	3.0	0.1+	1118	Darky ellowish-browng ravela nds and

Borehole 33

From	To	Thick	ContextNo	Description
0	0.5	0.5	1119	Darkg rey(2. 5Y 3/2)c layeys iltploug hsoil
0.5	1.5	1.0	1120	Darkgre yish-brown(2. 5Y4/2)clay eysiltoverburd en
1.5	3.0	1.5	1121	Darky ellowish-brown(10Y R4/ 4)g ravela ndc oarses and
3.0	4.0+	1.0+	1122	Darkgre y(2.5 Y4/1)bo uldercla y

Borehole 34

From	To	Thick	ContextNo	Description
0	0.4	0.4	1123	Darkg rey(2. 5Y 3/2)c layeys iltploug hsoil

From	To	Thick	ContextNo	Description
0.4	1.1	0.6	1124	Darkgre yish-brown(2. 5Y4/2)clay eysiltoverburd en
1.1	3.7	260	1125	Darky ellowish-brown(10YR4/4)sandandgrave l
3.7	4.0+	0.3+	1126	Grey(2.5 Y4/1)b ouldercla y

Borehole 35

From	To	Thick	ContextNo	Description
0	0.5	0.5	1127	Darky ellowish-brown(10Y R4/ 4)c layeys iltploug hsoil
0.5	1.6	1.1	1128	Greyish-brown(10 YR4/2) la minated,s iltyc layov erburden/alluvium
1.6	3.7	2.1	1129	Yellowish-brown(10YR5/6)coarse sandand gra vel
3.7	4.0+	0.3+	1130	Darkgre y(7.5 YR 4/1)silty clay ,po ssiblebo uldercla y

Borehole 36

From	To	Thick	ContextNo	Description
0	0.5	0.5	1131	Darky ellowish-brown(10Y R4/ 4)c layeys it ploughsoil
0.5	1.2	0.7	1132	Greyish-brown(10 YR4/2) la minated,s iltyc layov erburden/alluvium
1.2	3.6	2.4	1133	Yellowish-brown(10YR5/6)coarse sandand gra vel
3.6	4.0+	0.4+	1134	Brown(7.5 YR4/3)very stif f,com pact,f inelylam inatedb oulderclay

Borehole 37

From	To	Thick	ContextNo	Description
0	0.4	0.4	1135	Darky ellowish-brown(10Y R4/ 4)c layeys iltploug hsoil
0.4	1.0	0.6	1136	Greyish-brown(10 YR4/2) la minated,s iltyc layov erburden/alluvium
1.0	3.0+	2.0+	1137	Yellowish-brown(10YR5/6)coarse sandand gra vel

Borehole 38

From	To	Thick	ContextNo	Description
0	0.4	0.4	1138	Darky ellowish-brown(10Y R4/ 4)c layeys iltploug hsoil
0.4	0.7	0.3	1139	Greyish-brown(10 YR4/2) la minated,s iltyc layov erburden/alluvium
0.7	3.5	2.8	1140	Yellowish-brown(10YR4/2) g ravela nds and
2.8	4.0+	1.2+	1141	Brown(7.5 YR4/3)com pactbou lderclay

Borehole 39

From	To	Thick	ContextNo	Description
0	0.4	0.4	1142	Darky ellowish-brown(10Y R4/ 4)c layeys iltploug hsoil
0.4	3.0+	2.6+	1143	Yellowish-brown(10YR4/2)sandandgrave l

Borehole 40

From	To	Thick	ContextNo	Description
0	0.3	0.3	1144	Darky ellowish-brown(10Y R4/ 4)c layeys iltploug hsoil
0.3	3.8+	3.5+	1145	Yellowish-brown(10YR4/2)sandandgrave l

Borehole 41

From	To	Thick	ContextNo	Description
0	0.4	0.4	1146	Darky ellowish-brown(10Y R4/ 4)c layeys iltploug hsoil
0.4	0.6	0.2	1147	Greyish-brown(10 YR4/2) s iltyc layov erburden/alluvium
0.6	2.6	2.0	1148	Lighty ellowish-brown(10YR6/4)band edsand,and sandandgrave l
2.6	3.0+	0.4+	1149	Brown(7.5 YR4/3)bo uldercla y

Borehole 42

From	To	Thick	ContextNo	Description
0	0.4	0.4	1150	Darky ellowish-brown(10Y R4/ 4)c layeys iltploug hsoil
0.4	1.5	1.1	1151	Darkg reyish-brown(2. 5Y 4/2)
1.1	3.2	2.1	1152	Yellowish-brown(10YR4/2)sandandgrave l
3.2	4.0+	0.6+	1153	Brown(7.5 YR4/3)bo uldercla y

Borehole 43

From	To	Thick	ContextNo	Description
0	0.6	0.6	1154	Darkoli ve brown(2.5Y3/3) c layeys iltploug hsoil
0.6	3.0+	2.4+	1155	Darky ellowish-brown(10Y R4/ 4)g ravela nds and

Borehole 44

From	To	Thick	ContextNo	Description
0	0.6	0.6	1156	Darkoli ve brown(2.5Y3/3) c layeys iltploug hsoil
0.6	1.9+	1.3+	1157	Darky ellowish-brown(10Y R4/ 4)g ravela ndc oarses and

Borehole 45

From	To	Thick	ContextNo	Description
0	0.7	0.7	1158	Olive brown(2. 5Y4/3) c layeys iltploug hsoil
0.7	1.4	0.7	1159	Darky ellowish-brown(10Y R4/ 4)g ravelin coarse sand
1.4	1.7	0.3	1160	Veryda rkg reyish-brown(2. 5Y 3/2) gravelin coarse sand
1.7	3.0+	1.3+	1161	Darky ellowish-brown(10YR4/4)sandandgrave l

Borehole 46

From	To	Thick	ContextNo	Description
0	0.6	0.6	1162	Olive brown(2. 5Y4/3) c layeys iltploug hsoil
0.6	1.0	0.4	1163	Darky ellowish-brown(10YR3/6)clay eysiltoverburd en
1.0	1.4	0.4	1164	Darky ellowish-brown(10Y R4/ 4)c oarses and
1.4	4.0+	2.6+	1165	Darky ellowish-brown(10YR4/4)sandandgrave l

Borehole 47

From	To	Thick	ContextNo	Description
0	0.6	0.6	1166	Darkg reyish-brown(2. 5Y 4/2) clayeys iltploug hsoil
0.6	2.4	1.8	1167	Darky ellowish-brown(10YR4/4)m ixedsa ndandgrav el
2.4	2.7	0.3	1168	Darkreddish -grey(5YR4/2)sterilec lay
2.7	4.0+	1.3+	1169	Darky ellowish-brown(10Y R4/ 4)c oarses and

Borehole 48

From	To	Thick	ContextNo	Description
0	0.6	0.6	1170	Olive brown(2. 5Y4/3) c layeys iltploug hsoil
0.6	3.4+	2.8+	1171	Darky ellowish-brown(10Y R4/ 4)g ravela ndc oarses and

Borehole 49

From	To	Thick	ContextNo	Description
0	0.7	0.7	1172	Brown(10Y R4/ 3)c layeys iltploug hsoil
0.7	2.5	1.8	1173	Darky ellowish-brown(10Y R4/ 4)g ravela nds and
2.5	3.0+	0.5+	1174	Darky ellowish-brown(10Y R4/ 4)c oarses and

Borehole 50

From	To	Thick	ContextNo	Description
0	0.7	0.7	1175	Brown(10Y R4/ 3)c layeys iltploug hsoil
0.7	1.4	0.7	1176	Lighto livebrow n(2.5 Y5/3)clay eysiltoverburd en
1.4	1.8	0.4	1177	Darky ellowish-brown(10YR4/4)sandandgrave l
1.8	2.5+	0.7+	1178	Brown(10YR4/ 3)bou lderclay

Borehole 51

From	To	Thick	ContextNo	Description
0	0.6	0.6	1179	Brown(10Y R4/ 3)c layeys iltploug hsoil
0.6	1.0	0.4	1180	Lighto livebrow n(2.5 Y5/3)clay eysiltoverburd en
1.0	3.0+	2.0+	1181	Darky ellowish-brown(10YR4/4)sandandgrave l

Borehole 52

From	To	Thick	ContextNo	Description
0	0.6	0.6	1182	Brown(10Y R4/ 3)c layeys iltploug hsoil
0.6	1.1	0.5	1183	Darky ellowish-brown(10YR4/6)clay eysiltoverburd en
1.1	1.6	0.5	1184	Darky ellowish-brown(10Y R4/ 6)c oarses and
1.6	1.8	0.2	1185	Darkgre y(10YR4/1)sandy clay
1.8	4.0+	2.2+	1186	Darky ellowish-brown(10YR4/4)sandandgrave l

Borehole 53

From	To	Thick	ContextNo	Description
0	0.7	0.7	1187	Brown(10Y R4/ 3)c layeys iltploug hsoil
0.7	3.6	2.9	1188	Darky ellowish-brown(10YR4/4)sandandgrave l
3.6	4.0+	0.4+	1189	Brown(10YR4/ 3)bou lderclay

Borehole 54

From	To	Thick	ContextNo	Description
0	0.8	0.8	1190	Brown(10Y R4/ 3)c layeys iltploug hsoil
0.8	4.0+	3.2+	1191	Darky ellowish-brown(10YR4/4)sandandgrave l

Borehole 55

From	To	Thick	ContextNo	Description
0	0.9	0.9	1192	Brown(10Y R4/ 3)c layeys iltploug hsoil
0.9	3.0+	2.1+	1193	Darky ellowish-brown(10YR4/4)sandandgrave l

Borehole 56

From	To	Thick	ContextNo	Description
0	1.0	1.0	1194	Brown(10Y R4/ 3)c layeys iltploug hsoil
1.0	3.0+	2.0+	1195	Darky ellowish-brown(10YR4/4)sandandgrave l

Borehole 57

From	To	Thick	ContextNo	Description
0	0.8	0.8	1196	Darky ellowish-brown(10Y R4/ 4)c layeys iltploug hsoil
0.8	4.0+	3.2+	1197	Darky ellowish-brown(10Y R4/ 4)s and and gravelbe comingpure s and

Borehole 58

From	To	Thick	ContextNo	Description
0	0.9	0.9	1198	Darky ellowish-brown(10Y R3/ 6)c layeys oil ploughsoil
0.9	1.6	0.7	1199	Darky ellowish-brown(10Y R4/ 4)g ravela ndc oarses and

From	To	Thick	ContextNo	Description
1.6	2.1	0.5	1200	Grey(10Y R4/ 1)a ndbrow nish-yellow(10Y R6/ 8)ba nded clayeys and
2.1	4.0+	1.9	1201	Darky ellowish-brown(10Y R4/ 4)g ravela nds and

Borehole 59

From	To	Thick	ContextNo	Description
0	1.0	1.0	1202	Brown(10Y R4/ 3)c layeys iltploug hsoil
1.0	4.0+	3.0+	1203	Darky ellowish-brown(10Y R4/ 4)g ravela ndc oarses and

Borehole 60

From	To	Thick	ContextNo	Description
0	0.6	0.6	1204	Brown(10Y R4/ 3)c layeys iltploug hsoil
0.6	1.4	0.8	1205	Grey(10YR4 /1)clay eysiltoverburd en
1.4	3.8	2.4	1206	Darky ellowish-brown(10Y R4/ 4)g ravela nds and
3.8	4.0+	0.2+	1207	Grey(10YR4 /1)lam inatedb oulderclay

Borehole 61

From	To	Thick	ContextNo	Description
0	0.7	0.7	1208	Brown(10Y R4/ 3)c layeys iltploug hsoil
0.7	3.7	3.0	1209	Darky ellowish-brown(10Y R4/ 4)g ravela ndc oarses and
3.7	4.0+	0.3+	1210	Brown(10YR4/ 3)f ine,lam inatedb oulderclay

Borehole 62

From	To	Thick	ContextNo	Description
0	0.7	0.7	1211	Brown(10Y R4/ 3)c layeys iltploug hsoil
0.7	1.3	0.6	1212	Darky ellowish-brown(10YR4/4)clay eysiltoverburd en
1.3	4.0+	2.7+	1213	Darky ellowish-brown(10Y R4/ 4)g ravela ndc oarses and

Borehole 63

From	To	Thick	ContextNo	Description
0	0.4	0.4	1214	Brown(10Y R4/ 3)c layeys iltploug hsoil
0.4	1.0	0.6	1215	Brown(10YR4/ 3),f riableclay eysiltoverburd en
1.0	4.0+	3.0+	1216	Darky ellowish-brown(10Y R4/ 4)g ravela nds and becomingpure s and

Borehole 64

From	To	Thick	ContextNo	Description
0	0.4	0.4	1217	Brown(10Y R4/ 3)c layeys iltploug hsoil
0.4	1.0	0.6	1218	Brown(10YR4/ 3)clay eysandoverburd en
1.0	4.0+	3.0+	1219	Darky ellowish-brown(10Y R4/ 4)g ravela nds and becomingpure s and

Borehole 65

From	To	Thick	ContextNo	Description
0	0.9	0.9	1220	Darky ellowish-brown(10Y R4/ 4)c layeys iltploug hsoil
0.9	4.0+	3.1+	1221	Darky ellowish-brown(10Y R4/ 4)g ravela nds and

Borehole 66

From	To	Thick	ContextNo	Description
0	0.7	0.7	1222	Darky ellowish-brown(10Y R4/ 4)c layeys iltploug hsoil
0.7	3.4	2.7	1223	Darky ellowish-brown(10Y R4/ 4)g ravela nds and
3.4	4.0+	0.6+	1224	Grey(10YR4 /1)stif fsilty bou lderclay

Borehole 67

From	To	Thick	ContextNo	Description
0	0.7	0.7	1225	Darky ellowish-brown(10Y R4/ 4)c layeys iltploug hsoil
0.7	2.2+	1.5+	1226	Darky ellowish-brown(10Y R4/ 4)g ravela nds and

Borehole 68

From	To	Thick	ContextNo	Description
0	0.4	0.4	1227	Brown(10Y R4/ 3)c layeys iltploug hsoil
0.4	3.0+	3.6+	1228	Darky ellowish-brown(10Y R4/ 4)g ravela nds and

Borehole 69

From	To	Thick	ContextNo	Description
0	0.4	0.4	1229	Darky ellowish-brown(10Y R4/ 4)c layeys iltploug hsoil
0.4	1.0	0.6	1230	Brown(10YR4/ 3)clay eysiltoverburd en
1.0	3.5+	2.5+	1231	Darky ellowish-brown(10Y R4/ 4)g ravela nds and

Borehole 70

From	To	Thick	ContextNo	Description
0	0.4	0.4	1232	Darky ellowish-brown(10Y R4/ 4)c layeys iltploug hsoil
0.4	1.0	0.6	1233	Brown(10YR4/ 3)clay eysiltoverburd en
1.0	1.6	0.6	1234	Greyish-brown(2. 5Y 5/2) sandw ith clayla minations
1.6	2.3	0.7	1235	Darky ellowish-brown(10Y R4/ 4)g ravela nds and
2.3	3.0+	0.7+	1236	Grey(10YR4 /1)stif fbou lderclay

Borehole 71

From	To	Thick	ContextNo	Description
0	0.5	0.5	1237	Brown(10Y R4/ 3)c layeys iltploug hsoil

From	To	Thick	ContextNo	Description
0.5	2.4	1.9	1238	Darky ellowish-brown(10Y R4/ 4)g ravela nds and
2.4	3.0+	0.6+	1239	Grey(10YR4 /1)bo uldercla y

Borehole 72

From	To	Thick	ContextNo	Description
0	0.6	0.6	1240	Brown(10Y R4/ 3)c layeys iltploug hsoil
0.6	1.5	0.9	1241	Darky ellowish-brown(10Y R4/ 4)g ravela ndc oarses and
1.5	1.6	0.1	1242	Darky ellowish-brown(10YR4/4)sandy clay
1.6	2.1	0.5	1243	Darky ellowish-brown(10YR4/4)sandandgrave l
2.1	3.0+	0.9+	1244	Grey(10YR4 /1)bo uldercla y

Borehole 73

From	To	Thick	ContextNo	Description
0	0.3	0.3	1245	Brown(10Y R4/ 3)c layeys iltploug hsoil
0.3	0.8	0.5	1246	Darky ellowish-brown(10YR4/4)clay eysiltoverburd en
0.8	2.1	1.3	1247	Darky ellowish-brown(10Y R4/ 4)g ravela nds and
2.1	3.0+	0.9+	1248	Grey(10YR4 /1)bo uldercla y

Borehole 74

From	To	Thick	ContextNo	Description
0	0.5	0.5	1249	Brown(10Y R4/ 3)c layeys iltploug hsoil
0.5	3.0+	2.5+	1250	Darky ellowish-brown(10Y R4/ 4)g ravela nds and

Borehole 75

From	To	Thick	ContextNo	Description
0	0.5	0.5	1251	Brown(10Y R4/ 3)c layeys iltploug hsoil
0.5	1.6	0.9	1252	Darky ellowish-brown(10Y R4/ 4)g ravela nds and
1.6	1.8	0.2	1253	Black(10 YR3/1)gra vel
1.8	2.2	0.4	1254	Darky ellowish-brown(10Y R4/ 4)g ravela nds and
2.2	3.0+	0.8+	1255	Grey(10YR4 /1)bo uldercla y

Borehole 76

From	To	Thick	ContextNo	Description
0	0.3	0.3	1256	Brown(10Y R4/ 3)s iltyc layploug hsoil
0.3	0.8	0.5	1257	Darky ellowish-brown(10YR4/4)silty clay overburd en
0.8	3.0+	2.2+	1258	Darky ellowish-brown(10Y R4/ 4)g ravela nds and

Borehole 77

From	To	Thick	ContextNo	Description
0	0.5	0.5	1259	Brown(10Y R4/ 3)c layeys iltploug hsoil
0.5	3.4	2.9	1260	Darky ellowish-brown(10Y R4/ 4)g ravela ndc oarses and
3.4	4.0+	0.6+	1261	Darkgre y(10YR4/1)bou lderclay

Borehole 78

From	To	Thick	ContextNo	Description
0	0.3	0.3	1262	Brown(10Y R4/ 3)c layeys iltploug hsoil
0.3	1.4	0.9	1263	Brown(10Y R4/ 3)s andys iltbe comingy ellowish-brown(10Y R5/ 6)c oarses and becomingg reyish-brown(10Y R5/ 2)l aminateds and and silt
1.4	2.8	1.4	1264	Darky ellowish-brown(10YR4/4)sandandgrave l
2.8	4.0+	1.2+	1265	Grey(10YR4 /1)lam inatedstiff bou lderclay

Borehole 79

From	To	Thick	ContextNo	Description
0	0.5	0.5	1266	Brown(10Y R4/ 3)c layeys iltploug hsoil
0.5	1.0	0.5	1267	Darkgre yish-brown(10 YR4/2)clay eysiltoverburd en
1.0	1.6	0.6	1268	Darky ellowish-brown(10Y R4/ 4)c oarses and
1.6	2.0	0.4	1269	Darkgre y(10YR4/1)f inesilty clay
2.0	3.6	1.6	1270	Darky ellowish-brown(10YR4/4)sandandgrave l
3.6	4.0+	0.4+	1271	Darkgre y(10YR4/1)bou lderclay

Borehole 80

From	To	Thick	ContextNo	Description
0	0.4	0.4	1272	Brown(10Y R4/ 3)c layeys iltploug hsoil
0.4	1.8	1.4	1273	Yellowish-brown(10YR5/6) s and
1.8	4.0+	2.2+	1274	Darky ellowish-brown(10Y R4/ 4)g ravela nds and

Borehole 81

From	To	Thick	ContextNo	Description
0	0.5	0.5	1275	Brown(10Y R4/ 3)c layeys iltploug hsoil
0.5	0.7	0.2	1276	Darky ellowish-brown(10Y R4/ 4)s lightlyc layeys and
0.7	0.8	0.1	1277	Brown(10YR4/ 3)silty clay
0.8	1.0	0.2	1278	Darky ellowish-brown(10Y R4/ 4)c oarses and
1.0	1.2	0.2	1279	Darky ellowish-brown(10Y R4/ 4)g ravela nds and
1.2	2.0	0.8	1280	Darky ellowish-brown(10Y R4/ 4)c oarses and
2.0	40+	2.0+	1281	Darky ellowish-brown(10Y R4/ 4)g ravela nds and

Borehole 82

From	To	Thick	ContextNo	Description
0	0.5	0.5	1282	Brown(10Y R4/ 3)c layeys iltploug hsoil
0.5	0.9	0.4	1283	Darky ellowish-brown(10YR4/4)slightly clay eysiltoverburd en
0.9	3.5+	2.4+	1284	Darky ellowish-brown(10Y R4/ 4)g ravela nds and

Borehole 83

From	To	Thick	ContextNo	Description
0	0.5	0.5	1285	Brown(10Y R4/ 4)c layeys iltploug hsoil
0.5	1.8	1.3	1286	Grey(10YR4 /1)slightly clay eysiltalluvium -sa mpled
1.8	3.0+	1.2+	1287	Darky ellowish-brown(10Y R4/ 4)g ravela nds and

Borehole 84

From	To	Thick	ContextNo	Description
0	0.6	0.6	1288	Brown(10Y R4/ 3)c layeys iltploug hsoil
0.6	1.6	1.0	1289	Darky ellowish-brown(10Y R4/ 4)g ravela nds and
1.6	3.4+	1.8+	1290	Darky ellowishbro wn(10Y R4/ 4)c oarses and

Borehole 85

From	To	Thick	ContextNo	Description
0	0.5	0.5	1291	Brown(10Y R4/ 3)c layeys iltploug hsoil
0.5	0.8	0.3	1292	Grey(10YR4 /2)clay eysiltoverburd en
0.8	3.0+	2.2+	1293	Darky ellowish-brown(10Y R4/ 4)g ravela nds and

Borehole 86

From	To	Thick	ContextNo	Description
0	0.6	0.6	1294	Brown(10Y R4/ 3)c layeys iltploug hsoil
0.6	0.8	0.2	1295	Darky ellowish-brown(10YR4/4)slightly clay eysiltoverburd en
0.8	2.6	1.8	1296	Darky ellowish-brown(10Y R4/ 4)g ravela nds and
2.6	3.0+	0.4+	1297	Darkgre y(10YR4/1)bou lderclay

Borehole 87

From	To	Thick	ContextNo	Description
0	0.5	0.5	1298	Brown(10Y R4/ 3)c layeys iltploug hsoil
0.5	0.8	0.3	1299	Darky ellowish-brown(10YR4/4)slightly clay eyoverburd en
0.8	2.4	1.6	1300	Darky ellowish-brown(10YR4/4)coarse sandand gra vel
2.4	3.0+	0.6+	1301	Darkgre y(10YR4/1)bou lderclay

Borehole 88

From	To	Thick	ContextNo	Description
0	0.6	0.6	1302	Brown(10Y R4/ 3)c layeys iltploug hsoil
0.6	3.0+	2.4+	1303	Darky ellowish-browng ravela nds and

Borehole 89

From	To	Thick	ContextNo	Description
0	0.7	0.7	1304	Brown(10Y R4/ 3)c layeys iltploug hsoil
0.7	1.1	0.4	1305	Darky ellowish-brown(10YR4/4)coarse sandand gra vel
1.1	1.4	0.3	1306	Brown(10YR4/ 3)slightly clay eysandlam inatedwithy ellowish-brown(10 YR 5/6)gra vel
1.4	2.2	0.8	1307	Darky ellowish-brown(10YR4/4)sandandgrave l
2.2	2.6	0.4	1308	Darky ellowish-brown(10Y R4/ 4)c oarses and
2.6	3.0+	0.4+	1309	Darky ellowish-brwon(10YR4 /4)sand andgrav el

Borehole 90

From	To	Thick	ContextNo	Description
0	0.6	0.6	1310	Brown(10Y R4/ 3)c layeys iltploug hsoil
0.6	1.0	0.4	1311	Darky ellowish-brown(10YR4/4)clay eysiltoverburd en
1.0	1.2	0.2	1312	Darkg rey(10Y R4 /1) slightlyc layeys ilt
1.2	3.4	2.1	1313	Darky ellowish-brown(10YR4/4)sandandgrave l
3.4	4.0+	0.6+	1314	Darky ellowish-brown(10Y R4/ 4)c oarses and

Borehole 01/07

From	To	Thick	ContextNo	Description
0	0.25	0.25	-	Topsoil
0.25	0.70	0.45	-	Lightb rownsoily s andy clay
0.70	1.60	0.90	-	Sandandgrav el
1.60	1.90	0.30	-	Clayinterbu rden
1.90	4.60	2.70	-	Silty sandand gra vel
4.60	5.50+	0.90+	-	Boulderclay

Borehole 03/07

From	To	Thick	ContextNo	Description
0	0.30	0.30	-	Browntops oil
0.30	1.50	1.20	-	Sandandgrav el
1.50	3.00	1.50	-	Sanda ndg ravelth inw ith clayba nds at1.6- 1.7a nd2.8m
3.00	5.50	2.50	-	Silty sandand gra vel
5.50	6.00	0.50	-	Sandw ithp ebbles
6.00	7.00+	1.00+	-	Boulderclay

Borehole 05/07

From	To	Thick	ContextNo	Description
0	0.20	0.25	-	Topsoil
0.20	0.40	0.45	-	Lightbr ownc layeys ubsoil
0.40	1.50	1.10	-	Silty sandand gra vel
1.50	2.80	1.30	-	Silty sandand gra vel
2.80	3.20	0.40	-	Clayinterbu rden
3.20	4.40	1.20	-	Silty sandand gra vel
4.40	5.50+	1.10+	-	Boulderclay

Borehole 19/07

From	To	Thick	ContextNo	Description
0	0.30	0.30	-	Browne arthytops oil
0.30	2.90	2.60	-	Sandandgrav el
2.90	3.10	0.20	-	Intercalatedthin cl aylensesw iththin sand lam inates
3.10	7.00	3.90	-	Sandandgrav el
7.00	8.30	1.30	-	Sandw ithp ebbles
8.30	8.5+	0.20+	-	Silt

Borehole 28/07

From	To	Thick	ContextNo	Description
0	0.30	0.30	-	Browne arthytops oil
0.30	1.20	0.90	-	Clay
1.20	1.50	0.30	-	Sand
1.50	1.80	0.30	-	Sandandclay interbedd ed
1.80	3.90	2.10	-	Sandandgrav el
3.90	4.50+	0.60+	-	Boulderclay

Borehole 35/07

From	To	Thick	ContextNo	Description
0	0.30	0.30	-	Browne arthytops oil
0.30	0.60	0.30	-	Clayeys andys ubsoil
0.60	1.60	1.00	-	Silt, blue-greya ndy ellowm ottled cohesive peatys ilt
1.60	3.20	1.60	-	Sandandgrav el
3.20	4.50+	1.30+	-	Boulderclay

APPENDIXI ASSESSMENTOF BI OLOGICALR EMAINS

HelenR anner,J ohnC arrott andA lisonF oster,P alaeoecologyR esearchS ervicesL td

Summary

Sixs ediments amples,a nda s eventhsa mpleof w ood,r ecoveredf romde positse ncounteredb ya bo reholes urveyat Home Farm,K irkbyFl eetham,N orthY orkshire,wer es ubmittedf oran ev aluation ofthei rbi oarchaeological/palaeoecological potential.

Eacho ft hesedi ments amplescont ainedrat herr estrictedass emblagesof waterlogged plant remains,wi thf iveal sogi ving at least tracesof i nvertebrate remains.T hreeof t he samples(includingt he wood sample whichw asi dentified asoa kf rom a substantial, possibly structural, timber) were from Borehole 5 and formed an Iron Age (datedvi a radiocarbona ssay) sequenceov erlyingst erile sanda ndg ravel.T he two sediments amplesg ave planta ssemblagesw hichpr ovided hintsof humana ctivityi nt hea rea,wi thev idenceof aqu aticde position(f rom bothpl antan di nvertebrater emains)f ort he earlierof thet wode posits andm uchd riercond itions att het imeo ft hef ormationof thel ater.

Threeo ft heo therse dimentsa mples(o nee achfro mB oreholes1 0, 11a nd1 5)in tersectedB ronzeA ge(a gain,d atedvia radiocarbonass ay)de posits,s tratifiedbe tweenl ayers ofgrav eland s and.E ach wasri ch inremains f romwo odlandplant taxa(e .g.b ark,t wigsa ndw ood fragments, with fruits and fruitstones of birch, raspberry and elder) and charcoal firew aste suggestedt he useof oak. O verall,provi sionali nterpretationof t he datai mpliedadr ierand morewoo ded environmentt han thatap parentf romthe Iro nA gec ontexts.A fe wr emainsfro mar ablew eeds,w etland,ru deralan de urytopicp lantt axa,ag ain suggestedlo calhu mana ctivity.

Plant, invertebratea ndm icrofossilr emainsfro mth efin alse dimentsa mple(fromB orehole8 3)in dicatedd epositionw ithin slow-movingo rsta gnantwa ter. U nfortunately, insufficientsuitab lem aterialwa sre coveredfo rra diocarbond atingo ft his deposita ndi tr emainsu ndated.

Nofurth erstu dyo fth er ather limiteda ssemblages ofre mains recoveredfro mth ee valuationsu bsamplesisw arranted.A seconds tage ofe valuationi s planned during which any additional boreholes in these areas should be subjectt oi nvestigation tode terminet heext entand qua lityof organicp reservationat t hes ite.I ntheevent thatt renching,al sop lannedf ort hesecond stageof t he evaluation,en countersdepo sitswi thw aterlogged preservationt henl arge sediments ampless houldbecol lected frome achd istinctd epositan dthe sesh oulda lsob esu bjectedto a ne valuationo ft heirinte rpretativep otential.

Keywords:H omeFar m;K irkbyFl eetham;N orthY orkshire;bore holes urvey;ev aluation;pre historic;B ronze Age;I ronAge; plantr emains;ch arredpl antr emains;pol len grains/spores;di atoms;i nvertebrate r emains;f reshwaters nails;f reshwater bivalves;b eetles.

1.0 INTRODUCTION

Ab oreholesu rveyw asu ndertakenb yF ieldA rchaeologyS pecialistsL td(FAS)a tH omeF arm,K irkbyF leetham,N orth Yorkshire(centredo nN GRSE 27 9996 25),be tweent he1 1th of November and the 9th of December 2009. Thewo rkswere undertakenasSt age1 of ap hasedeva luationt owards ap lanningap plicationf ormi neralext raction.

Thel andscape setting of the site is dominated by the presence of the river Swale, and fluvial activity associated witht he floodplainis li kelyto have influencedform erocc upationandexp loitationof thearea. R esearchundert akenb yT aylorand Macklin(19 97),at C atterick,t ot heno rth-westof thesi te,has l edt ot hed evelopmentof ab roadm odelof thechangi ng fluvialse dimentationstyles inthe riv erv alley.T hep atterns uggeststha tt hefl oodp lainw asa ggradingd uringthe e arly Holocenebut t hatpat ternsha ve becomemore variables ince.

At otalof 90bor eholeswer et akenf romt hreen orth-southt ransectsa crosst he site.O ft hese onlyf ive (Boreholes5, 10, 11, 15a nd8 3)e ncounteredd epositsw ithw aterloggedo rganicp reservation.B oreholes5 ,1 0,1 1a nd1 5(n umberedso uthto north,an dp erpendicularto the c urrentrive rc hannel)c amefro mthe w esternmosttra nsectwh ichc rosseda se rieso fp ossible palaeochannels;t hesec hannelss uggestedt hatt hewho leo ft hesi teo ncef ormedpa rtof af ormerchannel of theri ver. Borehole8 3w aslo catedinthe m iddleo ft hee asternmosttran sect, whichra np arallelto the c urrentrive rc hannel.

Sixo rganic‘b ulk’se dimentsa mples(‘G BA’/‘BS’ *sensu* D obney *etal* . 1992) and a single ‘spot’ sample of wood, w ere recovered fromt he boreholes l istedabov e. T he samplesw ere submitted to Pal aeoecology Res earch Se rvices Li mited, Kingstonup onH ull,fo ra ne valuationo ft heirb ioarchaeological/palaeoecologicalp otential.

2.0 METHODS

2.1 BULKS EDIMENTSA MPLES

The lithologiesof t he samplesw ere recorded usinga s tandard *prof orma*.Sub samples(of0.75 to 3kg;0 .5t o2.5l itres)were takena ndpr ocessed for the recovery of biological remains (macrofossils).T he subsamplesw ere disaggregated inw aterf or ami nimumo f24hour s,an dt heirvol umesr ecordedi na waterlogged state. T he subsequentproces singbroadl yf ollowed the techniquesof K enward *etal* .(1980),pr oducinga r esiduea nda w ashoverf rome achs ubsample (witht he exceptionof thesubsam plef romC ontext10 12f romwhi chno s eparateres iduef ractionwasob tained–seeb elow).

All of theres idueswere dri ed and wei ghed, any m acrofossils were r ecovered, and t heco mponents oft hem atrix were recorded.

Eacho ft hewashove rsexhi bitedwat erloggedpreservat iona nd theywerekep twet f orexaminat ionf ormacro fossils using alo wp owerm icroscope;t he material was sieved into fractions(0 .3 to 4 mm)t ofac ilitatee valuation.P lantan dinv ertebrate remainsi nt he processeds ubsamplef ractions(washoversa ndre sidues)wer ea ssessedby ‘ scanning’(usingal ow-power microscopewh eren ecessary),i dentifiablet axa and other components were recorded. Macrofossilr emainswer ei dentified by comparison with modernr eferencem aterial,wherepo ssible,and /orwi thref erencet opub lishedwo rks.I dentifications weremadet ot he lowestt axonomicl evelne cessaryto a chievet he aimsof t he project.T he componentsof t he washover fractions werereco rdedus ingaf ive-points emi-quantitatives cale;f ractions weregeneral lys cannedunt ilnonew remains wereobse rveda ndas enseof t he abundance of each taxon or component(relative tot he originalvol umeof t he subsample) wasa chieved.

Microfossil‘ squash’s ubsamples(of~1m l)weret akenf romeachof t hed eposits.T hesewereexam inedus ingt he‘ squash’ techniqueo fD ainton (1992),o riginallyd esignedsp ecificallyt oa ssessthe c ontento fe ggso fintesti nalp arasiticn ematodes; however,t his methodrout inelyreveal s thep resenceo fothe rmi crofossils,s uchas po llenand diat oms,whi chweret he primary focus of the examinations here. The evaluation slides were scanned at x150 magnification and at x600 where necessary.

Nomenclaturef orpl antt axaf ollowsSt ace(1 997)andi nsectsf ollowK loetand H incks(1964-77).

An importantc onsiderationdu ringr ecordingw ast he identificationo fsui table macrofossilr emainsf ors ubmissionf or radiocarbond atingb ysta ndardra diometric tec hniqueo ra ccelerator m asssp ectrometry (A MS). T o thise nd,p araffin flotation(Kenward *etal* . 1980) was not employed for the separation ofi nvertebratesi nord ert oavo idco ntaminationof the organicrem ainswit hfossil ca rbon. Recoveredre mains wereforw ardedto the ra diocarbon datinglab oratoryoft heS cottish UniversitiesEnv ironmentalRes earchCen tre (SUERC),Eas tKi lbride,Sc otland.

2.2 SPOTSAM PLE

Thesam plefro mC ontext1 014co nsistedo fasinglep ieceo fwaterlo gged wood andwa sexa minedt oi dentifyt hist osp ecies. Identification was madeb yref erencet oScho ck *etal* .(2004) ;not et hiswor kwas al sous edf ori dentificationof c harcoalf rom thesed imentsam ples.

3.0 RESULTS

Theres ults are presented inco ntextnum berord erbybo rehole.I nformation,pro videdbyt heexcavator, i s giveni ns quare brackets.A bri efs ummaryof thep rocessingm ethodand anes timateo ft herema iningvolumeo funpro cesseds ediment follows(inround bracke ts)af tert hesamp lenum bers(t herewerecr eatedbyP RSf ori nternalrecord keep ingpurp oses).

Calibratedre sultsf romra diocarbond ating(a t9 5.4% probability) are referred to inb rief within the followingtex tb utd etails are presented inT able 1.

3.1 BOREHOLE5

C1012

Context10 12[bl ack peatyso il,0 .70m thi ck,e ncounteredb eneathp loughso ila t0 .40m b gl(b elow groundl evel),ove rlying Context1 013;r adiocarbond ate1 00BC t o7 0A D]

Sample101 201/T(0 .9kg/ 1.75l itress ievedt o30 0m icronsw ithw ashover;approxi mately0. 1of al itreof un processed sedimentrem ains)

Moist, very dark grey (with patches of mid brown and grey-brown), stifft ocrumb ly(worki ngs oft),s lightlys iltyam orphous organic s ediment, wi th f ibrous mat erial (possibly i ncluding moss an d ‘ straw’/‘reed’ pl us ?m odern r ootlets) an d f iner herbaceousd etritus.

Thewet washover(70 0m l) was principally of well humifiedveget ative material, with traces of mosses, rootm aterialand insect r emains. A f ew w aterlogged plant r emains w ere identifiable; n utlets f rom the rud eral f amily of k notweeds (Polygonaceae); nutletsf romwe tlandsed ges(*Carex*);an da chenesfro mt histles(*Carduus*/*Cirsium*), and a mericarpf rom am embero ft hec arrotf amily (Apiaceae),w hichm ayb efo undin a v arietyo fh abitats.S crapso fun identifiedinv ertebrate cuticlew ereq uiten umerousan dso meo ft hesew eresm allf ragmentso fi ndeterminateb eetles clerites. T herew erealso occasionalm uchb etterpreservedb eetlerema ins (largeorm oreo rl essi ntactf ragments exhibitingl ittle chemicalerosi on), includingas mall ground beetle (Carabidae) elytron (and anotherel ytronf roman un identifiedbeet le),t ogetherwi tha f ew mites(Acarina).

Therewa snomi neralr esiduef ractionf romt hiss ample.

Them icrofossil‘ squash’s ubsamplewasmo stlyorgani cd etritus,w ith al ittlei norganicm aterial.T herewerem any plant tissue fragmentsbut t he onlyi dentifiablemi crofossilss eenwer ea few? phytolithsand asi ngleq uitewel lpre served(intact buts omewhat pale/eroded) *Polypodium*s pore.

C1013

Context1 013[d ark grey organic clay, 0.80 m thick, encountered at ~1.0 m bgl, overlyingC ontext1 014;ra diocarbond ate 420t o2 30BC]

Sample101 301/T(2.75kg /1.75l itress ievedt o30 0m icronswi thw ashover;approxi mately0. 5of al itreof un processed

sedimentrem ains)

Moist, lightto m idg reyto m idgr ey-brown,w ithso mep atcheso fm idb rowna ndd arkgr ey(su lphidesta ining),stiff to slightlybri ttle(worki ngs oftand s lightlyst icky),hum ic,sl ightlyc lay,sl ightlys andys ilt,wi thf ineherba ceous detritus and modernro otlets.S omea reash ada m uchgr eaterc layc ontent.

Thew etwa shover (350m l) largelyc omprisedp artlyd ecomposedm onocotste ms,w ithw oodfra gmentsa ndro otm aterial. Waterlogged plantr emainsw ere identified from:t he arable weed,bl ackbi ndweed (*Fallopiaco nvolvulus*(L.)Á. Löve); wetlands edges(Cy peraceae);t he ruderals peciesc ommon chickweed (*Stellariam edia*(L.)V ill.)an dcom monn ettle(*Urtica dioica* L .); an d t histles (*Carduus*/*Cirsium*) a nd c inquefoils (*Potentilla*) wh ich o ccupy a va riety o f d ifferent hab itats. Macroscopicc harcoalwa sp resentan dno n-oaka nd? oak(c f. *Quercus*)s temwoodwasi dentified.C harophyteo ogoniawere common,and molluscsh ellsf romf reshwatersn ail(un identified)andb ivalve (*Pisidium* sp?p.) taxa werepr esent,t ogether withs mallnu mbersof ca ddisf ly(Trichoptera)l arvalcas es,b eetleremai ns(t hesewer eq uiteheav ilyf ragmentedbut s howed onlya li ttle chemicale rosion–n oi dentificationsw ere possible withint he constraintsof t he evaluation),s ome scrapsof ‘filmy’i ndeterminateinv ertebratec uticlea ndso meo stracods.

Thevery s mallres idue(dry wei ght0.08 3kg) wasmo stlysand,wit hst ones(t o1 5m m;6g), af ewsandst onep ebblesand occasionalsm all pieceso fun disaggregatedsa ndysilt . A li ttled rieda morphouso rganicm aterial andb rokensn ail shell remaineda fters orting,a ndt hel esst han1 mm fraction(unsorted)cont ainedt inyf reshwatermo lluscs(includings ome additional *Pisidium* sp?p.va lves).Fr agmentsof s everalun identifiedf reshwaters nails(to4 mm;< 0.1g) wer ea lsore covered fromthe re sidue,t ogetherw itha few se eds(to 2 m m;< 0.1 g)an d occasional ground beetlescle rite fragments(to 3 m m;< 0.1 g).

Them icrofossil‘ squash’s ubsample wasapp roximatelyeq ualpart s inorganicm aterialand organi cd etritus,wi thm any plant tissuef ragmentsa nds omep oorlypreserved(som ewhat eroded)p ollengrai ns/spores(i ncludingaf ewp ossiblet riletespo res).

C1014
Context1 014[sa mpleo fwo ode ncountereda t~ 1.9m b gl]
Sample1 01401/SPOT

As inglep iece ofw aterlogged wood wasr ecovered fromB orehole 5,Cont ext1014, a ta pproximately1. 9me tresbe low ground level. This wasi dentifiedas oakand wasbo redf romas ubstantialpieceof timberof m inimumde pth14 0m m(t he boringact ionhad s ignificantlyco mpressedt het imber).

3.2 BOREHOLE10

Context103 7 [soft,d arkgr eyish-browns andysi ltwi thorga nics,0 .30m t hick,encoun tered at3. 3m bgl ,s tratifiedbet ween sequencesof s anda ndg ravel;r adiocarbonda te14 30t o1 260BC]
Sample1 03701/T (1kg/~1 l itres ieved t o30 0m icrons wi thwas hover; ap proximately1 l itreof unpro cessed s ediment remains).

Moist,l ightt om idbrown, t om idgr ey-brown,t om id grey,cru mblyand slightlys ticky(workings lightlys oft),s lightlycl ay silty sand,w ithw ood(in cludingro undwood)c ommon.

The wetwas hover(200m l)was pri ncipallyof hu mifiedve getative material,wi throot m aterialand mosses,occas ionall arger piecesof wood(i ncludingnon-oakr oundwood to 20 mm) and fairly numerous bark and woodf ragments.W aterloggedplant remainswer ei dentifiedf rom:t he wetlands peciespal eper sicaria(*Persicariala pathifolia*(L.)G ray);wo odlandt axa,bi rch

(*Betula*), raspberry(*Rubusi daeus*L.)andelder(*Sambucusn igra* L.); the ruderals, hemp-nettle(*Galeopsiss peciosa* Mill./*G. tetrahit*L.)an dcom monnett le;a ndmemb ersof t he carrot(Apiaceae)an dcabbage(Brassicaceae)f amiliesan dm ousear (*Cerastium*),w hicha ree urytopic. Tracesof coa lan dch arcoalf irewa stewe re recorded,w ith?oa ks temwoodi dentified. Earthwormegg ca psules,i nsectr emainsan daf ewos tracods hellswer epr esent.T he insectr emainsi ncludedoccas ional quite w ell preserved b eetle sc lerites; m any o f t hese w ere no n-diagnostic b ody p arts (s uch a s le gs) b ut a w eevil (Curculionidae)pr onotumwa sa lson oted.

Theve rysmal lres idue(dr ywei ght0 .064 kg)was al mostent irelys and(0.056kg) ,wi ths malls tones(to9m m),al ittledr ied amorphouso rganicm aterialan do ccasional‘ crumbs’o fun disaggregatedse diment.

The microfossil ‘squash’ subsamplew asa pproximatelyt hree-quartersor ganicde tritusa ndo ne-quarteri norganic,w iths ome plantt issuef ragments butnoi dentifiablem icrofossils weres een.

3.3 BOREHOLE11

C1042

Context 104 2 [dar k g reyish-brown sandy s iltwi th or ganics, 0. 20 m t hick, en countered 2. 30 m bgl , s tratified bet ween sequencesof s anda ndg ravel;r adiocarbonda te13 00t o1 050BC]

Sample 10 4201/T (0.75k g/0.5l itres s ievedt o3 00mi cronsw ithw ashover;a pproximately0. 2o fa l itreof u nprocessed sedimentrem ains)

Moist,mi dbrownt ogr ey-brown,cr umblyan ds lightlys ticky(workings oft),s lightlycl ay,s lightlysi ltysan d(w ithmuc h morec layinp laces).S omew ood(in cludingro undwood)w asp resent.

The wet was hover (200 m l) was pri ncipally wood pi eces, t wigs an d n on-oak round-wood (t o 20 mm) wi th h umified vegetative material,r ootsa ndpi ecesof ba rk,w itht racesof mos sesa ndc one remains,oc casionall argerpi ecesof w ood (including no n-oak r oundwood to 2 0m m) a ndq uite n umerous fra gments o fwo od a nd b ark. O ccasional m acroscopic charcoal(u nidentified)w asre cordeda ndthe re was a single waterloggednu tletfro mthe ru deralhe mp-nettle.Inv ertebrate remains wereres trictedt ooc casionals craps ofuni dentifiedcut icle(very pa leand ‘ filmy’).

The majorityof t he residue(totaldry wei ght0. 122kg) was s and(0. 087kg) ,wi ths malls tones(to10mm),occas ionaldri ed amorphouso rganicm aterialan da li ttlese diment‘ crumb’.

Them icrofossil‘ squash’s ubsample wasm ostlyi norganic,wi ths omeo rganicd etritus,i ncludingplant t issuef ragments,but noi dentifiablem icrofossils.

3.4 BOREHOLE15

C1055

Context 1055 [grey organic clay with possible wood fragments, over 1.8m thick, encountered at ~2.0 m bgl, s tratified betweens equencesof s anda ndg ravel;r adiocarbonda te11 30t o9 20BC]

Sample 105 501/T (2 kg/1 .75l itres s ievedt o30 0m icrons w ithw ashover; approxi mately 0. 3 of a l itre of un processed sedimentrem ains)

Moistt ow et, midb rownto gr ey-brown,sti ffa ndsligh tly crumbly(w orkingso ft andsligh tly sticky),sligh tly sandyc laysilt

(withm orec layinp laces).W oodfra gmentsw erea bundant.

Thew etwa shover(5 00m l)c omprisedw oodfra gments,withc ommon‘wo ody’p ieces,tw igsa ndn on-oakr oundwood(to 20 m m), and oc casional roo t m aterial. W aterlogged el der fruits were al so co mmon, wi th oc casional seed s from t he ubiquitousta xono rache/goosefoot(*Atriplex*/*Chenopodium*). Earthwormegg capsu leswere p resentb utt herewe ren oot her identifiableinve rtebratere mains.

Thev erys mallr esidue(dryw eight0. 065k g)co nsisteda lmosten tirelyof s and(0.063k g),w itha f ews malls tones(to9 mm) ando ccasionald rieda morphouso rganicm aterial.

The microfossil‘ squash’s ubsample wasapproxi matelyt hree-quartersi norganica ndone- quarterorg anicdet ritus,wi tha f ew plantt issuef ragments andpo ssiblep ollengrai ns/spores(ver ypo orlypreserved– crump ledand erod ed).

3.5 BOREHOLE83

C1286

Context12 86[grey sl ightlyc layeysi lt? alluvium,1 .30m thi ck,e ncountereda t0.30 m bgl, be neathploughsoi land ove rlying sanda ndg ravel;no ra diocarbond atew aso btainedfro mth isd eposit]

Sample1 28601/T(3kg/ 2.5l itress ievedt o30 0m icronsw ithwasho ver;a pproximately0 .1o fa l itreof unpro cesseds ediment remains)

Moist, midgr ey(in ternally)an dm idb rown(e xternally),sli ghtlystif f to crumbly (working soft), slightly sandysilt (slig htly clayi np laces),w ith midye llow-brown induratedc lay (inlum pst o2 m m). S tones(2 t o6 0m m), includingro undedp ebbles, werep resent. Thec olourv ariationo ft hese dimentse emedto re flecto xidationa ndit sa ppearancesu ggestedso mep ossible gleying.

Thewet washover(75 m l)was principallyof partlyhum ifiedmo nocots tems,wi thoc casionalm osses(including *Sphagnum*) andro otm aterial.Id entifiablep lantrem ains were recorded from the aquatict axa,wa terstar-wo rts(*Callitriche*)an dhorn ed pondweed (*Zannichelliap alustris* L .). In sectre mainsa ndea rthworme ggc apsulesw erere corded,w itha tra ceo fco al. Insectr emainsi ncludeds mall numbersof va riablypre served (indeg ree ofbot hf ragmentationan der osion)beet les clerites (nonewere identified) and some delicate structures, such as wings, were preserved. The latter included atl eastone wi ng provisionallyi dentifiedas theb ug *Liviaj uncorum*(L atreille)w hichliv eso nru shes.T herew erea lsoso me‘f ilmy’(p ossibly larval)f ragmentso fi nvertebratec uticlea ndo ccasionalo stracods.

The smallr esidue(drywei ght0. 35kg)was mo stlys andstonepe bbles(to57 mm; 226g), other stones, undisaggregatedcl ay lumpsa ndm ineralisedse diment, withv eryo ccasionald riedam orphouso rganicm aterial.

Them icrofossil‘ squash’ wasap proximately equalp artsi norganica ndo rganicd etritus,wit hso mep lantt issuef ragments. Af ewdi atomsan dpo llengr ains/sporeswere al so noted;t hef ormerwere q uitewel lp reservedb eingrepr esentedby i ntact frustulesof a tl eastt wo formsa ndt he latterwe re ratherl essw ellpr eserved (rathere roded)t rilete spores(probablyof *Sphagnum*).

4.0 DISCUSSIONANDS TATEMENTOFP OTENTIAL

Thet hreeco ntexts fromB orehole5(west t ransect) providedanIronA gesequenc e(s eerad iocarbonres ults inT able1), overlyings terile sandandgr avel. A substantial pieceof oak timber was encountered at approximately 1.9m be lowground

level(Context1014) ;t his may have been construction timber, and impliesa s ource(probablyl ocal)of ma ture woodland. Theo verlyingda rkgr ey organiccl ay (Context10 13)cont ainedasm allsui teo fi dentifiablewat erloggedplant remains and somech arcoalf irew aste. The pl antma crofossilspr incipallyde rivedf roms edges,i ndicativeof w etland;t hea dditional presence o fcharop hyte o ogonia (t he cal cified f ruiting bo dies oft he group of macroscopic green plant s Charophyta), suggestedr elatively stables tandingwat er.Char ophytesar eu suallywel lan choredt oas andyor muddys ubstrate(Macan andW orthington1 990;F ittera ndM anuel1 994),a ndthr ivei nc learw ater(M oore1 986);the yc ana lsob esu ccessfuli n habitats thatexp erienceextr emeenvi ronmentalchanges, e. g.ephem eralw aterb odiessuchasf loodplai ns,wheret heo ospore ishi ghlyr esistantan dcan r emaindorman ti nu nfavourable conditions (ibid.). In addition, the records of caddisf lyl arval cases,ost racods andf reshwaterm olluscs,s upportedt hei nferenceof standingw ater. T hep resenceo fremains f romt he arablewe ed,bl ackbi ndweed,an daf ewr uderalan deur ytopict axa,hi ntsat l ocalhu manac tivity, with disturbeda ndopen grounda ndso mea rablefa rming. Thec harcoalfire w aste,co mprisingo aka ndno n-oaktax a,sug geststhe a vailabilityo fa localmi xedwoodl andr esource.

Theup permostIr onA geco ntext(Co ntext1 012) was ala terfo rmationof ab lacko rganicsoi l. T hep lantremains were relativelywel lhu mifiedcomp aredt ot hosef romCo ntext101 3an daquat ica nimalt axawer e noti dentified,s uggestingdri er conditions,al thoughs edgeswere st illp resent;t hef ewre mainsf romruder alan deur ytopicpl antscont inuedt ohi ntat hu man influence.

Eacho fB oreholes10 ,11 and 15 (wes tt ransect)i ntersectedB ronzeA ged eposits(s eerad iocarbonres ults inT able1), stratifiedbet weenl ayersof gr avelan ds and. All three oft he depositsex amined(onef romea ch oft he boreholes)wer er ich inremains f romwo odlandt axa,s uchasbark, t wigs andwo odf ragments,wi thf ruits andf ruitstonesof bir ch,ras pberryand elder.C harcoalf irewa ste suggestedtheuseof oa k.O verall,provis ionali nterpretationof thed atai mpliedadri erandm ore woodede nvironmentt hant hata pparentf romt he IronAg e contexts. Woodland wouldpr obablyh ave beendomi nated by oakw ithb irch,ra spberrya nde lder, *inter alia*,gr owingin clearings anda longw oodlandm argins. Afe wr emainsfro ma rable weeds,wet land,r uderalan deur ytopict axa,agai ns uggested localhu manac tivity,wi thper hapspat chesof di sturbedandop en ground,w etlanda reasa nds ome arable farming. V eryf ewi nvertebrate remainsw ere recovered from these depositsa nd, consequently,n oa dditionali nterpretativei nformationc ould beg leanedf romt hem.

The p lant m acrofossil remains f rom B orehole 83 (Co ntext 12 86) i ndicated t hat t he sedi ment f ormed i n an a quatic environment; unfortunatelysufficie ntm aterialf orra diocarbond atingw asn oto btainedfro mthisd epositan dit iscu rrently undated. Twoa quatict axawerep resent:horned po ndweed,whi chwi llt olerateab roadrangeof s hallowwater hab itats;and waterstarw ort,wh ichreq uires a substrate fora ttachment,an dist herefore confinedto slo w-movingo rst agnantwa terb odies. The associated ve getative material was pre dominantly mo nocot st ems li kely t o hav e been was hed i n f rom mar ginal vegetation.T het entativelyi dentifiedwi ngof theb ug *Liviaj uncorum* would imply the presenceof rushes andbe i nacco rd witht he greaterwei ghtof ev idenceprovi dedb yt he plantas semblage.

Identifiable microfossilrem ains weresparseornon- existenti nt he‘ squash’s ubsamples.O nlyt hosef romC ontext12 86gave any inte rpretatively va luable info rmation, w ith sm all numbers o f *Sphagnum* s pores an d di atoms provi ding addit ional evidencef oraquati cd eposition.

6.0 RECOMMENDATIONS

Nofu rther studyo fth er ather limiteda ssemblages ofre mains recoveredfro mth ee valuations ubsamples reporteda boveis warranted.

Thee valuationo ft hesed epositsha sd emonstratedtha tB ronzeA gea ndIro nA gea ssemblageso fp lantan dinv ertebrate remains preservedb ywaterlo ggingex isti nthev icinityofB oreholes5 , 10, 11an d1 5(an d, althoughc urrentlyund ated, also

Borehole8 3).T hep roposedS tage2 o ft hee valuationisi ntendedto b etar getedb yp otentialh ighlightedinS tage1 a ndit is recommendedt hata nya dditionalb oreholesint heseareasshoul db e subjectto furthereva luationt ode terminet heext ent andqua lityof org anicpr eservationat t he site.

Althoughit is alsop lannedto in cludeth ee xcavationo fso me evaluationtre nchesw ithinS tage2 it isl ikelyt hatt hesew ill bet oos hallowt oenco unterval uabled eposits.U nfortunately,ont he evidencer eported above, theass emblagesof remains recoveredf roms malls amplesf rombor eholesa re likelyt obe t oos mallf orde tailed studya ndw illh ave a similarl ackof archaeologicalc ontext.T hisi spa rticularlyu nfortunateg ivent hatpr ehistoric depositsw ithw aterlogged organic preservation are r are i n t he north of E ngland. I n t he eventt hatt he evaluation tren ching does encounter depo sits wi th w aterlogged preservation t hen s ediment s amples of at l east 40 l itres s hould be col lected f rom ea ch distinct d eposit (context s ize permitting)a ndthe sesh ouldb esu bjectedto a ne valuationo fthe irb ioarchaeologicalp otential.

7.0 RETENTIONANDDI SPOSAL

All oft hec urrentm aterialsho uldb ere tainedfo rth ep resent.

8.0 ARCHIVE

Allmat eriali scu rrentlys toredby P alaeoecologyRese arch Services(Unit4, N ationalI ndustrialE state,B ontoftAvenu e, Kingston upo n H ull), pe nding ret urn t o t he excavator, al ong wi th pa per and elect ronic records pert aining to t he wo rk describedher e.

Acknowledgements

Theaut horsaregr atefult oJust inG arner-LahireandC ecilySp all,ofFiel dA rchaeologyS pecialistsLtd, forpro vidingt he materialand t hearchaeo logicali nformation.

References

Dainton, M .(1992). A q uick, s emi-quantitative m ethod f or r ecording ne matode g ut par asite e ggs f rom ar chaeological deposits. *Circaea,t he Journalof t he Associationf orEnvi ronmentalAr chaeology* **9**,58- 63

Dobney,K .,H all,A. R. ,K enward,H .K .andM illes,A. (1992).Aworki ngcl assificationof s amplet ypesf ore nvironmental archaeology. *Circaea,t he Journalof t he Associationf orEnvi ronmentalAr chaeology* **9**(fo r1 991),2 4-6

Fitter, R. and M anuel, R.(1 994). *Lakes, R ivers, St reams and P onds ofB ritain an dN orth-West E urope.* H ong K ong: HarperCollins

Kenward,H .K .,H all,A. R. and Jones,A .K .G .(198 0).A t ested seto ft echniquesf ort heex tractiono fp lantan dani mal macrofossilsfro mw aterloggeda rchaeologicald eposits. *Science andAr chaeology* **22**,3- 15

Kloet, G. A. and Hincks,W .D .(1 964-77). *Ac hecklist ofB ritishin sects*, *2nde dition*,L ondon:R oyalE ntomologicalS ociety

Macan,T .T .an dW orthington,E .B .(1 990). *Lifein L akesan dR ivers*.Lo ndon:B loomsburyB ooks

Moore,J.A .(1 986). *Charophytesof G reatBr itainandI reland*.Londo n:B otanicalSoci etyof t he BritishI sles

Schoch,W .H .,H eller,I.,S chweingruber,F .H .an dK ienast,F.(2 004). *Woodan atomyof ce ntralE uropeans pecies*.O nline version:www. woodanatomy.ch

Stace,C .(1 997). *Newf loraof t he BritishI sles:2 nde dition*C ambridge:C ambridgeU niversityP ress

Taylor,M .P .an dM acklin,M .G .(1997).H oloceneal luvials edimentation and valley floor development: the RiverSwal e, Catterick,N orthY orkshire,U K. *Proceedingso ft heY orkshireG eologicalS ociety* **51**,317- 27

APPENDIXJ RADIOCARBONDE TERMINATIONS
SUERC

C1012

LaboratoryCode	SUERC-27149(GU-20731)
Submitter	CecilySpa ll FieldA rchaeologySpe cialistsL td Unit8 FulfordB usiness Centre 35HospitalField sRoad YorkYO104DZ
Siterefe rence	KirkbyFle etham(K BF 09)
Samplere ference	KBF091012
Material	Seeds:A piaceaem ericarp,Poly gonaceae nutlets
delta13Crelativ eto V PDB	-29%
RadiocarbonA geBP	2010± 30

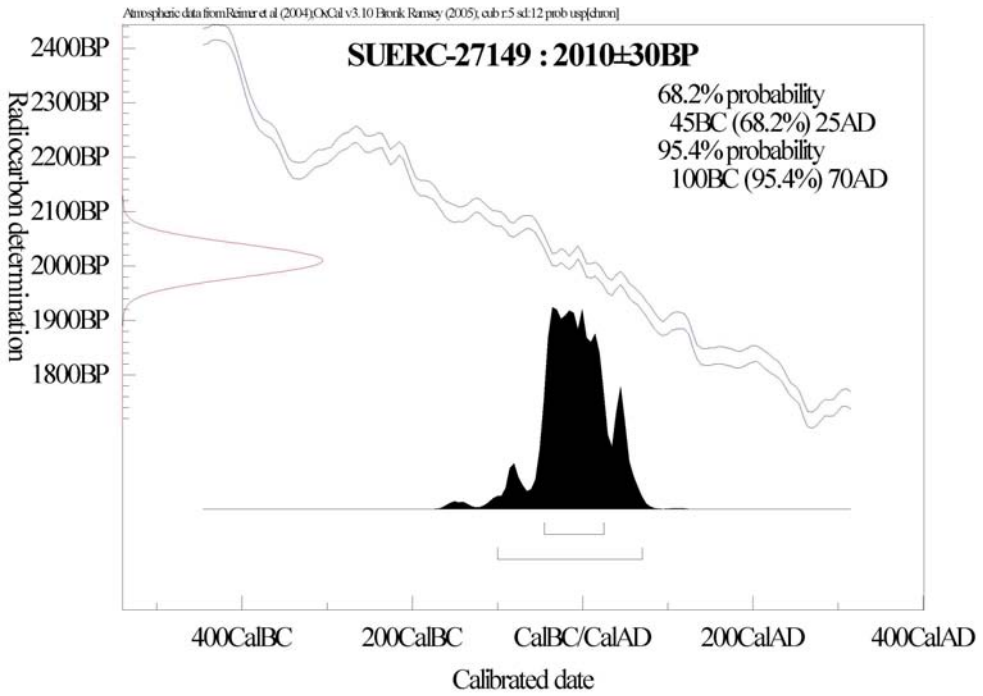
N.B

1. The aboveag eisquotedin conventio naly ears BP(bef ore19 50A D).T heerror,w hich ise xpressed atthe one s igma levelof c onfidence,i ncludesc omponents fromthe countings tatistics ont he sample,m odernre ference standarda ndbla nka ndthe ra ndom machinee rror.
2. The calibrated age rangesa rede terminedf romthe U niversityof O xfordR adiocarbon AcceleratorU nit calibration programme (OxCal3)
3. Samplesw ithaSUERCcodin ga rem easuredattheScottishUni versities EnvironmentalRe search CentreA MSf acilitya nds houldbe quote da s suchin any reportsw ithinthe s cientificli terature,A nyque stionsdir ectedto theRa diocarbon Laboratoryshou ldalsoquo tetheG Ucodin gg iveninparenth esesaf tertheSUERC code.T he contactde tailsf ort he laboratorya ree mailg cook@suerc.gla.ac.ukor telephone01 35527 0136di rectline.

Conventionala ge and calibrationa ge rangesc alculated by:- P.Na ysmith Date:- 22/01/10

Checked and signed offby :- G .M uir Date:- 22/01/10

Calibration Plot



C1013

LaboratoryCode	SUERC-27150(GU-20732)
Submitter	CecilySpa ll FieldA rchaeologySpe cialistsL td Unit8 FulfordB usiness Centre 35HospitalField sRoad YorkYO104DZ
Siterefe rence	KirkbyFle etham(K BF 09)
Samplere ference	KBF091013
Material	Twig
delta13Crelativ eto V PDB	-28.9%
RadiocarbonA geBP	2315± 30

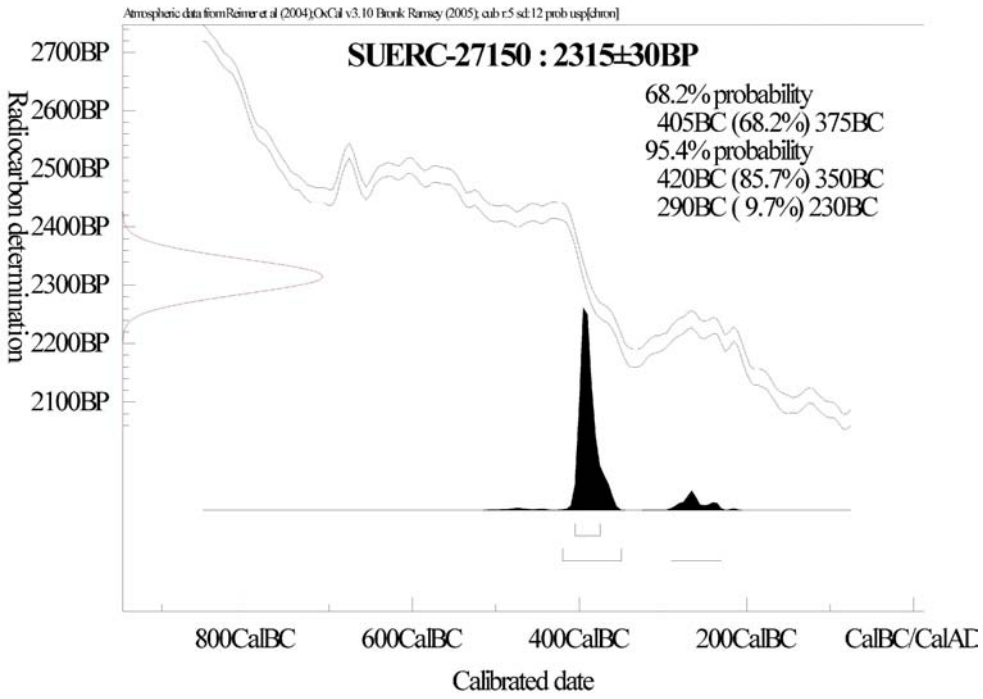
N.B

1. The aboveag eisquotedin conventio naly ears BP(bef ore19 50A D).T heerror,w hich ise xpressed atthe one s igma levelof c onfidence,i ncludesc omponents fromthe countings tatistics ont he sample,m odernre ference standarda ndbla nka ndthe ra ndom machinee rror.
2. The calibrated age rangesa rede terminedf romthe U niversityof O xfordR adiocarbon AcceleratorU nit calibration programme (OxCal3)
3. Samplesw ithaSUERCcodin ga rem easuredattheScottishUni versities EnvironmentalRe search CentreA MSf acilitya nds houldbe quote da s suchin any reportsw ithinthe s cientificli terature,A nyque stionsdir ectedto theRa diocarbon Laboratoryshou ldalsoquo tetheG Ucodin gg iveninparenth esesaf tertheSUERC code.T he contactde tailsf ort he laboratorya ree mailg cook@suerc.gla.ac.ukor telephone01 35527 0136di rectline.

Conventionala ge and calibrationa ge rangesc alculated by:- P.Na ysmith Date:- 22/01/10

Checked and signed offby :- G .M uir Date:- 22/01/10

Calibrationpl ot



C1037

LaboratoryCode	SUERC-27151(GU-20733)
Submitter	CecilySpa ll FieldA rchaeologySpe cialistsL td Unit8 FulfordB usiness Centre 35HospitalField sRoad YorkYO104DZ
Siterefe rence	KirkbyFle etham(K BF 09)
Samplere ference	KBF091037
Material	Wood(w aterlogged):R oundwood
delta13Crela tive toV PDB	-28.5%
RadiocarbonA geBP	3085± 30

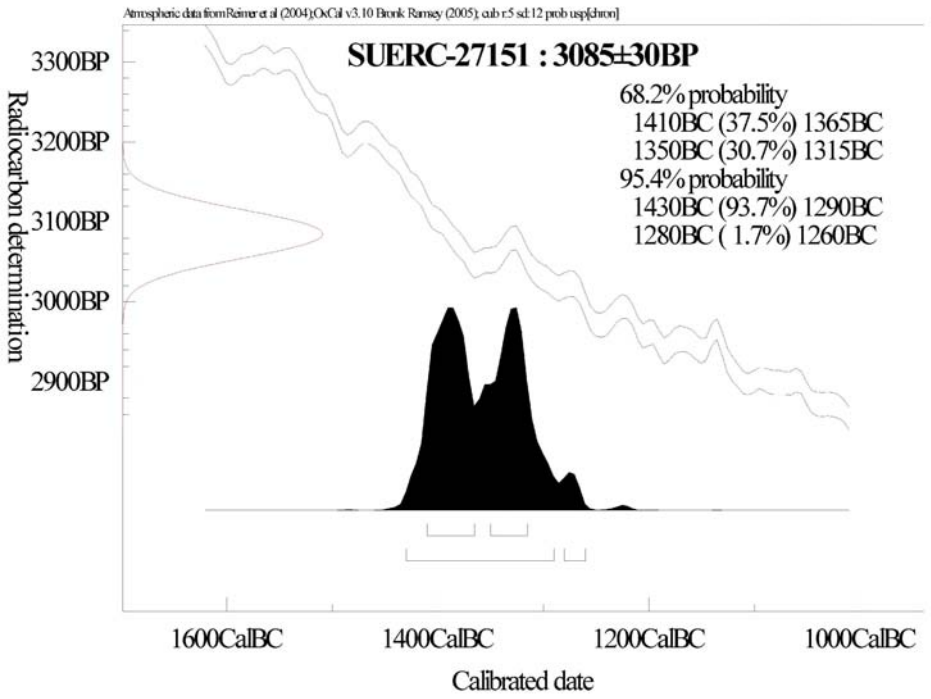
N.B

1. The aboveag eisquotedin conventio naly ears BP(bef ore19 50A D).T heerror,w hich ise xpressed atthe one s igma levelof c onfidence,i ncludesc omponents fromthe countings tatistics ont he sample,m odernre ference standarda ndbla nka ndthe ra ndom machinee rror.
2. The calibrated age rangesa rede terminedf romthe U niversityof O xfordR adiocarbon AcceleratorU nit calibration programme (OxCal3)
3. Samplesw ithaSUERCcodin ga rem easuredattheScottishUni versities EnvironmentalRe search CentreA MSf acilitya nds houldbe quote da s suchin any reportsw ithinthe s cientificli terature,A nyque stionsdir ectedto theRa diocarbon Laboratoryshou ldalsoquo tetheG Ucodin gg iveninparenth esesaf tertheSUERC code.T he contactde tailsf ort he laboratorya ree mailg cook@suerc.gla.ac.ukor telephone01 35527 0136di rectline.

Conventionala ge and calibrationa ge rangesc alculated by:- P.Na ysmith Date:- 22/01/10

Checked and signed offby :- G.M uir Date:- 22/01/10

Calibrationpl ot



C1042

LaboratoryCode	SUERC-27152(GU-20734)
Submitter	CecilySpa ll FieldA rchaeologySpe cialistsL td Unit8 FulfordB usiness Centre 35HospitalField sRoad YorkYO104DZ
Siterefe rence	KirkbyFle etham(K BF 09)
Samplere ference	KBF091042
Material	Wood(w aterlogged):R oundwood
13Cre lativeto VPDB	-30.4%
RadiocarbonA geBP	2960± 30

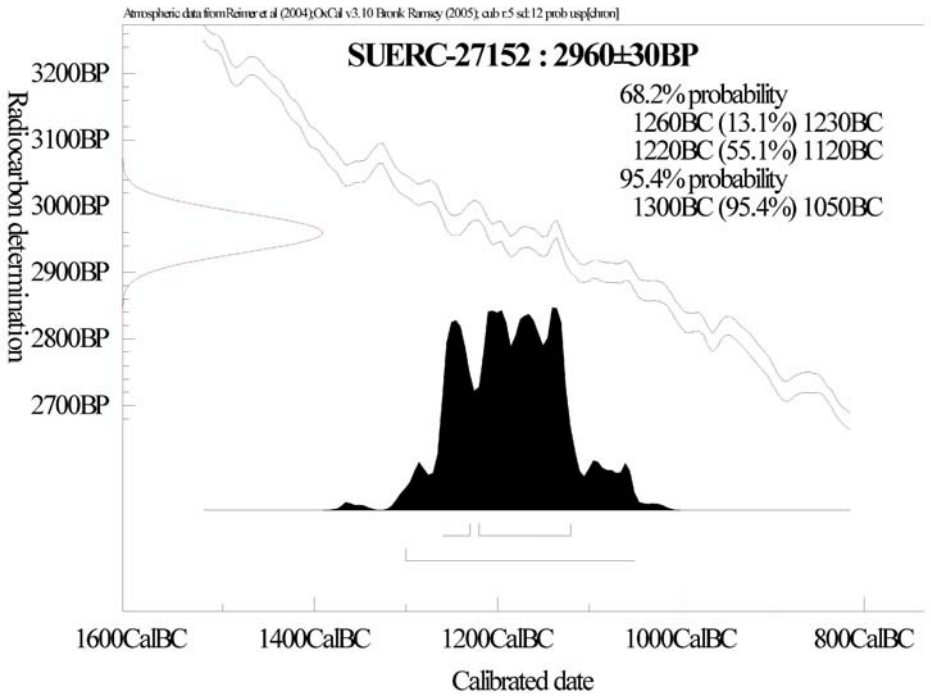
N.B

1. The aboveag eisquotedin conventio naly ears BP(bef ore19 50A D).T heerror,w hich ise xpressed atthe one s igma levelof c onfidence,i ncludesc omponents fromthe countings tatistics ont he sample,m odernre ference standarda ndbla nka ndthe ra ndom machinee rror.
2. The calibrated age rangesa rede terminedf romthe U niversityof O xfordR adiocarbon AcceleratorU nit calibration programme (OxCal3)
3. Samplesw ithaSUERCcodin ga rem easuredattheScottishUni versities EnvironmentalRe search CentreA MSf acilitya nds houldbe quote da s suchin any reportsw ithinthe s cientificli terature,A nyque stionsdir ectedto theRa diocarbon Laboratoryshou ldalsoquo tetheG Ucodin gg iveninparenth esesaf tertheSUERC code.T he contactde tailsf ort he laboratorya ree mailg cook@suerc.gla.ac.ukor telephone01 35527 0136di rectline.

Conventionala ge and calibrationa ge rangesc alculated by:- P.Na ysmith Date:- 22/01/10

Checked and signed offby :- G.M uir Date:- 22/01/10

Calibrationpl ot



C1055

LaboratoryCode	SUERC-27156(GU-20735)
Submitter	CecilySpa ll FieldA rchaeologySpe cialistsL td Unit8 FulfordB usiness Centre 35HospitalField sRoad YorkYO104DZ
Siterefe rence	KirkbyFle etham(K BF 09)
Samplere ference	KBF091055
Material	Wood(w aterlogged):N on-oakr oundwood
delta13Crela tive toV PDB	-28.9%
RadiocarbonA geBP	2855± 30

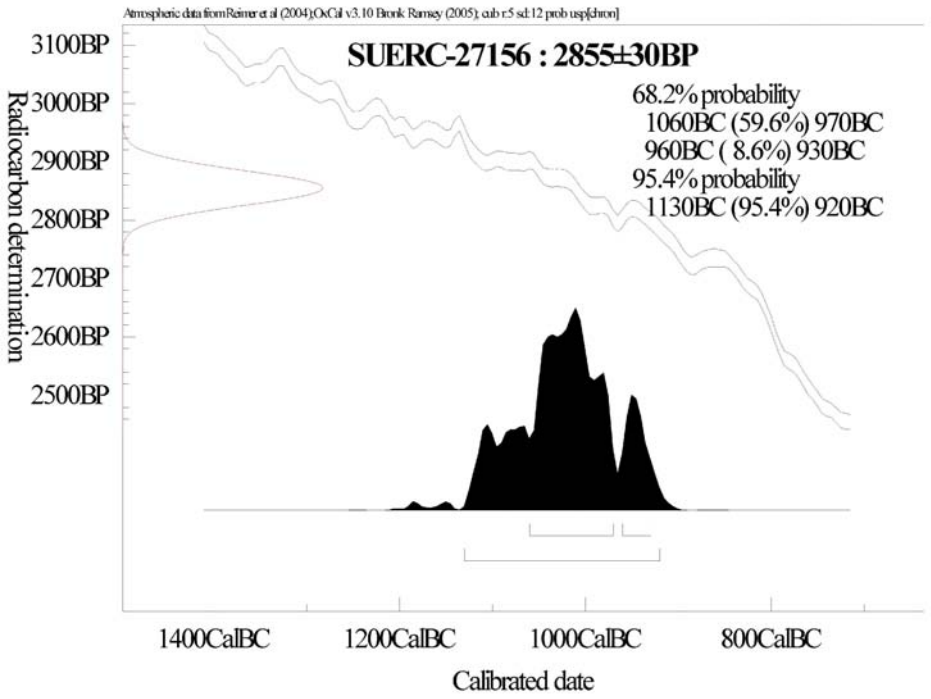
N.B

1. The aboveag eisquotedin conventio naly ears BP(bef ore19 50A D).T heerror,w hich ise xpressed atthe one s igma levelof c onfidence,i ncludesc omponents fromthe countings tatistics ont he sample,m odernre ference standarda ndbla nka ndthe ra ndom machinee rror.
2. The calibrated age rangesa rede terminedf romthe U niversityof O xfordR adiocarbon AcceleratorU nit calibration programme (OxCal3)
3. Samplesw ithaSUERCcodin ga rem easuredattheScottishUni versities EnvironmentalRe search CentreA MSf acilitya nds houldbe quote da s suchin any reportsw ithinthe s cientificli terature,A nyque stionsdir ectedto theRa diocarbon Laboratoryshou ldalsoquo tetheG Ucodin gg iveninparenth esesaf tertheSUERC code.T he contactde tailsf ort he laboratorya ree mailg cook@suerc.gla.ac.ukor telephone01 35527 0136di rectline.

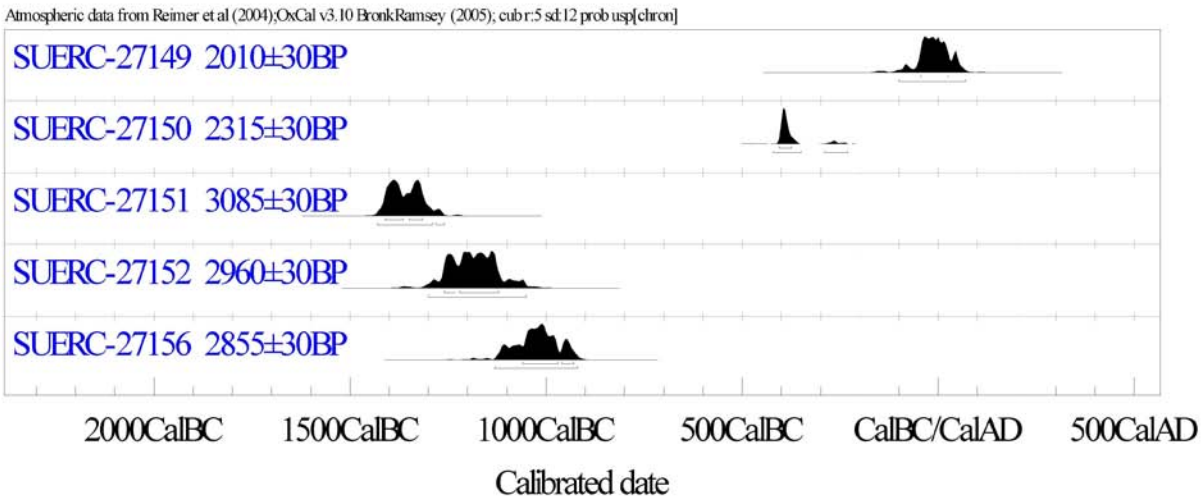
Conventionala ge and calibrationa ge rangesc alculated by:- P.Na ysmith Date:- 22/01/10

Checked and signed offby :- G.M uir Date:- 22/01/10

Calibrationpl ot



Calibrationp lot- al ldates



FIELD ARCHAEOLOGY SPECIALISTS LTD

Unit 8 Fulford Business Centre
35 Hospital Fields Road
York YO10 4DZ

TELEPHONE (01904) 652000
FASCIMILE (01904) 749014
fas@fieldarchaeologyspecialists.co.uk