ARCHAEOLOGICAL SERVICES
DURHAM UNIVERSITY

on behalf of

TEES ARCHAEOLOGY

for

North East Yorkshire Mesolithic Project
Phase 3

Overdale Farm
Goldsborough
North Yorkshire

geophysical survey

report 2911
May 2012

Durham University

Contents

Figures

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1. Summary

The project

1.1 This report presents the results of a geophysical survey at Overdale Farm, Goldsborough, conducted as part of Phase 3 of the North East Yorkshire Mesolithic Project. The works comprised 3.2ha of high resolution geomagnetic survey.

1.2 The works were commissioned by Tees Archaeology and conducted by Archaeological Services Durham University.

Results

1.3 A number of probable soil-filled ditches have been detected, including possible ring-ditches and small enclosures, which could reflect small-scale prehistoric activity. The weakness of these anomalies could indicate that they have been truncated by more recent ploughing.

1.4 In addition to the linear features a number of possible pit features, some discrete and others forming possible alignments, have been detected.

1.5 A former field boundary, as shown on Ordnance Survey maps, has been identified.

2. Project background

Location (Figure 1)

2.1 The survey area was located at land at Overdale Farm, Goldsborough, North Yorkshire (NGR centre: NZ 8510 1448), approximately 5km up the coast from Whitby. The survey covered 3.2ha in the north end of a large arable field next to the coast. It was bounded by public footpaths to the north, east and west, with the North Sea to the north and east, and open farmland to the south and west.

Research proposal

2.2 The geophysical survey has been conducted as part of the North East Yorkshire Mesolithic Project, a three-phase project to further a more complete understanding of the Mesolithic in the area and to contribute to the national understanding of the Mesolithic. The geophysical survey represents part of the third and final phase of this project.

Objective

2.3 The principle aim of the survey was to assess the nature and extent of any sub-surface features of potential archaeological interest, specifically to attempt to identify any features which might be associated with the extensive multi-period flint scatters found at the site.

Methods statement

2.4 The geophysical survey was undertaken in accordance with a project design prepared by Tees Archaeology (Appendix), and to national standards and guidance (below, para. 5.1).

Dates

2.5 Fieldwork was undertaken on the 2nd and 3rd May 2012. This report was prepared for 24th May 2012.

Personnel

2.6 Fieldwork was conducted by Duncan Hale and Richie Villis. Geophysical data processing and report preparation was by Richie Villis and Duncan Hale, with illustrations by Tony Liddell. The Project Manager was Duncan Hale.

Archive/OASIS

2.7 The site code is **GOF12**, for **G**oldsborough **O**verdale **F**arm 20**12**. The survey archive will be supplied on CD to the client for deposition with the project archive in due course. Archaeological Services Durham University is registered with the **O**nline **A**cces**S** to the **I**ndex of archaeological investigation**S** project (**OASIS**). The OASIS ID number for this project is **archaeol3-126117**.

3. Historical and archaeological background

3.1 The following information summarises that presented in the North East Yorkshire Mesolithic Project Design for Phase 3.

3.2 Mesolithic activity in north-east Yorkshire is generally under-represented in the archaeological record when compared to later periods, despite a concentration of sites on the North York Moors. A number of these sites have large lithic assemblages

but are predominantly located on the moors' central watershed, with peripheral areas having very little evidence of occupation in the Mesolithic. The majority of evidence comes from surface collections, with very few sites having extensive or systematic excavation. Palaeoenvironmental research in the North York Moors is a well established practice, but there has been very little sampling of archaeological sites so a direct link between environmental evidence and the lithic assemblages cannot be established. This has led to significant gaps in our understanding of Mesolithic occupation in north-east Yorkshire.

3.3 The North East Yorkshire Mesolithic Project started in 2006. Phase 1 assessed, analysed and characterized the Mesolithic resource in the region. Phase 2 fieldwork between 2008 and 2011 evaluated several Mesolithic sites over a range of differing environmental zones.

3.4 The site at Goldsborough is mainly known due to the 25,000+ lithic assemblage collected by Norman and Patricia Harbord. Shovel pitting and trial excavation was carried out at Goldsborough in 2008. The works found a multi-period lithic assemblage form the Mesolithic to the Bronze Age. Archaeological features were also identified, including a possible ditch at the north end of the field, although these may have been of later dates.

4. Landuse, topography and geology

4.1 At the time of survey the study area comprised a single field predominantly under wheat but with approximately one hectare of deep ploughed artichoke ridges at the north end. The ridges were between 2-2.5m wide with deep furrows between. Shattered bedrock fragments were evident in parts of this ridged area where the plough had cut into the rockhead.

4.2 The survey area occupied relatively level ground atop cliffs above the North Sea, at a mean elevation of approximately 100m OD.

4.3 The solid geology of the area comprises mid-Jurassic undifferentiated sandstone, siltstone and mudstone of the Saltwick and Cloughton Formations, with a thin fringe of mid-Jurassic sandstone of the Dogger Formation towards the cliffs at the north. The solid geology in the western part of the site is overlain by Devensian till.

5. Geophysical survey

Standards

5.1 The surveys and reporting were conducted in accordance with English Heritage guidelines, *Geophysical survey in archaeological field evaluation* (David, Linford & Linford 2008); the Institute for Archaeologists (IfA) *Standard and Guidance for archaeological geophysical survey* (2011); the IfA Technical Paper No.6, *The use of geophysical techniques in archaeological evaluations* (Gaffney, Gater & Ovenden 2002); and the Archaeology Data Service *Guide to Good Practice: Geophysical Data in Archaeology* (Schmidt & Ernenwein 2011).

Technique selection

5.2 Geophysical survey enables the relatively rapid and non-invasive identification of sub-surface features of potential archaeological significance and can involve a suite

of complementary techniques such as magnetometry, earth electrical resistance, ground-penetrating radar, electromagnetic survey and topsoil magnetic susceptibility survey. Some techniques are more suitable than others in particular situations, depending on site-specific factors including the nature of likely targets; depth of likely targets; ground conditions; proximity of buildings, fences or services and the local geology and drift.

5.3 In this instance, based on trial excavations, cut features such as ditches and pits were known to be present in the north of the field, and were anticipated elsewhere. It was considered likely that other types of feature such as routeways and fired structures (for example hearths or campfires) might also be present.

5.4 Given the anticipated depth of targets and the non-igneous geological environment of the study area a geomagnetic technique, fluxgate gradiometry, was considered appropriate for detecting the types of feature mentioned above. This technique involves the use of hand-held magnetometers to detect and record anomalies in the vertical component of the Earth's magnetic field caused by variations in soil magnetic susceptibility or permanent magnetisation; such anomalies can reflect archaeological features.

Field methods

5.5 A 30m grid was established across the survey area and related to known, mapped Ordnance Survey (OS) points using a Leica GS15 global navigation satellite system (GNSS) with real-time kinematic (RTK) corrections typically providing 10mm accuracy.

5.6 Measurements of vertical geomagnetic field gradient were determined using Bartington Grad601-2 dual fluxgate gradiometers. A zig-zag traverse scheme was employed and data were logged in 30m grid units. The instrument sensitivity was nominally 0.03nT, the sample interval was 0.25m and the traverse interval was 0.5m, thus providing 7,200 sample measurements per 30m grid unit.

5.7 Data were downloaded on site into a laptop computer for initial processing and storage and subsequently transferred to a desktop computer for processing, interpretation and archiving.

Data processing

5.8 Geoplot v.3 software was used to process the geophysical data and to produce both a continuous tone greyscale image and a trace plot of the raw (minimally processed) data. Plots of filtered data are also provided. The greyscale images and interpretations are presented in Figures 2-5; the trace plots are provided in Figures 6-7. In the greyscale images, positive magnetic anomalies are displayed as dark grey and negative magnetic anomalies as light grey; palette bars relate the greyscale intensities to anomaly values in nanoTesla. Palette bars with the filtered images relate the greyscale intensities to standard deviations rather than absolute values.

5.9 The following basic processing functions have been applied to the geomagnetic data:

clip	clips data to specified maximum or minimum values; to eliminate large noise spikes; also generally makes statistical calculations more realistic

zero mean grid	sets the background mean of each grid to zero; for removing striping effects in the traverse direction
zero mean traverse	sets the background mean of each traverse within a grid to zero; for removing striping effects in the traverse direction and removing grid edge discontinuities
destagger	corrects for displacement of geomagnetic anomalies caused by alternate zig-zag traverses
interpolate	increases the number of data points in a survey to match sample and traverse intervals; in this instance the data have been interpolated to 0.25m x 0.25m intervals

5.10 The following filter has been applied to the geomagnetic data (Figure 3):

low pass filter	applied with Gaussian weighting to remove high frequency, small-scale spatial detail, specifically the artichoke ridges, and for enhancing larger weak features

Interpretation: anomaly types

5.11 A colour-coded geophysical interpretation plan is provided. Three types of geomagnetic anomaly have been distinguished in the data:

positive magnetic	regions of anomalously high or positive magnetic field gradient, which may be associated with high magnetic susceptibility soil-filled structures such as pits and ditches
negative magnetic	regions of anomalously low or negative magnetic field gradient, which may correspond to features of low magnetic susceptibility such as wall footings and other concentrations of sedimentary rock or voids
dipolar magnetic	paired positive-negative magnetic anomalies, which typically reflect ferrous or fired materials (including fences and service pipes) and/or fired structures such as kilns or hearths

Interpretation: features

5.12 A colour-coded archaeological interpretation plan is provided.

5.13 The very strong, alternate positive and negative magnetic anomalies detected across the northern part of the area reflect the deep ploughed artichoke ridges and furrows, respectively. A plot of filtered data has been provided to remove the appearance of these.

5.14 A broadly north/south aligned positive magnetic anomaly has been detected in the west of the survey area. This reflects a relative increase in high magnetic susceptibility materials and almost certainly represents the remains of soil-filled ditch feature. The position of the anomaly at the north end broadly corresponds to the location of a suggested ditch in the test pit excavations of 2008. This could reflect an enclosure ditch from an early phase of occupation. This ditch could

continue eastwards from its southern end, and then possibly southwards again though this latter anomaly is aligned with the modern plough direction.

5.15 Previous work on Mesolithic sites has found shallow cut features; these would be reflected in the geomagnetic data as very weak positive anomalies and a number of these types of anomalies have been detected in the survey. At the north-west corner of the survey area, to the west of the ditch feature, a number of curvilinear and sub-circular, very weak positive magnetic anomalies have been detected. These could reflect the truncated remains of soil-filled features, possibly small enclosures and ring-ditches. A number of discrete positive magnetic anomalies have also been detected in this area, which could reflect soil-filled pit features.

5.16 Further discrete positive magnetic anomalies have been detected across the survey area. These could also reflect soil-filled pits. A number of these appear to form possible alignments.

5.17 A magnetically 'noisy' area has been detected in the south-east corner of the survey area. This may reflect debris from the recently removed field boundary, or it could reflect occupational debris. A number of amorphous positive magnetic anomalies have been identified in the filtered data in this area. The lack of structure to these anomalies suggests they are more likely to be geomorphological features, perhaps related to the natural rockhead.

5.18 A linear negative magnetic anomaly in the southern part of the survey corresponds to the location of a former field boundary as shown on OS maps.

5.19 Parallel strong positive magnetic anomalies have been detected aligned broadly east/west across the survey area. These are likely to reflect a system of land drainage. Many fragments of fired clay drain were noted on the ground surface. The perpendicular linear 'texture' in the part of the area under wheat reflects the current ploughing regime.

5.20 The only other anomalies detected here are small, discrete dipolar magnetic anomalies. These almost certainly reflect items of near-surface ferrous and/or fired debris, such as horseshoes and brick fragments.

6. Conclusions

6.1 A high resolution geomagnetic survey was undertaken over 3.2ha of land at Overdale Farm near Goldsborough, as part of Phase 3 of the North East Yorkshire Mesolithic Project.

6.2 A number of probable soil-filled ditches have been detected, including possible ring-ditches and small enclosures, which could reflect small-scale prehistoric activity. The weakness of these anomalies could indicate that they have been truncated by more recent ploughing.

6.3 In addition to the linear features a number of possible pit features, some discrete and others forming possible alignments, have been detected.

6.4 A former field boundary, as shown by OS maps, has been identified.

7. Sources

David, A, Linford, N, & Linford, P, 2008 *Geophysical Survey in Archaeological Field Evaluation*. English Heritage

Gaffney, C, Gater, J, & Ovenden, S, 2002 *The use of geophysical techniques in archaeological evaluations*. Technical Paper **6**, Institute of Field Archaeologists

IfA 2011 *Standard and Guidance for archaeological geophysical survey*. Institute for Archaeologists

Schmidt, A, & Ernenwein, E, 2011 *Guide to Good Practice: Geophysical Data in Archaeology*. Archaeology Data Service

Appendix: Project design

North East Yorkshire Mesolithic
Project Design for Phase 3
February 2012
Tees Archaeology

1 Project Name

The project will be known as the North East Yorkshire Mesolithic Project - Phase 3.

2 Summary Description

To complete the final Phase of the North East Yorkshire Mesolithic Project: -

- through a further season of archaeological fieldwork at the multi-period (Mesolithic to Bronze Age) lithic scatter site at Goldsborough.
- by testing the suitability of varying archaeological methods (geophysical survey, fieldwalking, shovel and test pitting) on Mesolithic plough-zone archaeology.
- by producing a final report for all three phases.
- by producing a popular booklet for the general reader on the Mesolithic in the area including the results of the project.
- by producing an academic article synthesising the information about the Mesolithic of the North York Moors.
- A management statement for the Mesolithic of the North York Moors based on the information generated by the project to be made available to land managers, North York Moors NPA staff and other relevant professionals.

3 Background

3.1 The Mesolithic

It is acknowledged that Mesolithic activity is generally under-represented in the archaeological record for northern England when compared to later periods (Adams 1996). The area of north east Yorkshire is no exception, despite there being a concentration of sites on the North York Moors in particular. A number of these sites are prolific in their lithic assemblages (summarised in Spratt 1993), but they are predominantly situated on the central watershed of the moors and many of the peripheral areas have scant evidence for Mesolithic occupation. Furthermore, the range of evidence is very restricted and comes principally from surface collections; few sites have undergone systematic excavation, particularly in recent years (e.g. Waughman 1996). Although palaeoenvironmental research in the area is well established (Simmons 1996), there has been very little sampling of archaeological sites, and hence there is no direct link between the environmental evidence and the lithics. There are, therefore, significant gaps in our understanding of the nature of Mesolithic occupation in north east Yorkshire.

3.2 The Study Area

The North York Moors is an isolated upland block which is bounded by the Vale of Pickering to the south, the Vales of York and Mowbray to the west, the lowlands of the Tees valley to the north and the North Sea coast to the east. The project area extends across this upland landscape and into the Tees valley lowlands. It is defined to the north by the River Tees, to the west by the River Leven and its catchment and by the escarpment of the Cleveland and Hambleton Hills, and to the south by the North York Moors National Park boundary and the southern edge of the Tabular Hills, taken as the 50m contour to the east of Kirbymoorside and 70m further west. On its western edge the National Park includes an area of up to 1km beyond the escarpment, so for consistency this margin is included within the project area and extended where the NP boundary runs close to the foot of the escarpment.

Outside the North York Moors National Park boundary, North Yorkshire County Council has administrative responsibility for small areas on the southern fringes of the moors and in the Tees Valley. The unitary authorities of Redcar and Cleveland, Middlesbrough and Stockton (whose HERs are curated by Tees Archaeology) cover the remainder of the Tees valley to the east as well as the northern fringes of the moors. The high moors form the largest area of open heather moorland in England and Wales with SSSI status, and are managed largely for grouse shooting and sheep farming. The moorland valleys, the gentler slopes of the Hambleton and Tabular Hills on the southern fringes of the moors, and the lowlands of the Tees Valley are mainly farmland, dominated by pasture in the moorland valleys and with a significant proportion of arable elsewhere. There are also extensive urban and industrial developments in the Tees valley and substantial areas of afforestation in the National Park, particularly towards the south east.

3.3 Previous Archaeological Work

Previous archaeological work in the area has focussed on surface collection of lithics and is summarised by Manby (2003). Collections made prior to the early 1990s are largely documented in Wymer (1977) and Spratt (1993), although many of these have received little attention from lithics specialists and have not been analysed in detail. More recent collections are also known to have been made but many of these remain poorly documented. At the start of Phase 1, the three HERs maintained for the project area (NYMNP, NYCC and Tees Archaeology) together had about 900 entries for Mesolithic sites and finds. Of these, about 270 referred to lithic assemblages, the remainder being largely detailed entries for their component artefacts and single findspots. A proportion of the assemblages also contain diagnostic Neolithic artefacts and these have raised a number of questions concerning the chronology of Mesolithic and Neolithic in the area (Young 1989), particularly since there are only a handful of purely Neolithic assemblages recorded on the HERs.

Within the project area there is only one recently determined radiocarbon date from deposits associated with Mesolithic artefacts (5956±51 bp; Wk-15138; associated with a single flint) and two more from the 1970s (4904±75 bp, Q-1170; 9430±390 bp, Q-1560), although there are also dates for some of the pollen profiles. Highcliff Nab on the northern edge of the upland is the only Mesolithic site to have been excavated in recent years, although a number of the lithic assemblages derive from systematic fieldwalking programmes, particularly those undertaken by the former Cleveland County Archaeology Section, by Richard Chatterton as part of his PhD research (R Chatterton pers. comm.) and by the Great Ayton Community Archaeology Group for their ongoing project. Mesolithic finds have also been recovered from the excavation of later sites (e.g. Street House,

Loftus, Vyner 1984). The extensive palaeoenvironmental work which has been undertaken on the moors is synthesised by Simmons (1996) and Innes and Blackford (2003), but very little was recorded on the HERs at the start of Phase 1.

3.4 The North East Yorkshire Mesolithic Project

A three phase project was put forward in a Project Proposal dated May 2004, which it was anticipated would further a better and more complete understanding of the Mesolithic in this area and would also contribute to the changing picture of the Mesolithic nationally. Phase 1 was commissioned by English Heritage (project reference 3862) following acceptance of the project design in January 2006; work on Phase 1 took place between February and September 2006. Phase 2 was commissioned by English Heritage (project reference 3862/Eval) on 17.01.2008 and work, including reporting took place between 2008 and 2011.

3.5 Phase 1 (2006)

This phase of the Project was a resource assessment. It included:-

- The creation of a database and GIS layer of Mesolithic finds and sites in the study area from existing HERs and literature.
- A rapid assessment of the lithic collections held in the collecting Museums of the study area and by private individuals to enhance the database and GIS.
- A rapid assessment of the palaeoenvironmental resource.
- Analysis of the distribution of known Mesolithic sites and the characterisation of six zones, based on altitude and proximity to a water source e.g. Zone 6 High Moorland Springhead Basins.

3.6 Phase 2 (2008-2011)

This phase of the Project was designed to evaluate several Mesolithic sites over a broad range of environmental zones. It included:-

- Training of volunteers to carry out archaeological fieldwork and to monitor and record the impact of Moorland erosion on Mesolithic sites.
- Raising the awareness of the Mesolithic period in the region through production of a leaflet.
- Shovel pitting and trial excavation were carried out at Upleatham and Goldsborough in 2008 (Zone 2 – Lowland activity in prominent locations). Both produced multi-period lithics assemblages from the Mesolithic to Bronze Age. Archaeological features at both sites were identified but were from later prehistoric eras. This field season was severely hampered by bad weather which severely affected crop harvest.
- Palaeoenvironmental samples were taken from Moordale Bog in 2008 to tie in with the archaeological activity at Upleatham. A well preserved sequence from all but the first millennium of the Early Mesolithic to after the Elm decline (c. 5000 BP).
- Palaeoenvironmental samples were taken from Bog House Farm in 2008 to tie in with the archaeological activity at Goldsborough. A sequence covering the entire Mesolithic was obtained but was poorly preserved with low potential for environmental reconstruction.
- Shovel pitting and trial excavation were carried out at Farndale in 2009 (Zone 4 – Upland activity in prominent locations). A major lithic assemblage (c. 3000 flints) was recovered of the later Mesolithic period. Several features were identified including a low cairn, gully terminus or pit.
- Palaeoenvironmental samples were taken from Farndale Moor and Esklets in 2009 to tie in with the archaeological activity. The sequences extended well back into the late Mesolithic. The Mesolitic to Neolithic transition was marked by a significant phase of woodland burning.
- Shovel pitting and trial excavation were carried out at Bransdale in 2010 (Zone 4 – Upland activity in prominent locations). The location of Taylor's excavation trenches, known as Pointed Stone, were relocated. A small late Mesolithic flint assemblage was recovered along with several very shallow cut features.
- Palaeoenvironmental samples were taken from Bransdale Ridge in 2010 to tie in with the archaeological activity. Mesolithic age peat was not recovered in this instance.
- Shovel pitting and trial excavation were carried out at Peat Moss/Wetherhouse Moor in 2010 (Zone 6 – Highland springhead basins). The small flint assemblage included material from the late Mesolithic to Bronze Age. Cut features were limited to a single example which may have been natural in origin.
- Palaeoenvironmental samples were taken from Meggy Mires in 2010 to tie in with the archaeological activity at Peat Moss/Wetherhouse Moor. The sequence included well preserved Mesolithic deposits.
- A series of flint factsheets were provided to the regional museums to assist them with managing their lithic collections.

4 Research Aims and Objectives

4.1 Past Approaches to Research

Until relatively recently, interpretations of Mesolithic archaeology have followed an approach based on either lithics or environmental data, often supported by ethnography (Young 2000) and in the case of north east England based on interpretations of type sites such as Star Carr. Over the past few years a number of studies in northern England have adopted a broader landscape based approach (e.g. Conneller and Schadla-Hall 2003; Spikins 1999, 2002; Tolan-Smith 1996; Waddington 2000, 2007) and with the recent and forthcoming publication of the results from some of these it is timely to address our understanding of Mesolithic activity across the landscape of north east Yorkshire as a complement to those studies. In addition to these specific studies, there are now a number of synthetic publications covering the archaeology of northern England, some of which include recommendations for future research (e.g. Huntley and Stallibrass 1995; Brooks et al 2002; Harding and Johnston 2000; Manby et al 2003; Petts 2006).

4.2 Regional & National Research Frameworks

More recently the formal initiative taken up by the Yorkshire Archaeological Research Framework Forum (YARFF) to establish a research agenda for Yorkshire completed its first stage of data gathering and resource assessment in 2005 and the draft report

suggests some future directions which could be built on to develop regional research agenda (Roskams and Whyman 2005, currently under review). Work on the North East Regional Research Framework has also been completed (Petts 2006). These framework documents and the recently produced syntheses include the following research priorities identified for the Mesolithic period within the region:

- Reappraisal of existing lithic collections, including analysis of chronology
- Identification of sites in under-represented areas, particularly lowland occupation sites
- Refining chronology through use of radiocarbon dating, especially high resolution
- Investigation of sites with both palaeoenvironmental and archaeological potential, particularly in lowland areas
- Clarification of the Mesolithic-Neolithic transition, including through examining assemblage composition and differences in site location
- Investigation of site distributions to see whether differences relate to chronology, subsistence strategy, site function or cultural grouping

These priorities also match some of those identified in the national Palaeolithic and Mesolithic research framework (Gardiner 1999), which in addition highlights the need for education and outreach work. Phase 3 of the North East Yorkshire Mesolithic project will develop these regional and national priorities and in particular will provide the major input on the Mesolithic to the National Park's research and management framework (NYMNPA 2007).

4.3 Aims and Objectives for Phase 3

- To carry out a further season of archaeological fieldwork at the multi-period (Mesolithic to Bronze Age) lithic scatter site at Goldsborough (Figure 1). Currently known through the extensive lithic collections of Norman and Patricia Harbord this site was partially evaluated in the field in 2008 by shovel pitting and trial trenches. Due to a wet summer and a late harvest the field season was severely restricted with only certain areas available for fieldwork. The lithic assemblage and archaeological evidence suggested that Mesolithic or early Neolithic cut features were present. The Phase 3 season will attempt to define the extent of this coastal site (NHPP 3A2), its use and chronology to aid future management of this and other similar lithic sites (NHPP 4G1). The site is at risk from coastal erosion and agricultural impacts. The fieldwork will allow an assessment to be made on the impact of the plough on the archaeological remains (NHPP 2D1) and allow the impact of future coastal erosion to be measured (NHPP 2C1 & 3A2).
- To test the suitability of varying archaeological methods (geophysical survey, fieldwalking, shovel pitting and trial excavation) on Mesolithic plough-zone archaeology. The 2008 season was limited to shovel pitting and trial trenching as the harvest had not been completed in time to allow fieldwalking. It is proposed that this season would include fieldwalking and geophysical survey (NHPP 3A4) followed by trial excavation and that these results can be compared directly to the methodologies employed in the 2008 season. This will allow greater understanding of how representative the ploughzone archaeology at the site is of the sub-soil archaeology. This will allow a statement to be made of the likely significance of flint scatters in the lowland zone (NHPP 4G2).
- To engage volunteers to assist with all aspects of the fieldwork and to provide training and new skills to local people.
- To produce a final report for all three phases, updating the Phase 2 report.
- To produce an academic article that presents an overview of Mesolithic of the North York Moors
- To produce a statement of the management applications of what has been learnt to be circulated to land managers and other interested parties.
- To produce a popular booklet for the general reader on the Mesolithic in the area including the results of the project.

5 Business Case

Phase 3 of this project will see the drawing to a close of a major piece of synthesis and fieldwork carried out over the last 5 years. Originally Phase 3 was envisioned as a larger piece of fieldwork, involving area excavation at one of the moorland spring head sites (possibly Farndale). This is no longer achievable in the current financial climate largely as a result of English heritage grant realignment whilst developing the NHPP.

A difficult field season at Goldsborough in 2008 led to the objectives of this part of the project only being partly met. Applying different techniques (geophysical survey, field walking (NHPP 3A4) and Shovel and Test Pitting) will allow the significance of this coastal site (NHPP 3A2) to be properly assessed and allow future management and understanding. It will enhance our understanding of an early Holocene site (NHPP 4G1) and assess the impact of coastal erosion (NHPP 2C1) and agriculture (NHPP 4G2) on these types of remains.

The NHPP proposes to improve professional access to information about the significance of the historic environment (p. 4). Phase 3 envisions the publication of the project as a whole in a final grey literature report which will be published via OASIS and the Tees Archaeology website. The grey literature report will be used as the basis to produce an academic publication for submission to a regional or national journal to disseminate the results of the project to traditional researchers and academics.

The NHPP proposes to promote greater active engagement in the historic environment by more people and to involve local communities with archaeological projects (p. 4). Providing opportunities for volunteers has been a major part of the project and there is a huge public appetite for involvement in archaeological projects. The fieldwork elements of the project will help to satisfy this demand in the area and provide local people with new skills.

The NHPP proposes to improve public access to information about the significance of the historic environment (p. 4). A booklet is proposed to inform the general public of the results of the project and the Mesolithic period in general. This aspect of the proposal will deliver a direct public benefit. Information about the project and all stages of reporting will be published on the Tees Archaeology website alongside general web-pages about the project.

6 Project Scope

A major lithic collection (25,000 plus flints) has been recovered by Norman and Patricia Harbord from the Goldsborough site. This was rapidly assessed in 2006. It in not proposed to carry out further research on this collection as part of this project.

7 Interfaces

Phase 3 interfaces directly with the preceding phases of the North East Yorkshire Mesolithic project and allows each of the phases to be brought together in a logical conclusion.
It is proposed that the final grey literature report will include suggestions for future themes of study but that Phase 3 would be the final part of the current overarching project.

8 Communications

Communication within the Project Team will be by e-mail with a project review meeting following the completion of the fieldwork phase.
Volunteers will be made aware of the project by means of the already established e-mail list and through the Tees Archaeology e-newsletter.
Communication with the public will be through press releases, talks and the publication of a popular booklet about the Mesolithic in the area which will draw on the results of the project.
The profession will be informed about the project through talks and the production of a peer reviewed article for publication in a regional or national journal.
Highlight Reports
Highlight reports will be produced:-

- Prior to the commencement of the fieldwork and will provide further information on timings; the results of the Geophysical Survey if they are available and the extent of volunteer involvement (June 2012) .
- Following the completion of the fieldwork season and after the project review meeting set out as task 1.3 (November 2012)
- In order to provide an update or compiling the archive and completing the final reports (March 2013).

9 Project Review

A formal project review meeting will take place following the completion of the fieldwork and this should be in September or October 2013. The meeting will involve, Robin Daniels, Peter Rowe, Rachel Grahame (Tees Archaeology) and , Graham Lee and Mags Waughman (North York Moors National Park).

10 Health and Safety

All activities will be undertaken in compliance with the Tees Archaeology Health and Safety policy. Tees Archaeology's projects are fully covered by Employers' Liability, Public Liability and Professional Indemnity insurance policies.

11 Resources and Programming

This is a partnership project between English Heritage, Tees Archaeology and North York Moors National Park. It is hoped that York University will also play a part in this final stage of the project. Close links have been established with a number of volunteers and every effort will be made to continue to engage them with the project.

11.1 Project Team Structure

The project will be managed by Robin Daniels (Archaeology Officer, Tees Archaeology) with Mags Waughman (North York Moors National Park) acting as Project Consultant. Specialists will be drawn from in house staff and the regional Universities at York and Durham.
For Phase 3 the project team will include:
Project Manager
Robin Daniels Archaeology Officer, Tees Archaeology
Project Consultant
Mags Waughman NYMNP Archaeological Conservation Officer
Fieldwork and Post Excavation Leader
Rachel Grahame Archaeology Assistant, Tees Archaeology
Lithics Specialist
Peter Rowe Archaeology Assistant, Tees Archaeology
Palaeoenvironmental Specialists
Allan Hall (plant macrofossils) Dept of Archaeology, University of York
Harry Kenward (invertebrates) Dept of Archaeology, University of York
Illustrator
Freelance Illustrator to be commissioned
North York Moors National Park
Graham Lee NYMNP Senior Archaeological Conservation Officer
Field Team
This will comprise the Fieldwork and Post Excavation Leader, a Supervisor and one fieldworker to be recruited by Tees Archaeology. It is intended that this will be augmented by up to 5 volunteers per day.
Tees Archaeology will provide project management, administration and clerical support and work with the North York Moors National Park Authority in enabling volunteer involvement.

11.2 Fieldwork Method Statement

Geomagnetic Survey
The geophysical survey will be conducted according to the standards set out in English Heritage 2008 Geophysical survey in Archaeological Field Evaluation English Heritage and Institute for Archaeologists 2010 Draft Standard and Guidance for Archaeological Geophysical Survey IFA and its associated Introduction and Appendices. The most likely remains to be encountered in this situation are cut features such as ditches, pits, and routeways and fired features such as hearths or campfires.
It is recommended that a Magnetometer Survey should be deployed at a minimum rate of 0.25m x 0.5m. The area for survey will be c 3ha and will measure c. 180m x 170m.

The geomagnetic survey will be carried out by an appropriate specialist. At least two permanent survey points will be established to which the survey can be tied and which can be used to locate features discovered in the survey for future phases of fieldwork.

Fieldwalking

The fieldwalking will cover the c.3ha of the Geophysical Survey and take place over a five day period. The fieldwalking will be carried out according the guidance given in Institute for Archaeologists 2008 Standard and Guidance for Archaeological Evaluation IFA and its associated Introduction and Appendices.

The fieldwalking will follow a two stage programme as follows:-

- field scanning
- surface artefact collection

The field scanning will be carried out on a survey grid which can be related to the Ordnance Survey National Grid. The walkers will be at 10m intervals and will observe archaeological material on the ground surface along the line. All surface material of archaeological interest will be recorded including flint, pottery (prehistoric through to post medieval), clay pipe and ceramic building materials. Each find spot should be recorded against the survey grid.

The surface artefact collection will be based on a 10m grid tied into the Ordnance Survey National Grid. Material will be collected and bagged by artefact category from each 10m square. One member of the fieldwalking team will spend a period of five minutes scanning the surface of each square. Significant individual finds will be separately bagged, and their find spot accurately located.

Shovel Pitting

Following the results of the geomagnetic survey and fieldwalking a programme of shovel pitting will be implemented across the whole of the 3 ha area. This will target concentrations of flint found during the fieldwalking and will examine areas of no flint as a control measure.

Shovel pitting will be carried out on the basis of 10m intervals, decreasing to 5m and 2.5 m where concentrations of flint are encountered.

Test Pitting

Test pitting will be used to examine in more detail concentrations of flint picked up during fieldwalking and shovel pitting and to investigate geomagnetic anomalies of possible Early Prehistoric date. Test pits will be measure up to 2mx2m and these areas might be combined where there are significant concentrations of features

The test pits will be wholly carried out by hand and will include:-

- Sieving of c.1 cubic metre of ploughsoil from each area
- Inspection and cleaning of the subsoil to properly expose archaeological features;
- The investigation, recording and sampling of any archaeological features/deposits; the record should include site registers, pro-forma recording sheets (e.g. context record; sample record; human remains record), drawn plans and sections at the appropriate scale and photography in both digital and traditional formats.
- Examination of spoil for archaeological material by hand and eye.

All features will be recorded in plan and section, those that clearly are not Early prehistoric in date should not be investigated further, others should, where possible, be excavated in full.

Environmental sampling and processing will be carried out on all deposits found, in order to assess the environmental potential of the site and will be carried out in consultation with a suitably qualified environmental specialist. The sampling strategy will particularly target negative features such as gullies, pits and ditches. Bulk samples of 30-60 litres, wherever possible, should be taken for flotation and subsequent recovery of charred plant remains and associated small bones or industrial debris. Both flots and residues must be retained upon 500m mesh and the fine residue checked for material – the nature of the soils in this area often leads to partial mineralisation and much charred material can fail to float. 10 litre sub samples from waterlogged deposits should be wet sieved and examined for biological remains in particular. Five litre sub-samples may be processed from dry deposits to assess the potential of each sample. Samples worthy of further work will be fully processed.

The excavation will be carried out in such a way that the records obtained may be easily integrated with any future investigation. This will involve the accurate location and levelling of trenches and the recording of features and contexts at the appropriate scale.

Reporting

The information from the fieldwork will be brought together in a report

The report will include: -

i) an executive summary including dates of fieldwork, the names of the persons undertaking the work, the commissioning organisations, OASIS record number, unique site code and a summary of the results including details of any significant finds or features

ii) a location map sufficient to be able to define the extent of the site and location of fieldwork

iii) a description of the aims of the work referenced to the appropriate Research Framework and development background

iv) a description of the methodologies employed

v) a description of the results of the work

vi) an interpretation of the development of the site

vii) detailed interpretation of each phase of archaeological activity

viii) specialist reports on all relevant subject matter

ix) supporting illustrations, plans and photographs

x) A conclusion which refers back to the aims of the project and indicates whether or not these aims have been met and clearly indicating if further archaeological work is required.

xi) References and sources

Archive

All original site records and post-excavation material (paper based, photographic and digital) along with finds and sample residues will be transferred to a permanent archive following completion of the project. The site archive will be prepared in line with the guidance given in Archaeological Archives Forum. 2007. Archaeological Archives: A Guide to Best Practice in Creation, Compilation, Transfer and Curation. A.A.F.

Unless overridden by National Law any artefacts recovered from the site belong to the landowner. Tees Archaeology will arrange for any finds to be donated to Whitby Museum and will facilitate the Transfer of Title process between the Museum and the landowner.
Site photography will be provided in both conventional black and white and colour digital formats. The black and white film photography will be captured on a 35mm SLR camera using conventional (not chromogenic) silver-based film only, such as Illford FP4 or HP5, or Delta 400 Pro that is replacing HP5 in certain film sizes (such as 220). Dye-based films such as Ilford XP2 and Kodak T40CN are unacceptable due to poor archiving qualities. Film will be processed to British Standard 5699 which is the archival ideal and is recognised as suitable for long-term storage. Negatives and 6" x 4" prints will be provided in archive stable wallets suitable for hanging in a filing cabinet.
Digital images will be captured on a SLR camera at a minimum resolution of 10 mega-pixels. The camera will be set at the largest file size and highest picture quality. Images will be either high quality .jpg files or camera .raw files. If the .raw setting is used the archive will include a set of images saved as .tiff files as manufacturer specific specialist software may be required to open the .raw files.

11.3 Tasks, Stages and Products
11.3.1 Tasks
Task 1: Project management
This will include liaison with members of the project team, partners, EH, local societies, groups and individuals with an interest in the Mesolithic. The small size of the project team means that liaison between specialists can be achieved through informal discussion rather than timetabled meetings, although there will be a project review meeting at the end of the field season.
Task 1.1: Project management. This will include obtaining the relevant landowner permissions and setting up the field team and volunteers prior to the fieldwork.
Task 1.2: Fieldwork Report. A report on the fieldwork will be produced. This will set out the results of the fieldwork and of any specialist work completed at that time and will make an assessment of the effectiveness of the methodology used in order to inform the Final Report.
Task 1.3: Project review meeting to appraise the field season and discuss its implications for the Final Report.
Task 1.4: Produce Final Report for Phases 1-3 of the North East Yorkshire Mesolithic Project, updating the Phase 2 final report.
Task 2: Fieldwork
Task 2.1 Identify the area at Goldsborough suitable for investigation in terms of current land use and densities of material produced in the last few years. This will include liaison with Norman and Patricia Harbord who have been undertaking regular fieldwalking at Goldsborough.
Task 2.2 Commission geomagnetic survey for 3 hectares of land at Goldsborough.
Task 2.3 Fieldwalking of the selected area.
Task 2.4 Shovel and Test Pitting of the selected area.
Task 2.5 Process and assess finds.
Task 2.6 Process bulk samples.
Task 2.7 Assess flots and residues from processed samples, and extract suitable dating material
Task 2.8 Submit samples for radiocarbon dating if appropriate.
Task 2.9 Cross-check field records and complete field archive.
Task 2.10 Update N E Yorks Mesolithic database.
Task 2.11 Prepare and submit project archive to Whitby Museum.
Task 3: Public awareness and engagement
Task 3.1 Provide opportunities for volunteers to take part in fieldwork project.
Task 3.2 Update webpage
Task 3.3 Provide information about the project through talks to local societies and interest groups, and in newsletters.
Task 3.4 Provide Press Releases about the project.
Task 3.5 Provide Booklet on 'The Mesolithic' period.
Task 4: Informing the Profession
Task 4.1 Produce an article synthesising information about the Mesolithic of the North York Moors for publication in a national or regional journal
Task 4.2 Seek publication of the article.
Task 4.3 To produce a statement of the management applications of what has been learnt to be circulated to land managers and other interested parties.

11.3.2 Stages (see Table 2)
There are two key stages to this phase of the project.
Stage 1. Production of popular booklet and draft management statement and implementation of fieldwork and production of fieldwork report. The fieldwork programme will provide an opportunity for volunteer involvement and this will be publicised widely as well as with those volunteers already registered with Tees Archaeology and the North York Moors National Park Authority. Any necessary archaeological training will be provided for volunteers and they will all be fully briefed on Health and Safety requirements for the project as well as its wider archaeological goals.
Stage 2. The compilation of a series of overarching documents; the final report on the project, revision of management statement and a synthetic article for publication in a journal.
It is intended that Stage 1 will take place between March 2012 and the summer of 2012 and that Stage 2 will be completed by September 2013. Table 2 sets out this timetable in more detail

11.3.3 Products
The products will comprise the fieldwork report; the final project report, the synthetic article, a management statement and the popular publication.

11.4 Ownership

The archive and the finds from the excavation will be deposited in Whitby Museum with the landowner's permission. Intellectual property rights will remain with Tees Archaeology and authors.

11.5 Risk Log
See Appendix 1 for this

11.6 Budget (see Table 3 for details)
The overall cost of Phase 3 will be £41,804.20. Tees Archaeology will contribute £1,583.75 in staff time and facilities and the National Park will contribute £658.35 in staff time. The value of the voluntary contribution to the evaluations will be £6,187.50. A total grant of £33,374.60 is therefore requested from English Heritage. Table 3 shows the detailed costing.

Table 1: Task List

Task no.	Task	Performed by	Days
2011 / 12			
1.1	Project management	RD / MW / GL	1 / 1 / 1
2.1	Identify suitable fields for fieldwalking	RG	2
3.2	Update Tees Archaeology Web Page	PR	1
2012 / 13			
1.1	Project management	RD / MW / GL	3 / 1 / 1
3.4	Provide Press Release about the project	RD / MW	1/0.5
3.1	Provide opportunity for volunteers to take part in the project. Providing all necessary training.	MW / RG / FO	1 / 1 / 0 (training delivered on site, no additional time required)
2.2	Commission Geophysical Survey	RD / RG	0.5 / 1
2.3	Carry out Fieldwalking	Field Team	
2.4	Carry out Shovel Pitting / Test Pitting	Field Team	17
2.5	Process, assess, illustrate and report on finds	Filed Supervisor / Field Officer (FO) / PR / Illustrator	2 / 1.5 / 15 / 3
2.6	Process bulk samples		6 Nos
2.7	Assess flots and residues from processed samples	AH / HK	2 / 2
2.8	Submit Radiocarbon samples	EH	-
2.9	Check records and complete archive	Field Supervisor / FO	3 / 1
2.10	Update N E Yorks Mesolithic database	MW	1
1.2	Fieldwork Report	FO	7
1.3	Project review meeting	MW/PR/RD GL/FO	All 0.5
4.3	Draft, Consult and finalise Management Statement	MW	3
3.3	Provide information through talks etc.	RG / MW / PR	1 / 1 / 1
3.5	Provide booklet on the 'The Mesolithic in North East Yorkshire'	PR / MW / Illustrator	15 / 2 / 7.5
3.2	Update Tees Archaeology Web Page	PR	1
2013 / 14			
1.1	Project management	RD / MW / GL	2 / 1 / 1
3.3	Provide information through talks etc.	RG / MW / PR	1 / 1 / 1
3.4	Provide Press Release	RD / MW	1 / 0.5
1.4	Produce Final Report for Phases 1 -3 of the North-East Yorkshire Mesolithic Project	MW	5
4.1	Provide article for regional / national journal	MW	2
4.2	Seek publication of article	RD / MW	1 / 1
2.11	Prepare and submit project archive to Whitby Museum	RG / PR	1 / 1

Table 2: Timetable for Phase 3 of Project

	Task	2012 January - March	2012 April – June	2012 July – September	2012 October - December	2013 January - March	2013 April - June	2013 July - September
Stage 1	**1.1**							
	3.3							
	2.1							
	3.2							
	3.4							
	2.2							
	3.1							
	4.2							
	2.3							
	2.4							
	1.2							
Stage 2	**1.3**							
	2.5							
	2.6							
	2.7							
	2.8							
	2.9							
	3.5							
	2.10							
	4.1							
	4.3							
	1.4							
	2.11							

Appendix 1: Risk Log

Risk Number	Description	Probability	Impact	Countermeasure	Estimated time / cost	Owner	Date entry updated
1	Unable to access land	Low	High	Early discussion and continued contact with landowner. Flexibility in timetabling	Time delay, 2months / 12months	Mags Waughman / Rachel Grahame	
2	Insufficient Volunteers	Low	Medium	Early and targeted 'advertising' of the project	Reduction in area / intensity of study	Rachel Grahame	

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DURHAM UNIVERSITY

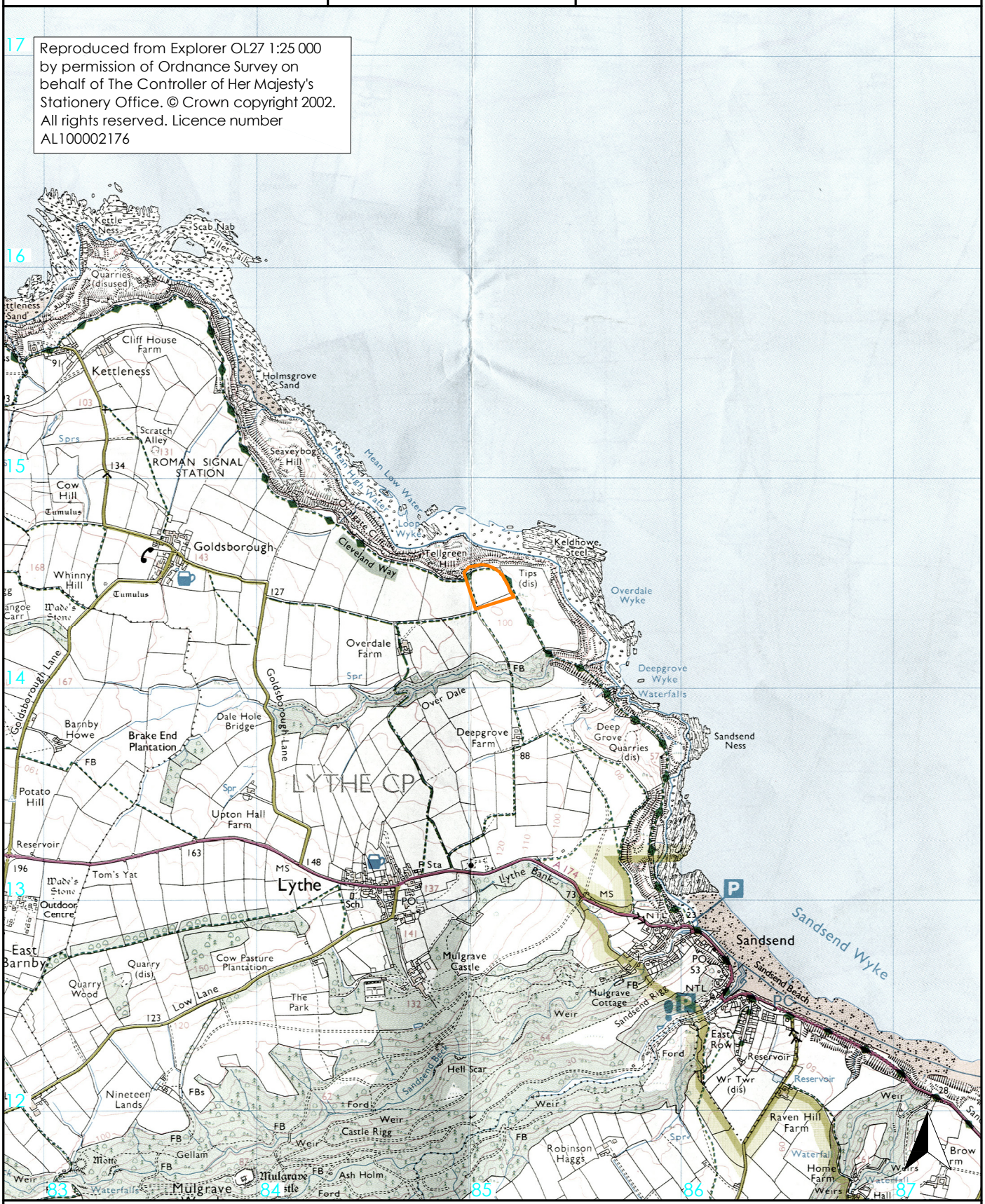
on behalf of
Tees Archaeology

for
North East Yorkshire Mesolithic Project Phase 3

Overdale Farm, Goldsborough
North Yorkshire

geophysical survey
report 2911

Figure 1: Site location



site location

0 1km
scale 1:25 000 for A4 plot

magnetic survey

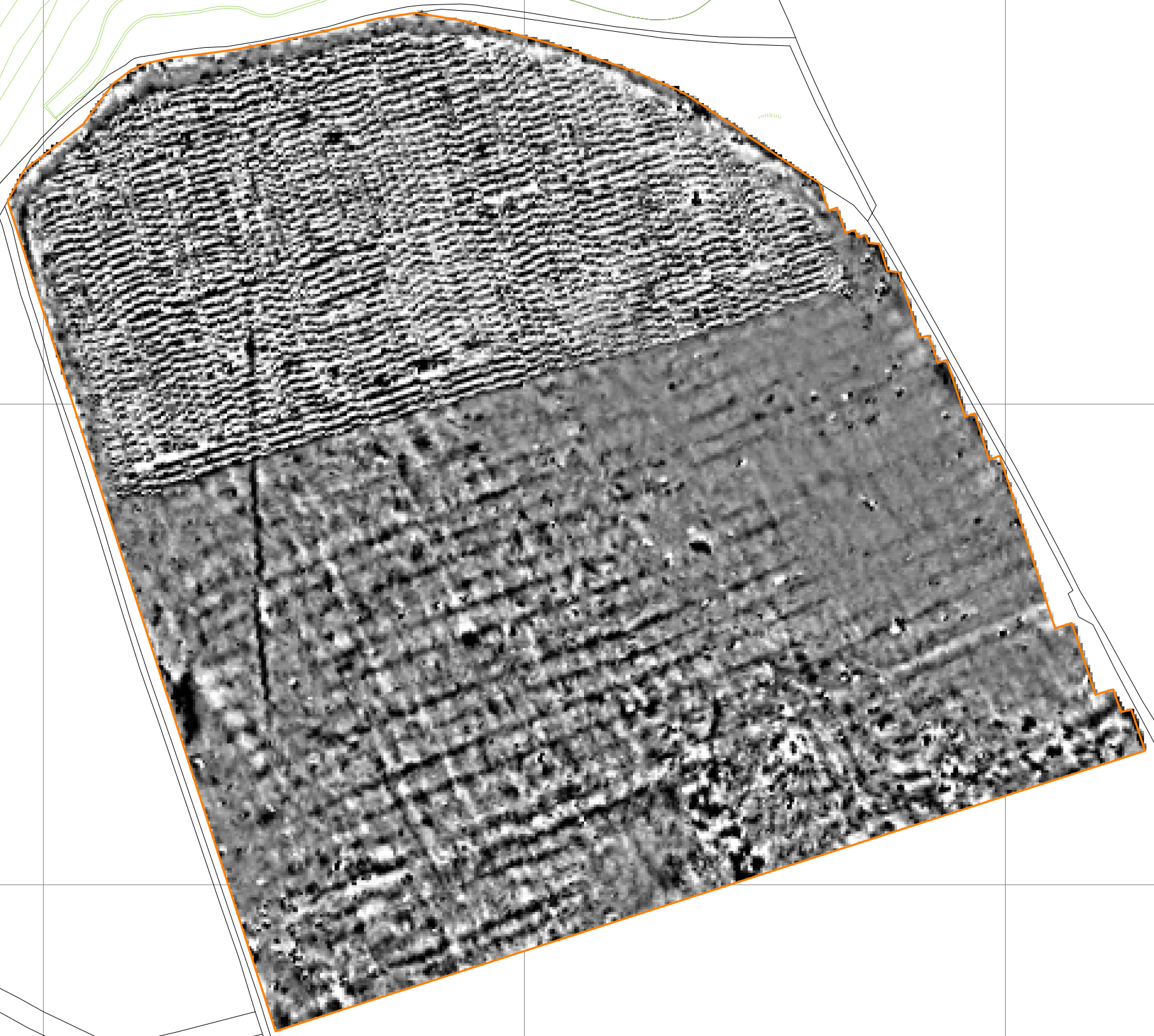
-5 nT 5

146

145

144

850 851 852



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for
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0 50m
scale 1:1000 for A3 plot

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Figure 2: Geophysical survey

magnetic survey

-4 SD 3

146

145

144

850 851 852

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for
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Mesolithic Project
Phase 3

0 50m
scale 1:1000 for A3 plot

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Figure 3: Geophysical survey (filtered data)

magnetic survey

negative magnetic anomaly

positive magnetic anomaly

dipolar magnetic anomaly

146

145

144

850

851

852

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Mesolithic Project
Phase 3

0 50m
scale 1:1000 for A3 plot

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Figure 4: Geophysical interpretation

soil-filled feature

former field boundary

146

145

144

850

851

852

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Mesolithic Project
Phase 3

0 50m

scale 1:1000 for A3 plot

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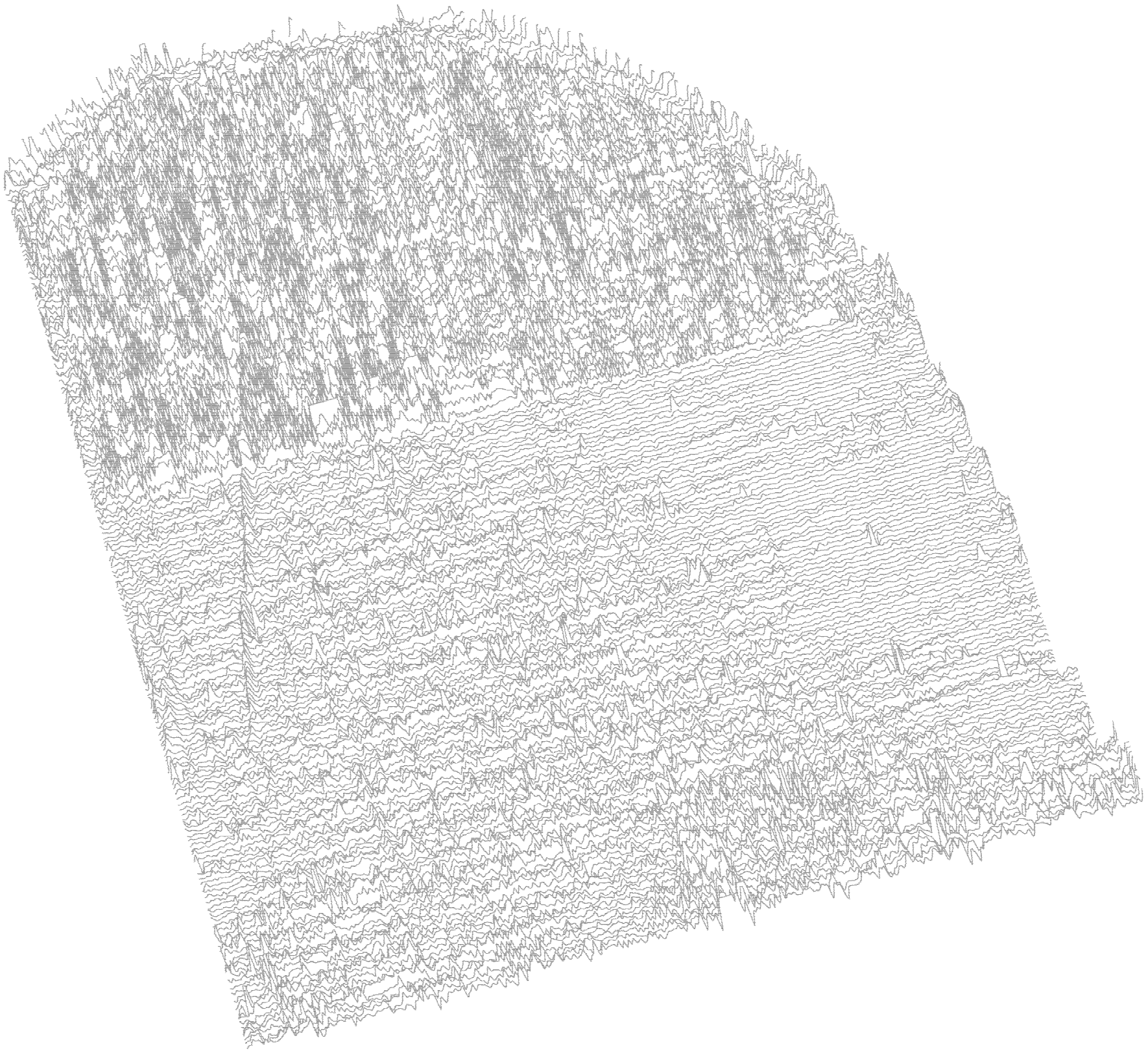
Figure 5: Archaeological interpretation

36.00nT/cm



0 50m

scale 1:1000 for A3 plot

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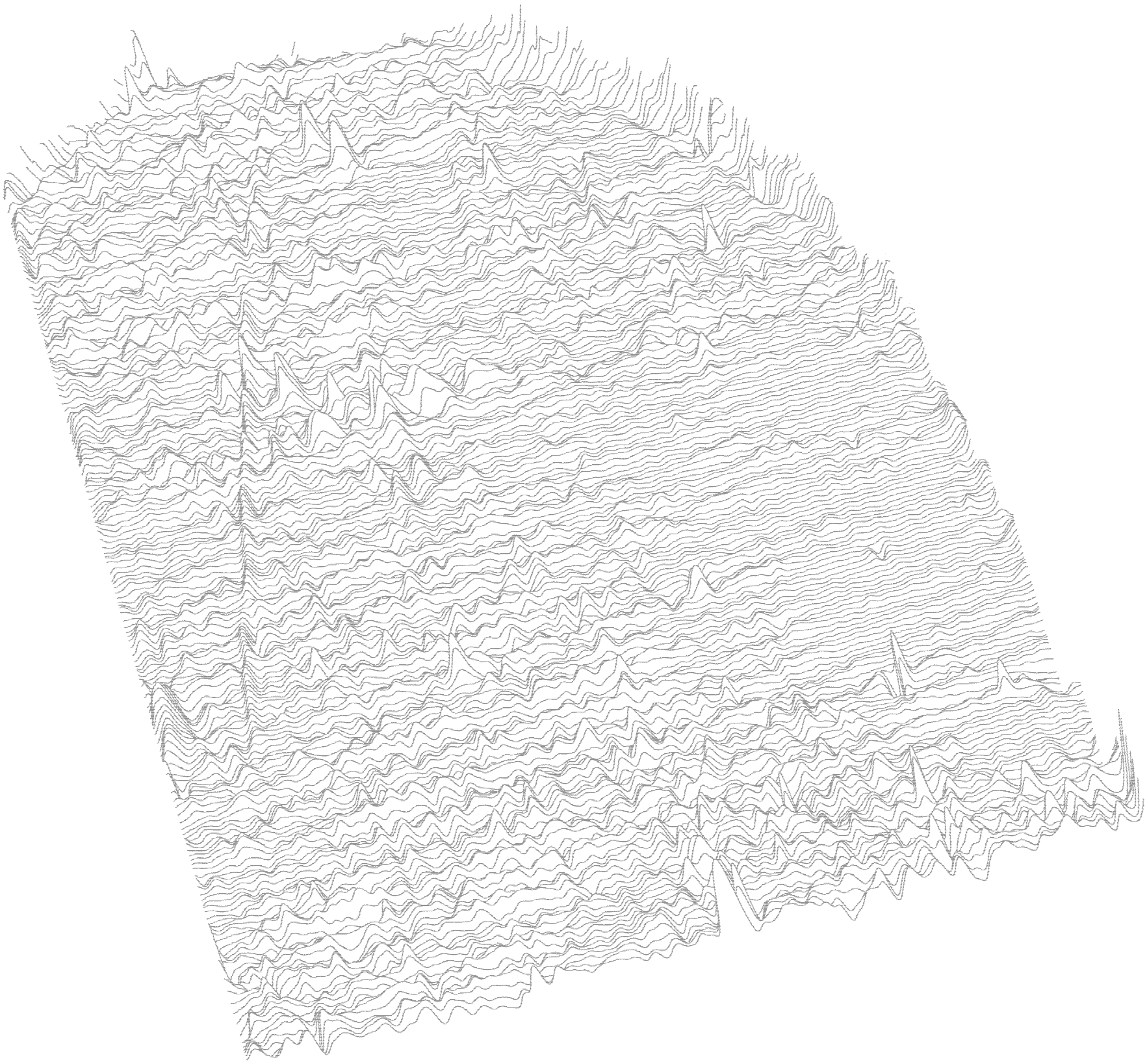
Figure 6: Trace plot of geomagnetic data

12.40nT/cm



0 50m
scale 1:1000 for A3 plot

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Figure 7: Trace plot of filtered geomagnetic data