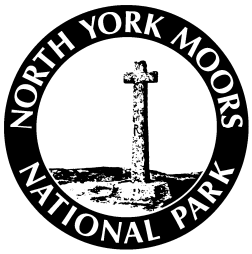
North East Yorkshire Mesolithic Project Phase 3

Archaeological Evaluation

Overdale Farm, Goldsborough

North Yorkshire

Autumn 2012 and Spring 2013



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Contents

Summary		1
Acknowledgments		2
1.	Introduction	3
2.	Previous work at Goldsborough	4
3.	Aims and Objectives	5
4.	Geophysical survey	6
5.	Fieldwalking	6
6.	Shovel pitting and test pitting	7
7.	Lithic analysis - 2012 Fieldwalking assemblage *Peter Rowe*	10
8.	Lithic analysis - 2013 Shovel pitting and test pitting assemblage *Peter Rowe*	14
9.	Coarse stone analysis *Ann Clarke*	17
10.	Other Finds *Rachel Grahame*	18
11.	Palaeoenvironmental Assessment *Charlotte O'Brien*	19
12.	Goldsborough Radiocarbon Dating *Peter Marshall, Gordon Cook, and Paula Reimer*	21
13.	Discussion	23
Bibliography		24

Appendices (CD only)

Appendix 1	MPG12 Flint Catalogue
Appendix 2	MPG13 Flint Catalogue
Appendix 3	MPG13 Coarse stone catalogue
Appendix 4	Data from palaeoenvironmental assessment
Appendix 5	Material available for radiocarbon dating
Appendix 6	Radiocarbon dates from Queens University Belfast
Appendix 7	Radiocarbon dates from Scottish Universities Environmental Research Centre

Figures

1 The location of the sites at Goldsborough

2 The results of the geophysical survey

3 The results of the fieldwalking

4 The location of the shovel pits and test pits

5 Test Pit 1, plan and north facing section

6 Test Pit 2, plan and north facing section

7 Test Pit 3, plans

8 Test Pit 3, south facing section

9 Shovel Pit 50, facing W, scales 0.25m and 0.20m, showing possible stakeholes

10 Test Pit 1, facing SE, scale 1m, showing ditch [103]

11 Test Pit 2, facing S, scale 1m, showing feature [110]

12 Test Pit 3, facing S, scales 1m, showing stones (116)

13 Test Pit 3, facing S, scale 1m, showing deposits (117), (118) and (119)

14 Test Pit 3, facing S, scale 1m, showing bedrock (120)

15 Test Pit 4, facing E, scale 2m, showing the boulder clay (113)

16 Flints from the fieldwalking (2012)

17 Flints from the shovel pitting and test pitting (2013)

18 The combined results of the fieldwork in 2008, 2012 and 2013

19 The distribution of Mesolithic and early Neolithic flints from fieldwork in 2008, 2012 and 2013

20 Probability distributions of dates from Goldsborough

Summary

This report describes the methodology and results of archaeological evaluation undertaken by Tees Archaeology at Goldsborough, North Yorkshire as part of an English Heritage funded partnership project between Tees Archaeology and the North York Moors National Park Authority researching the Mesolithic in north east Yorkshire. The fieldwork comprised geophysical survey undertaken in May 2012, fieldwalking undertaken in September 2012, and shovel pitting and test pitting undertaken in March 2013.

The site had initially been evaluated as part of Phase 2 of the project in 2008 as a lowland location in a prominent position which had been previously identified as a site of potential settlement due to the presence of lithic scatters. It was evaluated using a program of shovel pitting followed by targeted test pitting. This replaced a fieldwalking program which could not be carried out due to poor weather delaying the harvesting of crops at the site. The shovel pitting produced a very mixed flint assemblage, but two ditches, probably enclosure ditches, were identified. Flint finds indicate that one of these dates to the Mesolithic or early Neolithic (Grahame *et al* 2008).

In 2012 further funding for the project was secured and Goldsborough was identified as a site where the Phase 2 evaluation objectives had not been fully realised and where there was potential for archaeological deposits of Mesolithic date. A project was designed that would test the effectiveness of three methods of evaluation, geophysical survey, fieldwalking and shovel pitting, in locating flint scatters and archaeological features (Daniels, 2012).

Geophysical survey was carried out in spring 2012, limited fieldwalking took place in autumn 2012 and shovel pitting and test pitting in early spring 2013. Logistical problems meant that whilst the fieldwalking and shovel pitting areas both overlapped the area of geophysical survey, there was no overlap between the fieldwalking and the shovel pitting. The fieldwork produced a mixed flint assemblage ranging in date from the Mesolithic to later prehistory, in keeping with previous finds from the site. The test pitting demonstrated that whilst the geophysical survey had identified some archaeological features, other anomalies were probably the product of underlying geology. Of the five test pits excavated in 2013, two identified cut features which were undated, whilst a third exposed the remains of a hearth containing Mesolithic or early Neolithic flint within and below it.

Subsequently radiocarbon dating was carried out on plant charcoal recovered from a post pit, which gave conflicting dates in the Neolithic/Early Bronze Age and Roman periods, and from the hearth, which was dated to the Early Bronze Age.

Acknowledgements

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Fieldwork was carried out by Rachel Grahame (Project Officer), Aaron Goode (Field Officer), Kevin Horsley (Field Archaeologist) and Dave Errickson (Field Archaeologist) of Tees Archaeology, and by volunteers Howard Carr, Spencer Carter, Mike Dixon, Nona Hetherington, Edward Higgins, Bill Hodgson, Reg McMeekin, Adam Mead, Alan Simkins, Dave Taylor, John Usher, John Watson and Rob Western. Without them the project would not have been possible.

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We would particularly like to thank the owners of Mulgrave Estate for allowing us access to their land, and the estate staff for their invaluable assistance; particularly John Hoyes.

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1. Introduction

Three phases of archaeological fieldwork at Overdale Farm, Goldsborough, North Yorkshire (Figure 1) were undertaken by Tees Archaeology during 2012 and 2013 as part of an English Heritage funded partnership project between Tees Archaeology and the North York Moors National Park Authority researching the Mesolithic in north east Yorkshire. The fieldwork was carried out by staff from Tees Archaeology assisted by a total of thirteen volunteers. Geophysical survey was carried out by Archaeological Services Durham University (2012).

The North East Yorkshire Mesolithic Project consists of a phased programme of research intended to increase our understanding of the nature of Mesolithic occupation in north east Yorkshire (Daniels, 2008). Existing sites are known primarily from flint scatters rather then systematic excavation, and little paleoenvironmental research in the area has been carried out on archaeological sites.

Phase 1 of the project was carried out in 2006 (Waughman, 2006) and consisted of a review of known sites and existing collections of lithics within the study area, resulting in the identification of six zones of Mesolithic occupation:

Zone 1 - low-lying areas in the Tees valley. These include the former lake basin at Seamer Carrs and sites alongside the river Tees and the former course of the Leven at Levensdale

Zone 2 - lowland locations in prominent positions, principally overlooking the Tees estuary and what would have been the coastal plain in the Mesolithic. Typical locations are those on the Eston and Upleatham hills and down the coast at Goldsborough

Zone 3 - the lower-lying northern and eastern fringes of the present moorland block where sites are often on broad ridges with panoramic views, with sites such as Simon Howe, Mauley Cross and Brown Hill.

Zone 4 - prominent locations on the edge of steep valley and scarp slopes. These include Highcliff Nab, the northern edge of Urra Moor, sites on the western escarpment of the Hambleton Hills and Bransdale Ridge.

Zone 5 - the upper reaches of streams in high moorland in locations such as White Gill, Parci Gill on West Bilsdale Moor and Butter Beck on Egton High Moor.

Zone 6 - high moorland spring head basins. Typical sites include Ousegill Head, Peat Moss, Glaisdale Moor and Westerdale Head.

Phase 2 of the project was then designed to evaluate a number of these sites and zones of activity (Daniels, 2008). Evaluation in 2008 focussed on two areas in Zone 2, Upleatham and Goldsborough (Grahame *et al* 2008). These were considered to be the most promising of the lowland locations with prolific assemblages which include a variety of artefact types, as well as both Mesolithic and later items.

At Upleatham, the flint assemblage demonstrates occupation from at least the late Mesolithic (and possibly early Mesolithic) through to later prehistory. In addition several features were identified: a large ditch, probably an enclosure ditch, a pit and a hearth. Pottery finds indicate that these are all likely to date to the Late Bronze Age or Pre-Roman Iron Age. At Goldsborough, the shovel pitting produced a very mixed flint assemblage, but two ditches, probably enclosure ditches, were identified. Flint finds indicate that one of these dates to the Mesolithic or early Neolithic.

At both Upleatham and Goldsborough the methodological approach of the project was compromised by poor weather leading to a delay in harvesting which prevented any fieldwalking taking place. Shovel pitting proved to be an effective way of identifying flint concentrations, though much less ground could be covered due to the increased time needed to cover an area.

Evaluation in 2009 (Grahame *et al* 2010) was carried out at Farndale in Zone 4. Several features were identified including a low cairn, a gully terminus or pit and a small pit or scoop, as well as well-defined concentrations of flint, provisionally characterised as late Mesolithic, across the area. Environmental samples produced little plant macrofossil material and no material suitable for AMS dating.

Evaluation in 2010 (Grahame *et al* 2011) assessed another site initially thought to be in Zone 4 but found on reassessment of the archive to be in Zone 6, Pointed Stone at Bransdale Ridge, and also two other sites in Zone 6, at the head of Bonfield Gill on Bransdale Ridge and Peat Moss / Wetherhouse Moor. At Bransdale Ridge, the flint assemblage demonstrated occupation during the late or very late Mesolithic. Despite few concentrations of flint compared to previous excavations, shallow cut features were identified in two test pits. The trenches excavated by Taylor in the 1970s may represent the focus of Mesolithic occupation here.

At Peat Moss / Wetherhouse Moor, the flint assemblage demonstrated occupation during the late or very late Mesolithic, with some activity in the Early Bronze Age. Only one cut feature was found which was probably natural in origin. The comparatively low number of flints found may be related to the concentration of activity immediately above the spring head basin: the proliferation of vehicle tracks in this area may have destroyed much of the evidence for Mesolithic occupation. The single environmental sample from the site produced little in the way of charred plant remains and no material suitable for AMS dating.

The Final Report for Phase 2 of the project (Waughman, 2012) identified the evaluation of Zone 2 lowland locations through the fieldwork at Upleatham and Goldsborough as the least successful component of Phase 2. These sites were however considered to have potential for further investigation and in 2012 further funding for a third phase of the project was secured. Goldsborough was identified as a suitable site for further fieldwork and a project was designed that would test the effectiveness of three methods of evaluation, geophysical survey, fieldwalking and shovel pitting, in locating flint scatters and archaeological features (Daniels, 2012).

2. Previous work at Goldsborough

The Goldsborough study area is located to the east of the village of Goldsborough on a cliff top overlooking steep cliffs and shore to the north and east, and dropping away to the south to a small stream valley. Two sites were initially identified as having potential (Figure 1), one at the west end of the area close to a small stream (NZ 84401470), and another to the northeast where an area of high ground is bounded by cliffs to the north, sharply dropping ground to the east, and more gentle slopes to the south and west (NZ 85101450). The geomorphology of the area consists of Jurassic sandstone overlain in places by Devensian till (boulder clay) (British Geological Survey).

Fieldwalking had been carried out over several years by Norman and Patricia Harbord generating a large multi-period collection which was identified by Phase 1 of the project. In 2008, it was intended to fieldwalk both sites at Goldsborough, but poor weather caused a delay in the harvest and in the event only the northern part of the eastern site was evaluated by shovel pitting and test pitting. This work recovered an assemblage of 457 lithics which was very mixed in character with diagnostic pieces ranging in date from the

Mesolithic to later prehistory. The collection of blades from Test Pit 76 (contexts 10, 11 and 13) was judged to be a significant indicator of earlier prehistoric activity, possibly of early Neolithic or even Mesolithic date. However, the low concentration of flint recovered indicated that the area investigated was peripheral to the main focus of prehistoric activity.

Two large ditch sections were identified which were very similar in nature and aligned at right angles to each other, probably representing an enclosure. The presence of flint blades including conjoining fragments of one blade in one of the lower fills of ditch 9 (context 11) suggested an unusually early Mesolithic or early Neolithic date for this feature. Unfortunately environmental samples from both sites produced little in the way of charred plant remains and no material suitable for AMS dating. Whilst no features firmly datable to the Mesolithic were found at the site, the flint assemblage confirmed a Mesolithic presence there.

3. Aims and Objectives

The aims of the fieldwork element of Phase 3 of the project were:

- 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.

  (Daniels, 2012)

4. Geophysical survey

4.1 Methodology

The methodology for the geophysical survey was specified in the project design as geomagnetic survey deployed at a minimum rate of 0.25m x 0.5m over an area of c. 3ha. measuring c. 180m x 170m (Daniels, 2012).

4.2 Results

The geophysical survey was commissioned in April 2012 and took place at the beginning of May 2012, before the wheat crop became too tall too allow survey to take place (Archaeological Services Durham University, 2012). On arrival at the site it was realised that the northern part of the area which had previously been evaluated in 2008 had been deep ploughed into ridges. This area had been planted with artichokes to provide cover for partridges during the autumn shooting season.

The geophysical survey identified a probable ditch aligned north-south in the west of the survey area which broadly corresponded to the location of the prehistoric enclosure ditch identified in the 2008 evaluation (Figure 2). To the west of this in the north-west corner of the survey area were a number of curvilinear and sub-circular weak positive magnetic anomalies which could represent the truncated remains of soil filled features such as small enclosures and ring-ditches. A number of pit like features were also identified across the survey area, some forming possible alignments (Archaeological Services Durham University, 2012).

A linear negative magnetic anomaly in the southern part of the survey area corresponded to the location of a historic field boundary. This may also have been the source of a magnetically 'noisy' area in the south-east corner of the survey area. A number of amorphous positive magnetic anomalies in this area were identified as probable geomorphological features. Parallel strong positive magnetic anomalies aligned broadly east-west across the survey area were identified as land drains. Small discrete dipolar magnetic anomalies were identified as ferrous items or fragments of ceramic building material (Archaeological Services Durham University, 2012).

5. Fieldwalking

5.1 Methodology

The methodology for the fieldwalking was specified in the project design as a two stage programme consisting of field scanning followed by surface artefact collection, to be carried out in the area of the geomagnetic survey over 5 days (Daniels, 2012). The field scanning was to record all surface material of archaeological interest along lines at 10m intervals. The surface artefact collection was to collect material from each 10m square over a period of five minutes per square.

This work was initially intended to be undertaken in the late summer or early autumn following the wheat harvest. However, the landowners, the Mulgrave Estate, were very concerned about any disturbance to the partridge population prior to the beginning of the economically important shooting season at the end of September. It was agreed that limited fieldwork could take place in the southern part of the study area planted with wheat prior to the start of the shooting season, but the northern part of the study area planted with artichokes would not be accessible for fieldwalking. The scheduling of the fieldwork was also constrained by the uncertain timing of the wheat harvest.

Survey was carried out using a Topcon Total Station working from survey stations using a local grid. The survey data has been located manually, adjusting its position for a 'best fit' with mapped features on Ordnance Survey map tile NZ8410. Site levels were corrected from the approximate values ascribed to the survey stations during fieldwork by comparison with the coordinates obtained by GPS in March 2013.

The project was given the site code MPG12 for **M**esolithic **P**roject **G**oldsborough 20**12**.

5.2 Results

Fieldwalking was undertaken on the 11th and 12th September 2012 with four staff (D Errickson, R Grahame, K Horsley and P Rowe) and four volunteers (S Carter, M Dixon, A Mead and J Usher). Delays in obtaining permission for the fieldwork and uncertainty over harvesting reduced the number of volunteers available for the project as many had other commitments and were unable to participate at very short notice. In total, 7 volunteer days were contributed to this part of the project.

The fieldwalking covered the part of the study area not planted with artichokes which had been harvested but not disc ploughed (Figure 3). There was a considerable amount of straw remaining on the surface of the field and it was quickly realized that walking along 10m transects would result in areas of the available bare soil being missed. Initial reconnaissance also indicated that the number of finds was expected to be low, and a decision was taken to divide the study area into large blocks which would be walked from one end to another along the areas of bare soil. Find spots were then recorded and located individually.

In the event much of the field to the south of the study area was also walked, excluding the southwestern part, and 349 find spots were recorded (numbered 11-359 for surveying purposes).

6. Shovel pitting and test pitting

6.1 Methodology

The methodology for the shovel pitting and test pitting was specified in the project design as to be carried out in the area of the geomagnetic survey and fieldwalking. Shovel pitting was to be carried out at 10m intervals, decreasing to 5m and 2.5m where concentrations of flint were encountered. Test pits measuring up to 2m x 2m were to 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. Features that were clearly not early prehistoric in date would not be investigated further, whilst others would, where possible, be excavated in full (Daniels, 2012).

The shovel pitting and test pitting was restricted to the northern part of the study area planted with artichokes, as the southern of the study area had been planted with a wheat crop. The area of shovel pitting and test pitting therefore did not overlap with the fieldwalking area.

The shovel pits and test pits were each given a unique number within two separate sequences. They were excavated by hand through the ploughsoil until natural clay or sandstone bedrock was reached. All of the ploughsoil from the shovel pits was dry sieved through a 6mm mesh: in the case of the test pits, poor weather conditions meant that only a small percentage of the ploughsoil could be sieved.

Where features were located, subsequent excavation and recording was undertaken following the methodology set out in Tees Archaeology Research and Fieldwork Section's recording manual. Sections within each test pit were drawn at a scale of 1:10 and plans were drawn at a scale of 1:20. Deposits were recorded using pro forma context recording sheets. A photographic record of the investigations was compiled using SLR cameras and 35mm black and white print film and 10m pixel high quality jpeg digital images. All photographs include a graduated metric scale. The photographic record forms part of the project archive.

The location of each shovel pit and test pit was surveyed using a Sokkia GRX1 GNSS GPS System with RTK correction, generating Ordnance Survey National Grid coordinates.

The project was given the site code MPG13 for **M**esolithic **P**roject **G**oldsborough 20**13**.

6.2 Results

The shovel pitting and test pitting was carried out in the northern part of the study area for two weeks between 4th and 15th March 2013. The weather during the first week was workable, though deteriorating to rain at the end of the week; however the beginning of the second week brought strong winds and snow. Work continued on Monday and Tuesday with a handful of volunteers who had managed to reach the site, but on Wednesday only one volunteer attended, and the site had to be abandoned in the face of heavy snow showers. Work resumed in the drier weather on Thursday and Friday.

A total of thirteen volunteers were scheduled to take part in the project: of these, three were unable to take part, however two additional volunteers were gained during the course of the project. In total, 54 volunteer days were contributed to the project.

A total of 91 shovel pits (c. 0.30m square) and 5 test pits were excavated across the area of artichoke planting, avoiding the area which had been evaluated by shovel pitting and test pitting in 2008 (Figure 4). Initially 68 shovel pits were excavated on a 10m grid, with an additional 23 excavated at 5m intervals where a rapid on-site assessment of the finds indicated possible concentrations of flint. Apart from the six on the westernmost edge of the area the shovel pits were sited between the ridges ploughed for the artichokes, in order to avoid the tubers and minimise disturbance to the crop.

Overall, the number of finds was low in comparison to the moorland sites such as that at Farndale, the vast majority of shovel pits producing flint counts in single figures with no clear concentrations of flint. 26 of the shovel pits contained no flint at all. None of the additional shovel pits provided enough material to find a suitable target for test pitting.

The ploughsoil (100) was a variable mid grey brown friable silt with a more clayey or sandy nature depending on the underlying strata, and due to the siting of the majority of the shovel pits between the ridges, varied in depth from approximately 0.05m to 0.35m. A light brown firm silt subsoil (101) was present in approximately a third of the shovel pits, generally those on the lower ground towards the western and eastern edges of the area, again reflecting the underlying strata and similarly varying in depth from approximately 0.05m to 0.45m. Beneath this the natural varied from a mid pink brown firm boulder clay (102) to the underlying heavily weathered sandstone, with clay present more towards the west of the area and sandstone dominating the higher ground to the east.

A possible stakehole was identified in the boulder clay in shovel pit 50, which was extended to the E where another possible stakehole was identified (Figure 9). These were filled with a fill identical to the subsoil. Burnt sandstone fragments were identified in shovel pits 6, 12, 24, 29, 30, 31, 40, 43, 47, and 72. Shovel pit 41 contained a copper alloy ring of unknown date.

6.2.1 Test Pit 1 (Figures 5 and 10)

Test pit **1** was located over shovel pit 23 in the western part of the study area and measured 1.75m by 0.38m. It contained a v-shaped ditch [103] cut into the natural clay (102), aligned approximately N-S and with a sloping base, 1.00m wide and 0.65m deep, and filled with a mid orange brown friable silty clay (104). This was cut by a shallower v-shaped ditch [105] on the same alignment, 0.70m wide and 0.25m deep, filled by a mid orange brown friable clay silt (106) containing some large sandstone fragments at the base. This was overlain by the ploughsoil (100). Context (104) contained a fragment of burnt flint. Context (106) contained a single undiagnostic flint flake and a very small amount of burnt bone.

6.2.2 Test Pit 2 (Figures 6 and 11)

Test pit **2** was located over shovel pit 1 in the southwestern corner of the study area and measured 0.96m by 0.92m. It contained a shallow and irregular u-shaped linear feature [108] cut into the natural clay (102), aligned approximately N-S with a slight curve to the E. This was 0.34m wide and 0.04m deep, and was filled by a light brown firm clay silt (107), very similar to the subsoil (101). It had an unclear relationship with a sub-circular feature immediately to the south, which had a flat u-shaped profile and a clearly defined step to the flat base [110]. This was 0.57 wide and 0.19m deep and was filled by a light brown firm clay silt (109) very similar to (107). This overlay a primary fill which was darker in colour and was not recorded separately on site. This feature was interpreted as a possible post pit and the fill was sampled (samples 1 and 2). The test pit contained a fragment of unworked jet and three worked flints, one a Mesolithic or early Neolithic blade, found in the subsoil (101).

6.2.3 Test Pit 3 (Figures 7, 8, 12, 13 and 14)

Test pit **3** was located over shovel pit 40 in the eastern part of the study area and measured 1.12m by 0.95m. It was excavated to investigate a layer of fragmented sandstone similar to the weathered bedrock exposed in some of the shovel pits, but including some fragments of burnt sandstone and concentrations of charcoal (116). It was also noted that there appeared to be an unusual number of stones which were not sandstone and not typical of the pebbles usually found in the boulder clay. The stones ranged in size from 0.05m to 0.20m and partially overlay two thin deposits of burnt material. The first was a discrete sub-circular layer of dark grey friable silty clay containing charcoal (117) lying within a semi-circular ring of stone within (116). It was only 0.02m deep but had well defined edges. The second was a dispersed layer of dark red brown friable silty clay containing small fragments of burnt sandstone (118). This was interpreted as heat affected areas of the underlying deposit (119), a mid grey brown firm sandy silt up to 0.10m deep and containing frequent angular sandstone fragments. Both deposits (117) and (118) were taken as samples (samples 3 and 4).

Deposit (116) was overlain by a mid yellow brown firm clay silt subsoil (115) 0.23m deep and a mid grey brown friable clay silt ploughsoil (114) 0.19m deep. It has been tentatively identified as the site of a hearth constructed on the thin soil (119) overlying the weathered sandstone bedrock (120). Nine of the stones from deposit (116) were retained for specialist assessment (see below), of these five were burnt. Only one cobble showed any signs of use wear, possibly as a hammerstone. Context (116) also contained six worked flints, one a Mesolithic or early Neolithic blade. The underlying soil (119) also contained a Mesolithic or early Neolithic blade. Context (115) contained two fragments of unworked jet.

6.2.4 Test Pit 4 (Figure 15)

Test pit **4** was located on the northern edge of the study area and measured 7.12m by 0.47m. It was excavated in order to test two features identified by the geophysical survey, a linear feature and a pit-like feature. It was excavated to the natural, a mid brown pink firm silty clay (113). This was overlain by a mid brown friable clay silt subsoil with a maximum depth of 0.19m (112), and a mid grey brown friable clay silt ploughsoil with a maximum depth of 0.18m (111). No features were identified. The subsoil (112) contained a single undiagnostic flint flake.

6.2.5 Test Pit 5

Test pit **5** was located over shovel pit 88 in the eastern part of the study area and measured 1.10m by 0.80m. It was excavated to investigate an area of charcoal flecks noted in the shovel pit. The natural was a mixture of weathered sandstone bedrock overlain with areas of boulder clay. This was overlain by a thin mid brown grey firm silty clay subsoil and a mid brown loose sandy silt ploughsoil, both containing frequent sandstone fragments. Charcoal flecks were present both in the subsoil and in the boulder clay, and burnt flint was also found in the boulder clay. This may have been the remnants of a hearth, or the effects of stubble burning in the past. No archaeological features were identified.

7. Lithic analysis - 2012 Fieldwalking assemblage *Peter Rowe*

7.1. Introduction

7.1.1 This report summarises an assemblage of 456 lithics collected during fieldwalking at Goldsborough in 2012. The flints were all collected from the field surface. The crop had been removed but the stubble and chaff remained meaning that visibility was low.

7.1.2 Methodology

Find bags were emptied onto a clean working surface and the material was examined by eye and with supplementary use of a 20x or 40x hand lens where necessary.

Finds were all in individual bags and sorted by find spot number. There were often several flints from one find spot. During the analysis each flint was given an individual number.

Each flint was logged on a spreadsheet. For each flint the following variables were described:-

SITE INFORMATION

Find Spot No	The find spot number (1-359)
Flint No	A unique identifier for each flint (1-456).
Quantity	This is usually ‘1’ and is present to allow calculations.
RAW MATERIAL	
Material	Whether flint, chert, quartz etc.
Material colour	A description of the colour of the raw material.
Cortex	A description of the amount of cortical surface, expressed as a percentage.
Cortex colour	A description of the colour of the cortex, usually ‘white’, ‘cream’ or ‘reduced’.
Patina	A description of the amount of patination, expressed as a percentage.
Patina colour	A description of the colour of the patina, usually ‘white’ or ‘grey’.
TECHNOLOGY	
Type	The type of artifact, e.g. ‘flake’, ‘blade’, ‘debitage’, ‘core’, ‘burnt fragment’ or tool types such as ‘scraper’.
Reduction Sequence	Whether from the ‘primary’, ‘secondary’ or ‘tertiary’ stage of knapping.

Platform	The type of platform (where present), based on Andrefsky's scheme (Andrefsky 2005, 96-77), i.e. 'cortical', 'flat', 'complex' or 'abraded'.
Bulb	A description of the bulb of percussion (where present), recorded as 'pronounced' or 'diffuse'.
Fracture Type	The type of termination, i.e. 'feathered', 'step', 'hinged' or 'overshot'. Based on the types described by Cotterell & Kamminga (1987, 701).
Interpretation	This column is used to indicate if an item has additional working, e.g. 'edge use' or 'retouch'. It is also used to note the type of removals taken from cores, the number of platforms and their orientation. e.g. F2O represents a Flake core with 2 platforms, Opposed to each other and B3OR would represent a Blade core with 3 platforms, 2 opposed and 1 at Right angles.
DAMAGE	
Burnt	This column uses an ordinal scale to describe the exposure to burning an item has received. 0 = unburnt; 1 = lightly fired (surface sooting, light crazing); 2 = fired (surface and interior patination, surface cracks, but still retaining its original form); 3 = heavily fired (complete surface and interior patination, pot lid fractures, shattering, original form cannot be determined).
Damage	A free text column to describe any other forms of damage, e.g. 'plough', 'frost', 'edge chipping'.
INTERPRETATION	
Period	Where an artifact is chronologically distinctive then the period is noted.
Notes	A free text field to record any further observations, i.e. if items refit.

7.1.3 Reporting

The spreadsheet was used to quantify the material (see Table 1 below) and this report was written immediately after the catalogue was completed. Recommendations were made for lithics which could be drawn to illustrate the report. These were principally a selection of the tools.

Flint Type	Total
Blade (inc. fragments)	16
Burnt fragments	256
Core (inc. trims etc)	13
Debitage & angular waste	34
Knife	1
Flakes	66
Microburin	2
Natural fragment	65
Scraper	3
Total	**456**

Table 1: Assemblage composition

The assemblage size is artificially inflated by the large number of natural pebbles and burnt pieces (the majority of which may be 19th or 20th century in date; see 7.2.3 below).

7.2 General character

7.2.1 Raw material

The assemblage is composed entirely of flint. There are no examples of chert, jasper, quartz or other fine-grained stone types such as tuff.

The collection includes 65 natural pieces. These are largely small angular pieces of plough or thermally shattered pebbles consistent with poor quality local beach pebbles.

The flint has a fairly homogenous character, mainly consisting of light brown items. There are two pieces of distinctive red-brown flint. The incidence of cortex is common with just over a third of the items (excluding natural pieces and burnt items) having some degree of original outer surface. There are seventeen items that have been classified as being from the primary stages of knapping. These are generally primary flakes with flat or cortical platforms and pronounced bulbs of percussion. Elsewhere the cortex is generally more limited, usually covering less than 20% of the surface area. When cortex is present it is worn from glacial or wave action and is extremely thin in section.

The general quality of the flint is poor. The assemblage is likely to derive from small pebbles collected from local glacial deposits, river gravels or beaches, the later being the most likely source.

7.2.2 Post-deposition damage

As this is a plough soil assemblage there is a high degree of post-deposition damage. The level of damage ranges from edge chipping to fragmentation. Many of the flakes and blades have modern snaps and fractures.

Patination was most apparent on burnt items, see below, but also occurred on unburnt pieces. Where patina is present it is generally an opaque white or grey, often mottled in appearance. The original flint colour can usually be made out by backlighting the thinner edges of patinated pieces.

7.2.3 Burning

Two hundred and fifty-six pieces have evidence of thermal damage caused by burning. The burning ranges from slight discoloration of the flint surface to more serious damage including complete patination (grey or white), with significant crazing and shattering.

The burnt pieces can be split into two categories, 1) those where the original form of the flint is still evident and 2) highly fired, and sometimes vitrified, shattered fragments where the original form cannot be ascertained. It is likely that flints in the latter category are the result of spreading burnt lime on the fields as a fertilizer from the 19th century to present. These account for approximately 96% of the burnt pieces.

7.3 Technology

7.3.1 Assemblage composition

The assemblage includes 13 items that represent core technology. The Mesolithic period is represented by a burnt core fragment (Flint 66). This is incomplete but preserves part of a circular platform from which at least 3 parallel-sided blades have been detached. A core tablet (Flint 108; Fig. 16a) is also present. This example was struck at the side of the core, removing a plunging flake from the platform, it is also burnt. A third piece displays Mesolithic affinities. This is part of a core rejuvenation flake (Flint 358; Fig. 16b), probably broken by the plough. It is a plunging flake removal that has deliberately overshot to remove a large portion of the flaking surface. Which demonstrates several blade scars.

Early Neolithic technology is represented by a pair of cores. The first is a cube-shaped, flake core (Flint 275; Fig. 16c) with two platforms at right angles to each other. There is evidence for several well balanced flake removals from each platform. These are cut through by several short hinge fractures struck when the angle of the platform was no longer suitable for flake removal. The second core is a keeled example (Flint 58; Fig. 16d) with flakes removed from two surfaces.

A specialist discoidal core of the later Neolithic/Early Bronze Age was noted (Flint 91; Fig. 16e). This is a primary flake that has had its dorsal surface thinned with a series of flakes struck from one of its longer edges. A thin flat flake has then been removed at 90 degrees to these flake scars. This type of core may have been used to produce suitable blanks for fashioning into arrowheads or knives (Butler, 2005, 157).

The remaining seven examples are all more typical of the less specialised later flint industries from the later Bronze Age onwards. Flint 321 (Fig. 16f) is a good example of a small pebble with a single platform that has been bashed to remove several small squat flakes, several of which have produced hinge terminations. There are numerous scars on the platform surface attesting to miss-hits that have bit too deeply into the body of the core. The core platform demonstrates crushing and has not been curated. This group of cores are reminiscent of the more ad hoc and less controlled lithic industries of later prehistory (Young & Humphrey, 1999).

Blade technology is represented by eight complete blades, five plough damaged sections of blades, two distal ends and one proximal end. The blades are generally parallel-sided, with complex knapping platforms and diffuse bulbs of percussion. A pair of microburins complement this collection. There is a burnt example (Flint 131; Fig. 16g) and an unburnt example (Flint 249; Fig. 16h). Both have the well-prepared platforms typical of Mesolithic industries. In addition one of the complete blades has a notch on the left ventral edge (Flint 3; not illustrated). The blade is fairly thick and triangular in section and it seems likely that this is a failed or abandoned attempt to snap the blade.

The dominant technology of the assemblage is the production of flakes. These outnumber blades in the ratio of 3:1. As previously discussed there are ten primary flakes along with seven secondary flakes. The remainder (41 in total) are tertiary examples. Where it can be determined there are roughly equal amounts of diffuse bulbs of percussion (23 examples) to pronounced (30 examples). Platforms are most commonly flat (24 examples) with complex types almost equal in number (18 examples). Terminations tend to be feathered (40 examples) with overshot (5 examples), step (six examples) and hinged (5 examples) present in small but significant quantities. The flake style is fairly mixed with lots of primary or secondary examples suggesting that initial pebble reduction took place at the site. As a generalisation the complex platform types and those with diffuse bulbs of percussion are likely to represent the Mesolithic or early Neolithic periods with the remainder being later.

There are very few finished tools present. Projectiles are absent, although the microburins suggest microlith manufacture. A single blade had edge use that was not conceivably plough damage (Flint 315) along with a single flake (Flint 63). More formal tool types were limited to three scrapers and one knife.

The scrapers are multi-period. The earliest is a thermally damage end scraper based on an elongated flake (Flint 240; Fig. 16i). It appears to have been a gracile example with abrupt retouch and consistent with a Mesolithic or early Neolithic date. Flint 87 (Fig. 16j) is a more robust type of circular end and edge scraper, although fire damage again restricts a complete interpretation it fits comfortably with a Neolithic date. The third scraper (Flint 121; Fig. 16k) is a squat and thick thumbnail example of the later Neolithic or early Bronze Age.

A simple knife is also present (Flint 360; Fig. 16l). This is invasively flaked on the dorsal face. It is quite small and likely to be from the later Neolithic or early Bronze Age period (Butler 2005, 170).

7.4 Conclusion

This assemblage is very mixed in character. The diagnostic pieces range in date from the Mesolithic to later prehistory. The lithic industry of all periods is likely to based on the exploitation of locally available raw material and all phases of flint reduction from primary knapping to production of tools is evident.

The lithics from the 2012 field season are in keeping with the multi-period collection reported by Norman and Patricia Harbord (Harbord pers. com.) and the Tees Archaeology field season of 2008 (Grahame 2008).

8. Lithic analysis - 2013 Shovel pitting and test pitting assemblage *Peter Rowe*

8.1. Introduction

8.1.1 This report summarises an assemblage of 245 lithics collected during fieldwork at Goldsborough in 2013. The flints were mainly collected from hand excavation and sieving of shovel pits and test pits. Several stray finds were made on the field surface and these have been included in this report.

8.1.2 Methodology

Find bags were emptied onto a clean working surface and the material examined by eye and with supplementary use of a 20x or 40x hand lens where necessary.

Finds were all in individual bags and sorted by findspot number. During the analysis each flint was given an individual number.

Each flint was logged on a spreadsheet. For each flint the following variables were described:-

SITE INFORMATION

Find locatoin	The shovel pit, test pit or surface find location
Context No	The context number where appropriate
Flint No	A unique identifier for each flint (1-245).
Quantity	This is usually '1' and is present to allow calculations.
RAW MATERIAL	
Material	Whether flint, chert, quartz etc.
Material colour	A description of the colour of the raw material.
Cortex	A description of the amount of cortical surface, expressed as a percentage.
Cortex colour	A description of the colour of the cortex, usually 'white', 'cream' or 'reduced'.
Patina	A description of the amount of patination, expressed as a percentage.
Patina colour	A description of the colour of the patina, usually 'white' or 'grey'.
TECHNOLOGY	
Type	The type of artifact, e.g. 'flake', 'blade', 'debitage', 'core', 'burnt fragment' or tool types such as 'scraper'.
Reduction Sequence	Whether from the 'primary', 'secondary' or 'tertiary' stage of knapping.
Platform	The type of platform (where present), based on Andrefsky's scheme (Andrefsky 2005, 96-77), i.e. 'cortical', 'flat', 'complex' or 'abraded'.
Bulb	A description of the bulb of percussion (where present), recorded as 'pronounced' or 'diffuse'.
Fracture Type	The type of termination, i.e. 'feathered', 'step', 'hinged' or 'overshot'. Based on the types described by Cotterell & Kamminga (1987, 701).
Interpretation	This column is used to indicate if an item has additional working, e.g. 'edge use' or 'retouch'. It is also used to note the type of removals taken from cores, the number of platforms and their orientation. e.g. F2O represents a Flake core with 2

platforms, Opposed to each other and B3OR would represent a Blade core with 3 platforms, 2 opposed and 1 at Right angles.

DAMAGE

Burnt This column uses an ordinal scale to describe the exposure to burning an item has received. 0 = unburnt; 1 = lightly fired (surface sooting, light crazing); 2 = fired (surface and interior patination, surface cracks, but still retaining its original form); 3 = heavily fired (complete surface and interior patination, pot lid fractures, shattering, original form cannot be determined).

Damage A free text column to describe any other forms of damage, e.g. 'plough', 'frost', 'edge chipping'.

INTERPRETATION

Period Where an artifact is chronologically distinctive then the period is noted.

Notes A free text field to record any further observations, i.e. if items refit.

8.1.3 Reporting

The spreadsheet was used to quantify the material (see Table 2 below) and this report was written immediately after the catalogue was completed. Recommendations were made for lithics which could be drawn to illustrate the report. These were principally a selection of the tools.

Flint Type	Shovel Pits	Test Pits	Stray finds	Total
Blade (inc. fragments)	15	2	2	19
Burnt fragments	91	16	0	107
Core (inc. trims etc)	1	0	2	3
Debitage & angular waste	42	4	1	47
Knife	0	0	1	1
Flakes (inc. fragments)	35	5	3	43
Microlith	2	0	0	2
Natural fragment	18	3	0	21
Scraper	2	0	0	2
Total	**206**	**30**	**9**	**245**

Table 2: Assemblage composition

The assemblage size is artificially inflated by the large number of natural pebbles and burnt pieces (the majority of which may be 19th or 20th century in date; see 8.2.3 below).

8.2 General character

8.2.1 Raw material

The assemblage is composed mainly of flint. There is a single flake of chert from Shovel Pit 70. Jasper, quartz and other fine-grained stone types such as tuff are absent.

The collection includes 21 natural pieces. These are largely small angular pieces of plough or thermally shattered pebbles consistent with poor quality local beach pebbles.

The flint has a fairly homogenous character, mainly consisting of light brown items. There are three pieces of distinctive red-brown flint. The incidence of cortex is common with just over a third of the items (excluding natural pieces and burnt items) having some degree of original outer surface, this figure almost exactly matches the 2012 field walking results (see above). There are six items that have been classified as being from the primary stages of knapping. These are generally primary flakes with flat or cortical platforms and

pronounced bulbs of percussion. Elsewhere the cortex is generally more limited, usually covering less than 20% of the surface area. When cortex is present it is worn from glacial or wave action and is extremely thin in section.

The general quality of the flint is poor. The assemblage is likely to derive from small pebbles collected from local glacial deposits, river gravels or beaches, the later being the most likely source.

8.2.2 Post-deposition damage

The majority of the flints are from the plough zone horizon of the Shovel Pits or Test Pits. As this is a plough soil assemblage there is a high degree of post-deposition damage. The level of damage ranges from edge chipping to fragmentation. Patination was most apparent on burnt items, see below, but also occurred on unburnt pieces. Where patina is present it is generally an opaque white or grey, often mottled in appearance. The original flint colour can usually be made out by backlighting the thinner edges of patinated pieces.

8.2.3 Burning

One hundred and thirteen pieces have evidence of thermal damage caused by burning. The burning ranges from slight discoloration of the flint surface to more serious damage including complete patination (grey or white), with significant crazing and shattering.

The burnt pieces can be split into two categories, 1) those where the original form of the flint is still evident and 2) highly fired, and sometimes vitrified, shattered fragments where the original form cannot be ascertained. It is likely that flints in the latter category are the result of spreading burnt lime on the fields as a fertilizer from the 19th century to present. These account for approximately 95% of the burnt pieces.

8.3 Technology

8.3.1 Assemblage composition

The assemblage includes 3 items that represent core technology. The Mesolithic period is represented by a core fragment (Flint 244), in this case a surface find. This is incomplete but preserves part of a circular platform from which at least 5 parallel-sided blades have been detached. A core rejuvenation flake (SP 64; Flint 150) is also present. This is a blade removal that has been struck at the side of the core to refresh the platform edge. The rejuvenation probably failed as the blade bit into the core terminating in a premature hinge fracture. The former flaking surface of the piece demonstrates several blade scars. This is also in keeping with Mesolithic (or early Neolithic) technology (Butler 2005).

Neolithic technology is represented by a core recovered from the field surface. The first is a cube-shaped flake core (Flint 238) with two platforms at right angles to each other. There is evidence for several well-balanced flake removals from each platform.

Blade technology is represented by five complete blades, three mid-sections of blades, eight distal ends and three proximal ends. The blades are generally parallel-sided, with complex knapping platforms and diffuse bulbs of percussion. There was no evidence of snapping using the microburin technique and it is likely that many of the pieces are broken due to plough damage. The blade technology at the site is likely to Mesolithic or early Neolithic in date.

The dominant technology of the assemblage is the production of flakes. These outnumber blades in the ratio of 2:1. There are five primary flakes along with two secondary flakes. The remainder (are tertiary examples). Where it can be determined there are roughly equal amounts of diffuse bulbs of percussion (18 examples) to pronounced (19 examples). Platforms are most commonly flat (17 examples) with complex types almost equal in number (15 examples). Terminations tend to be feathered (26 examples) with

overshot (2 examples), step (seven examples) and hinged (2 examples) present in small quantities that do not appear to be statistically significant. The flake style is fairly mixed with the presence of primary or secondary examples suggesting that initial pebble reduction took place at the site. The complex platform types and those with diffuse bulbs of percussion are likely to represent the Mesolithic or early Neolithic periods with the remainder being later.

There are very few finished tools present. Projectiles are represented by two microliths, both of which are fragmentary. Shovel Pit 20 produced a fire shattered fragment of a narrow blade microlith (Flint 44; Fig. 17a). A pointed end with abrupt retouch along both sides is all that survives. Shovel Pit 75 produced the mid section of a narrow blade with retouch along one edge (Flint 173; Fig. 17b). Both of these items are likely to represent the late or very late Mesolithic period.

Two micro-scrapers consistent with a Mesolithic date are present. Shovel Pit 28 produced a small primary flake with abrupt retouch around the proximal end forming a very basic scraper (Flint 56; Fig. 17c). A similar sized item was found in Shovel Pit 76. This has abrupt retouch along the distal end (Flint 177; Fig. 17d).

Less formal Mesolithic (or early Neolithic) tools were also present in the form of three blades with evidence of edge use (e.g. Shovel Pit 83; Flint 184; Fig. 17e).

A broken later Neolithic or early Bronze Age knife was noted on the field surface. This is the proximal end only (the distal end was presumably split off by the plough). The flake blank is fairly thick, presumably originally teardrop shaped. Retouch is invasive along both edges (Fig. 17f).

Sadly the majority of lithics from excavated features are undiagnostic angular or burnt fragments. Test Pit 3 produced blade fragment from contexts 116 and 119. These are Mesolithic or early Neolithic in character but may be residual in later features.

8.4 Conclusion

This assemblage is very mixed in character. The diagnostic pieces range in date from the Mesolithic to early Bronze Age but with a bias towards the earlier period. The lithic industry of all periods is likely to based on the exploitation of locally available raw material and all phases of flint reduction from primary knapping to production of tools is evident.

The lithics from the 2013 field season are in keeping with the multi-period collection reported by Norman and Patricia Harbord (Harbord pers. com.) and the Tees Archaeology field seasons of 2008 and 2012 (Grahame 2008; see above).

9. Coarse stone analysis *Ann Clarke*

9.1 Test Pit 3

Just one of the stone finds (116.d) appears to have any trace of use wear. This is an irregular-shaped water-worn cobble of quartzitic or metamorphosed sandstone that has irregular bifacial flaking damage down the acute edge and a fresher flake scar on opposite edge. This flaking is most likely the result of the incidental use of the cobble as a hammerstone. Alternatively, the damage may have occurred through testing the material qualities of the cobble as a potential tool. Either way the wear traces are entirely undiagnostic of any specific cobble tool form and also of period.

The remaining nine stones comprise a mix of material types: sandstones; fossiliferous rock; quartz; and quartzite and five are simply burnt fragments of rock. None show any

evidence for distinctive wear traces to indicate that they had been used as tools. Multi-directional grooves on the cobble from C.114 and surface damage on an abraded cobble 116.e are most likely to have been produced by some post-depositional mechanical/ agricultural action rather than from use prior to original deposition.

All of these stones would have been available locally from the immediate sedimentary formations or from the till. The excavator observed that the group looked different to the stones in the immediate ploughsoil though this may be because they had been altered by burning, presumably from proximity to the hearth. It is unlikely they were deliberately selected from further afield and brought in to the hearth area to use as tools as, with the exception of the small rounded quartzite pebble 116.i, the range of poor stone types and shapes would have made them unsuitable for cobble tools or as raw materials for knapping. The small size of the test pit makes it difficult to assess the relationship of the stones with the hearth area and whether the combination of rock types was indeed unusual to the locale.

There is no indication from the possible cobble tool (116.d) for its period of use and therefore for the date of the hearth.

9.2 Shovel Pit 64

Two small oval cobbles were collected both of which appear to have been lightly used. The quartzite cobble SP64.a and the flatter sandstone cobble SP64.b are similar in length at 80mm and both have traces of light pecking on a single end. Though the wear traces are not distinctive I would suggest they had been used in the earlier prehistoric period.

10. Other Finds *Rachel Grahame*

Few finds other than flint were identified in either the fieldwalking in 2012 or the shovel pitting and test pitting in 2013.

Find Spot	***Description***	***Date***
207	1 piece of unworked jet, 25mm long 1 triangular piece of worked jet with one smoothed face, 27mm long, unfinished or part of a larger piece?	Unknown Unknown
Not recorded	1 triangular broken fragment of quartz pebble, appearing polished on two faces, 15mm long	Unknown

Table 3: Finds from the 2012 fieldwalking

Shovel Pit / Test Pit	***Context***	***Description***	***Date***
SP41	-	Cu alloy ring, ‘o’ shape section, internal diameter 18mm, external diameter 25mm	Post medieval?
TP1	106	3 small fragments of burnt bone, the largest 16mm long	Unknown
TP2	101	1 piece of unworked jet, 23mm long	Unknown
TP3	115	2 pieces of unworked jet, the largest 27mm long	Unknown

Table 4: Finds from the 2013 shovel pitting and test pitting

Shovel Pit / Test Pit	***Context***	***Description***	***Date***
TP2	109	3 fragments of pottery, the largest 18mm long	Prehistoric
TP2	109	2 fragments of fired clay c. 3mm long	Unknown
TP2	109	Flint flake 5mm long	Prehistoric
TP2	109	3 fragments of quartz, the largest 8mm long	Unknown
TP3	117	2 fragments of quartz, the largest 10mm long	Unknown

Table 5: Finds from the 2013 palaeoenvironmental samples

These finds have not yet been assessed by specialists.

The five pieces of jet found during the fieldwalking and shovel pitting, compared with the 52 pieces found in 2008 including an unfinished Victorian faceted stud (Grahame, 2008), suggest that the distribution of jet is concentrated around the northwestern edge of the site. Specialist assessment is required to determine whether this is the product of prehistoric or Victorian manufacture. 'Old Jet Workings' are shown on the Ordnance Survey 1:2500 map of 1894 to the northwest of the site below Tellgreen Hill, which may be an indicator of a local cottage industry in the Victorian period.

11. Palaeoenvironmental Assessment *Charlotte O'Brien*

11.1 Project background

11.1.1 Archaeological works were conducted by Tees Archaeology at Overdale Farm, Goldsborough as part of the North East Yorkshire Mesolithic Project. This report presents the results of palaeoenvironmental assessment of four bulk samples comprising burnt deposits and the fill of a possible post pit.

11.1.2 The objective of the scheme of works was to assess the palaeoenvironmental potential of the samples, establish the presence of suitable radiocarbon dating material, and provide the client with appropriate recommendations.

11.1.3 Samples were received by Archaeological Services on 24th February 2014. Assessment and report preparation was conducted between 27th February and 10th March 2014.

11.1.4 Processing, assessment and report preparation was conducted by Dr Charlotte O'Brien.

11.1.5 The site code is **MPG13**, for **M**esolithic **P**roject **G**oldsborough 20**13**. The flots and finds are currently held in the Environmental Laboratory at Archaeological Services Durham University awaiting collection. The charred plant remains will be retained at Archaeological Services Durham University.

11.2 Methods

11.2.1 The bulk samples were manually floated and sieved through a 500µm mesh. The residues were examined for shells, fruitstones, nutshells, charcoal, small bones, pottery, flint, glass and industrial residues, and were scanned using a magnet for ferrous fragments. The flots were examined at up to x60 magnification for charred and waterlogged botanical remains using a Leica MZ7.5 stereomicroscope. Identification of

these was undertaken by comparison with modern reference material held in the Environmental Laboratory at Archaeological Services Durham University. Plant nomenclature follows Stace (1997). Habitat classifications follow Preston *et al*. (2002).

11.2.2 Selected charcoal fragments were identified, in order to provide material suitable for radiocarbon dating. The transverse, radial and tangential sections were examined at up to x600 magnification using a Leica DMLM microscope. Identifications were assisted by the descriptions of Schweingruber (1990) and Hather (2000), and modern reference material held in the Environmental Laboratory at Archaeological Services Durham University.

11.2.3 The works were undertaken in accordance with the palaeoenvironmental research aims and objectives outlined in the regional archaeological research framework and resource agendas (Petts & Gerrard 2006; Hall & Huntley 2007; Huntley 2010). The works form part of The North East Yorkshire Mesolithic Project, an English Heritage funded partnership project between Tees Archaeology and the North York Moors National Park Authority, intended to increase our understanding of the nature of Mesolithic occupation in north east Yorkshire (Daniels 2008).

11.3 Results

11.3.1 A fragment of pottery, a tiny piece of worked flint and a trace of fired clay were present in context (109), the fill of post pit [110]. Small quartz fragments were also noted in context (109) and burnt deposit (117). Small mineralised fragments of charcoal were noted in all of the samples. The fills from post pit [110] comprised hazel, oak and *Prunus* sp (cherry family) charcoal, while small fragments of Maloideae (hawthorn, whitebeams or apple) were predominant in deposits (117) and (118). A fragment of holly was identified from context (117).

11.3.2 A few charred plant macrofossils were recorded in the samples from context (109). These were heather twigs, indeterminate rhizome/tubers, heath-grass caryopses, a ribwort plantain seed and a false oat-grass tuber. Plant macrofossils were absent from contexts (117) and (118). Although a few uncharred seeds were noted in contexts (109) and (118), the non-waterlogged nature of the site and the presence of modern roots suggest that these are recent intrusions. Charcoal suitable for radiocarbon dating is available for all of the samples, although the small size of the fragments from samples 2 and 4 may mean that there is an insufficient weight of carbon to produce a date. The results are presented in Appendix 4 and 5.

11.4 Discussion

11.4.1 The information provided by the samples is limited due to the small number and diversity of palaeoenvironmental remains present, particularly from deposits (117) and (118). The small assemblage of charred plant remains in post pit [110] comprising heather twigs, tuber/rhizomes, heath-grass and ribwort plantain is typical of prehistoric deposits in north east England. The only tuber which could be identified to species, was that of false oat-grass. The tubers of this tall grass are a common occurrence from Bronze Age contexts (Platell 2013), and have also been recorded from a number of Iron Age sites in this region. It has been found that on Bronze Age sites, they are most commonly detected in cremation deposits, while in the Iron Age, they mainly occur on domestic sites (Roehrs *et al*. 2012). Infrequent occurrences in the Neolithic have also been recorded (ibid.). Their presence with heathland/grassland weed seeds at Goldsborough, may provide evidence for burnt turves, used either as fuel or structural material such as roofing (Hall 2003).The charcoal from deposits (117)and (118) included

a number of roundwood fragments, and may derive from burnt brushwood or domestic fuel waste.

11.5 Recommendations

11.5.1 No further analysis is required for the palaeoenvironmental remains due to their low numbers and poor preservation. If additional work is undertaken at the site, the results of this assessment should be added to any further palaeoenvironmental data produced.

11.5.2 The flots should be retained as part of the physical archive of the site. The residues were discarded following examination.

12. Goldsborough Radiocarbon Dating *Peter Marshall, Gordon Cook, and Paula Reimer*

Introduction

Six radiocarbon measurements have been obtained on samples from Goldsborough.

The three charcoal samples dated at The Queen's University Belfast were processed using an acid-alkali-acid pre-treatment as first outlined in Vries and Barendsen (1952). The pretreated and dried samples were placed in quartz tubes with a strip of silver ribbon to remove nitrates, chlorides, and CuO. The samples were then sealed under vacuum and combusted to CO_2 overnight at 850°C. The CO_2 was converted to graphite on an iron catalyst using the zinc reduction method (Vogel *et al* 1984). The graphite samples were analysed with an 0.5MeV NEC pelletron compact accelerator, with the $^{14}C/^{12}C$ ratios corrected for fractionation using the on-line measured $^{13}C/^{12}C$ ratio and in accordance with Stuiver and Polach (1977).

Three samples were dated at the Scottish Universities Environmental Research Centre. The charcoal was pre-treated as described by Stenhouse and Baxter (1983), with CO_2 obtained from the pre-treated samples combusted in pre-cleaned sealed quartz tubes (Vandeputte *et al* 1996) before being converted to graphite (Slota *et al* 1987). The samples were dated by AMS as described by Freeman *et al* (2010).

Both laboratories maintain continual programmes of quality assurance procedures, in addition to participating in international inter-comparisons (Scott 2003; Scott *et al* 2010). These tests indicate no significant offsets and demonstrate the validity of the precision quoted.

Radiocarbon results

The results (Table 6) are conventional radiocarbon ages (Stuiver and Polach 1977), and are quoted in accordance with the international standard known as the Trondheim convention (Stuiver and Kra 1986).

Laboratory number	Sample	Material& context	$\delta^{13}C$ (‰)	Radiocarbon Age (BP)	Calibrated Date (95% confidence)
Test Pit 3					
UBA-25467	[117] <3> sample A	Charcoal, Maloideae from a discrete sub-circular layer of dark grey friable silty-clay containing charcoal [117] lying within a semi-circular ring of stone within [116]	−25.7	3482±38	1910–1690 cal BC
SUERC-53473	[117] <3> sample B	Charcoal, Maloideae - as UBA-25467	−28.1	3438±29	1880–1660 cal BC
UBA-25468	[118] <4> sample A	Charcoal, Maloideae from a dispersed layer of dark red brown friable silty-clay containing small fragments of burnt sandstone [118], interpreted as heat affected areas of the underlying deposit [119].	−26.3	3400±36	1870–1610 cal BC
SUERC-53474	[118] <4> sample B	Charcoal, Maloideaeas UBA-25468	−27.5	3388±29	1750–1620 cal BC
Test Pit 2					
UBA-25469	[109] <1> sample A	Charcoal, hazel from the light brown firm clay silt fill [109] of a sub-circular feature [110] which had a flat u-shaped profile and a clearly defined step to the flat base.	−24.3	3863±31	2470–2200 cal BC
SUERC-53472	[109] <2> sample B	Charcoal, *Prunus*sp. – as UBA-25469	−25.2	1810±29	cal AD 120–330

Table 6: Goldsborough radiocarbon results

Radiocarbon calibration

The calibrations of these results, which relate the radiocarbon measurements directly to the calendrical time scale, are given in Table 6 and in Figure 20. All have been calculated using the datasets published by Reimer *et al* (2013) and the computer program OxCal v4.2 (Bronk Ramsey 1995; 1998; 2001; 2009). The calibrated date ranges cited are quoted in the form recommended by Mook (1986), with the end points rounded outward to 10 years. The ranges in Table 6 have been calculated according to the maximum intercept method (Stuiver and Reimer 1986); the probability distributions shown in Figure 20 are derived from the probability method (Stuiver and Reimer 1993).

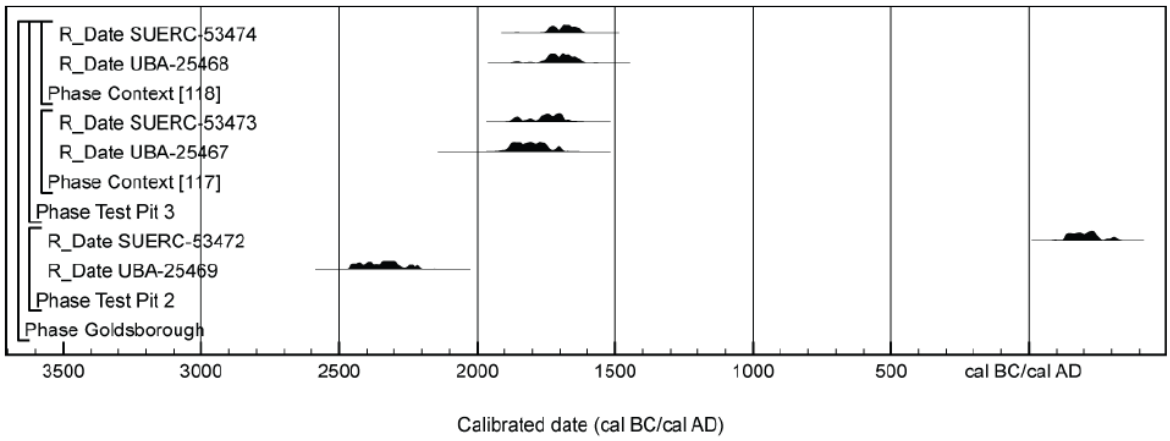

Figure 20: Probability distributions of dates from Goldsborough. The distributions are the result of simple radiocarbon calibration (Stuiver and Reimer 1993)

Interpretation

The radiocarbon dates indicate that the features are much later than the lithic assemblage and therefore do not help provide a date for their manufacture and use.

13. Discussion

Once again fieldwork at Goldsborough proved challenging, due to adverse weather and changes in the use of the field since the previous fieldwork in 2008. Flint concentrations were difficult to identify during both the fieldwalking and the shovel pitting, and no dense concentrations were found.

The geophysical survey (Archaeological Services Durham University, 2012) produced mixed results. Whilst the spoil heaps from the ditches excavated in 2008 (Grahame 2008, test pits 11 and 76) and the tails created by subsequent ploughing are clearly visible, the ditches themselves are not readily identifiable, although they may correspond with the curving linear feature to the south and west. The probable ditch aligned north-south in the west of the geophysical survey area corresponds with the ditch identified in test pit 1 [103 and re-cut 105], however no evidence was found for the very weak positive magnetic anomalies targeted by test pit 4, which must represent changes in the boulder clay and underlying sandstone (Figure 18). The shallower features in test pits 2 and 3 were not identified by the geophysical survey.

Whilst the ditch in test pit 1 remains undated, radiocarbon results for the post pit in test pit 2 [110] give a date of either the Neolithic/Early Bronze Age or the Roman period for this feature and the associated gully [108]. The earlier date would be consistent with the flint assemblage from the site and with the presence of false oat grass tuber in the plant macrofossil assemblage. The hearth in test pit 3 contained Mesolithic or early Neolithic flint which supports the hypothesis that Mesolithic activity was focused on the higher ground (Waughman, 2012). However, radiocarbon dates from the deposits associated with the hearth itself [117 and 118] place it firmly in the Early Bronze Age. This may have been one of the sources of burnt stone noted by the Harbords (Waughman, 2006). The radiocarbon dates are with one exception consistent with the later part of the flint assemblage for the site as a whole.

The low concentration of flint found in the 2008 season appears to be characteristic of the whole area as looked at in 2012 and 2013, and may reflect the previous intensive fieldwalking of the site by the Harbords rather than representing the Mesolithic presence there.

Any ephemeral features, whether Mesolithic or later, will have suffered damage from ploughing of the area, and the subsequent creation of the artichoke ridges may have significantly damaged the surviving archaeology in the northern part of the field. The distribution of Mesolithic and early Neolithic flint (Figure 19) found in the study area may suggest a focus of activity towards the northern edge of the area, however this may also be a reflection of the more intensive nature of the evaluation fieldwork here.

Bibliography

Andrefsky Jr, W. 2005 *Lithics Macroscopic Approaches to Analysis* Cambridge Manuals in Archaeology 2nd ed.

Archaeological Services Durham University 2012 *Overdale Farm, Goldsborough, North Yorkshire: geophysical survey* ASDU report 2911

British Geological Survey, *Geology of Britain Viewer* at http://www.bgs.ac.uk/ accessed 13/05/2013

Bronk Ramsey, C, 1995 Radiocarbon calibration and analysis of stratigraphy: the OxCal program, *Radiocarbon*, **37**, 425–30

Bronk Ramsey, C, 1998 Probability and dating, *Radiocarbon*, **40**, 461–74

Bronk Ramsey, C, 2001 Development of the radiocarbon calibration program OxCal, *Radiocarbon*, **43**, 355–63

Bronk Ramsey, C, 2009 Bayesian analysis of radiocarbon dates, *Radiocarbon*, **51**: 337–60

Butler, C 2005 *Prehistoric Flintwork* Tempus

Cotterell, B. & Kamminga, J. 1987 'The Formation of Flakes' *American Antiquity* 52, pp. 675-708.

Daniels, R 2008 *North East Yorkshire Mesolithic: Updated Project Design for Phase 2* Tees Archaeology report for English Heritage

Daniels, R 2012 *North East Yorkshire Mesolithic: Project Design for Phase 3* Tees Archaeology report for English Heritage

Freeman, S P H T, Cook, G T, Dougans, A B, Naysmith, P, Wicken, K M, and Xu, S, 2010 Improved SSAMS performance, *Nucl Inst Meth B*, **268**, 715–7

Grahame, R with Hall, A, Innes, J, Rowe, P and Vyner, B 2008 *Archaeological Evaluation: Upleatham, Redcar and Cleveland and Goldsborough, North Yorkshire* Tees Archaeology report TA08/10 for English Heritage OASIS ID 52502

Grahame, R with Hall, A, Innes, J, and Rowe, P 2010 *Archaeological Evaluation: Farndale, North Yorkshire* Tees Archaeology report TA10/06 for English Heritage OASIS ID 75003

Grahame, R with Hall, A, Innes, J, and Rowe, P 2011 *North East Yorkshire Mesolithic Project, Archaeological Evaluation: Bransdale Ridge and Peat Moss / Wetherhouse Moor, North Yorkshire, Summer 2010* Tees Archaeology report TA 11/04 for English Heritage OASIS ID 94563

Hall, A, 2003 Recognition and characterisation of turves in archaeological occupation deposits by means of macrofossil plant remains. Centre for Archaeology Report **16/2003**. English Heritage

Hall, A R, & Huntley, J P, 2007 *A review of the evidence for macrofossil plant remains from archaeological deposits in northern England*, Research Department Report Series no. **87**. London

Hather, J G, 2000 *The identification of the Northern European Woods: a guide for archaeologists and conservators*. London

Huntley, J P, 2010 *A review of wood and charcoal recovered from archaeological excavations in Northern England*. Research Department Report Series no. **68**. London

Mook, W G, 1986 Business meeting: recommendations/resolutions adopted by the twelfth International Radiocarbon Conference, *Radiocarbon*, **28**, 799

O'Brien, C 2014 *Overdale Farm, Goldsborough, North Yorkshire: palaeoenvironmental assessment* Archaeological Services Durham University report 3379

Ordnance Survey First Edition map of 1894, 25 inches to 1 mile = 1:2500, Yorkshire Sheets 20.9, 20.13

Petts, D, & Gerrard, C, 2006 *Shared Visions: The North-East Regional Research Framework for the Historic environment*. Durham

Platell, A, 2013 A Bronze Age cremation cemetery at Dallam School, Milnthorpe, Cumbria. *Trans Cumberland Westmorland Antiq Archaeol Soc* **13**, 33-55

Preston, C D, Pearman, D A, & Dines, T D, 2002 *New Atlas of the British and Irish Flora.* Oxford

Reimer, P J, Bard, E, Bayliss, A, Beck, J W, Blackwell, P, Bronk Ramsey, C, Buck, C E, Cheng, H, Edwards, R L, Friedrich, M, Grootes, P M, Guilderson, T P, Haflidason, H, Hajdas, I, Hatté, C, Heaton, T J, Hoffmann, D L, Hogg, A G, Hughen, K A, Kaiser, K F, Kromer, B, Manning, S W, Niu, M, Reimer, R W, Richards, D A, Scott, E M, Southon, J R, Staff, R A, Turney, C S M, and van der Plicht, J, 2013 IntCal13 and Marine13 radiocarbon age calibration curves 0–50,000 years cal BP, *Radiocarbon*, **55**, 1869–87

Roehrs, H, Klooss, S, & Kirleis, W, 2013 Evaluating prehistoric finds of *Arrhenatherumelatius* var. *bulbosum* in north-western and central Europe with an emphasis on the first Neolithic finds in Northern Germany. *Archaeol Anthropol Sci* **5(1),** 1-15

Schweingruber, F H, 1990*Microscopic wood anatomy*. Birmensdorf

Scott, E M, 2003 The third international radiocarbon intercomparison (TIRI) and the fourth international radiocarbon intercomparison (FIRI) 1990–2002: results, analyses, and conclusions, *Radiocarbon*, **45**, 135–408

Scott, E. M, Cook G, and Naysmith, P, 2010 The fifth international radiocarbon intercomparison (VIRI): an assessment of laboratory performance in stage 3, *Radiocarbon*, **53**, 859–65

SlotaJr, P J, Jull, A J T, Linick, T W and Toolin, L J, 1987 Preparation of small samples for ^{14}C accelerator targets by catalytic reduction of CO, *Radiocarbon*, **29**, 303–6

Stace, C, 1997 *New Flora of the British Isles*. Cambridge

Stenhouse, MJ and Baxter, MS 1983 14C reproducibility: evidence from routine dating of archaeological samples, *PACT* **8**, 147–61

Stuiver, M, and Kra, R S, 1986 Editorial comment, *Radiocarbon*, **28(2B)**, ii

Stuiver, M, and Polach, H A, 1977 Reporting of ^{14}C data, *Radiocarbon*, **19**, 355–63

Stuiver, M, and Reimer, P J, 1986 A computer program for radiocarbon age calculation, *Radiocarbon*, **28**, 1022–30

Stuiver, M, and Reimer, P J, 1993 Extended 14C data base and revised CALIB 3.0 14C age calibration program, *Radiocarbon*, **35**, 215-30

Vandeputte, K, Moens, L, and Dams, R, 1996 Improved sealed-tube combustion of organic samples to CO_2 for stable isotope analysis, radiocarbon dating and percent carbon determinations, *Analytical Letters*, **29**, 2761–73

Vogel, JS, Southon, JR, Nelson, DE and Brown, TA 1984 Performance of catalytically condensed carbon for use in accelerator mass-spectrometry, *Nuclear Instruments and Methods in Physics Research B* **233**, 289–93

Vries, Hessel de, and Barendsen, G W, 1952, A new technique for the measurement of age by radiocarbon: *Physica* **18**, 652

Waughman, M. 2006 *North East Yorkshire Mesolithic: Phase 1 report* Tees Archaeology report TA/06/11 for English Heritage

Waughman, M. with Innes, J, and Rowe, P 2012 *North East Yorkshire Mesolithic Project, Phase 2: Final Report* Tees Archaeology report TA12/02 for English Heritage

Young, R. & Humphrey, J. 1999 'Flint use in England after the Bronze Age: Time for a re-evaluation?' *Proc. Prehist. Soc.* **65**, 1999, pp. 231-242