# TOTAL LITHIC COLLECTION AND TEST-PIT EXCAVATIONS AT THE THORNBOROUGH MONUMENT COMPLEX, NORTH YORKSHIRE

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**ABSTRACT**

*The report describes a programme of geophysical survey, total surface collection and test-pit excavations at four locations across the Thornborough landscape. The work was undertaken in the summer of 2003 to attempt to ascertain whether there was any correlation between the surface archaeology, represented by lithic material collected by fieldwalking, and any surviving sub-surface archaeological features. A total of 134 lithics were recovered of Mesolithic, Neolithic and Bronze Age date, and the spatial patterning of these pieces suggests certain areas were utilised during different periods. A total of 42 pits were excavated, but none produced any evidence of Mesolithic, Neolithic or Bronze Age archaeological features, although the vast majority produced lithic material from these periods from their topsoil. Themes discussed include the nature of the lithic material and the relationship between the lithic material collected from the surface, the sub-surface and the implications of the lack of archaeological features.*

## 1. INTRODUCTION

### 1.1 Location, topography and geology

The area discussed is based between SE2677-3282 and focused around the Neolithic-early Bronze Age monument complex at SE285795 (centred), which comprises three large henges, a definite cursus and a possible cursus, a long mortuary enclosure, at least nine round barrows, two double pit alignments, contemporary settlement and other features or finds of archaeological significance (Fig. 1). These sites are described in Harding & Johnson (2003).

The topography of the landscape is largely flat or gently undulates between 35 and 45 m OD (Fig. 2). However, it does rise steeply to the west, between the villages of West Tanfield and Well, to a height of over 135 m. The River Ure lies to the south-west. The soils are typical brown earths, with calcareous brown earths to the west, and alluvial gley soils to the north. The drift geology is predominantly undifferentiated fluvio-glacial terrace deposits, with undifferentiated river terrace deposits around the River Ure and isolated pockets of till and peat to the west and north respectively. The solid geology comprises Lower Magnesian Limestone to the west, Middle Marl through the central areas, and Upper Magnesian Limestone to the east.

All the monuments lie on the fluvio-glacial terrace deposits along a slight north-south decline towards the River Ure. The primary foci of the monument complex are the three massive henges built 0.75 km apart, along a north-west to south-east axis. There would also appear to be contemporary settlement areas, significantly separated from the complex, either by distance or by variations in the local topography.

## 2. BACKGROUND

### 2.1 Archaeological history

Investigations have usually focused on the monuments at Thornborough. However, fieldwalking, undertaken by the Vale of Mowbray Neolithic Landscape Project (VMNLP) between 1994 and 1999, has produced significant evidence for contemporary activity across the wider landscape. The composition and distribution of worked flint and chert, collected from a total of thirty-six fields, reveal striking variations across the study area, of which the most noticeable is the contrast between the middle and upper gravel terrace, which has produced few worked pieces, and the surrounding ridges of till and limestone, where very much larger collections were found (Fig. 3). The densest lithic concentrations were located at Chapel Hill, Nosterfield quarry, Mire Barf Farm and an area on the lower gravel terrace, adjacent to the River Ure and to the east of West Tanfield.

Nosterfield quarry was the focus of archaeological evaluation, by Mike Griffiths and Associates, prior to gravel extraction (Roe 2002). The work uncovered evidence for substantial and extensive Neolithic and Bronze Age domestic activity, characterised by scattered pit groups and hearths which produced lithic material, pottery, two stone axes and part of a conical jet bead. Six pit alignments and a later Bronze Age field system, along with associated burial features, was also discovered.

### 2.2 Aims and objectives

Total lithic collection and test-pit excavations were undertaken in August and early September 2003 as part of the Thornborough Project funded by English Heritage through the Aggregate Levy Sustainability Fund. The aim was to provide information about the composition or nature of individual settlement sites. The majority of the evidence for such sites is provided by surface lithic scatters, but these are no more than a partial and incomplete ‘signature’ of original occupation, necessitating the need for the systematic and intensive examination of both the ploughsoil and any underlying sub-surface archaeology. The detailed examination of these scatters will provide an insight into the relationship between surface and sub-surface remains, and the condition and archaeological potential of any buried deposits. The results will constitute a ‘framework of understanding’ for the lithic scatters discovered at Thornborough, and indeed, at other comparable landscapes.

### 2.3 Methodology

Past surface collection at Thornborough (VMNLP) enabled the landscape to be divided into zones of comparative lithic density. Each field was classified as producing either a 'low' density scatter (0-5 flints per hectare), a 'medium' density scatter (5-25 flints per hectare), or a 'high' density scatter (26-59 flints per hectare). A total of four fields were then selected for further investigation (Fig. 4): the densest concentration from the study area was on Chapel Hill, and particularly field 11, and this was chosen as representative of a 'high' density scatter; fields 12 and 16, on Chapel Hill and the upper terrace edge respectively, were selected from the 'medium' density scatters; and field 18, an area immediately to the east of the Central Henge, on the middle terrace, was taken as the 'low' density scatter. The area of density analysis at each scatter was based exactly upon the areas fieldwork was undertaken in 2003, not upon the lithic density for the entire field which contained the scatter. The details of the selected lithic scatters are summarised in Table 1. The widespaced fieldwalking had been undertaken in 15 m transects and all finds collated in 30 m sections along each transect. This gives a coverage record of 13.3% of the surface as each walker examines a corridor 2 metres wide along the transect (Tolan-Smith 1997, 80). To arrive at a notional 100% density coverage the count per area can be multiplied by 7.5.

| Lithic Scatter | Area of scatter (hectares) | Number of lithics | Lithic density per ha (collected) |
|---|---|---|---|
| 'high' density (field 11) | 1.6 | 94 | 58.8 |
| 'medium' density (field 12) | 1.6 | 31 | 19.4 |
| 'medium' density (field 16) | 0.8 | 19 | 23.8 |
| 'low' density (field 18) | 0.8 | 1 | 1.3 |

**Table 1: Lithic densities at the high, medium and low density scatters**

The investigation of each scatter employed three distinct techniques. Firstly, geophysical survey (Biggins, 2003) was undertaken across a 90 m by 90 m area at three of the four sites. The exception was the 'medium' density scatter in field 16, this being an unplanned addition to the fieldwork programme. The total collection of all lithic material was then undertaken across the same area although at the 'high' density scatter in field 11, and the 'medium' density scatter in field 12, this was extended to 90 m by 180 m. Nine 2 m by 1 m test-pits were then dug 10 m apart, across a 30 x 30 m grid whose exact location was determined by the results of both geophysical prospection and total lithic collection. In a number of instances these test-pits were enlarged and further pits dug, depending upon the nature of the excavated material, including two 5 m by 5 m test-pits at the 'high' density scatter. All were excavated by trowel, shovel and mattock, with the exception of the two 5 m by 5 m test-pits where a mechanical-digger was employed. Their excavated content was sieved through a 5 millimetre mesh.

## 3. RESULTS

Surprisingly it appears that the lithic recognition and recovery rate was poorer than in previous field seasons. As an example, 94 lithics were recovered from the 'high' density scatter in 1995, walked at 15 metre intervals, meaning 13.3% of the total assemblage available for recovery was collected. This implies that the total collection rate (i.e. walking at 2 metre intervals, as in 2003) would have been 440 lithics per hectare, as the collected density of 58.8 lithics per hectare is multiplied by 7.5 to give the notional 100% lithic density per hectare figure. However, only 95 pieces were actually recovered in 2003 from the 100% coverage, giving a density of 59 lithics per hectare. This dramatic reduction in density per hectare is evident at three of the four scatters, the exception being the 'low' density scatter where the results are broadly similar. It is difficult to explain this phenomenon, but one obvious factor may be the lower discovery rate of students in 2003.

### 3.1 ' High' density scatter – field 11 (fig. 5)

#### 3.1.1 Introduction

The area consists of a low ridge of till that rises 1.5 m from the surrounding gravel plateau and is located 1.2 km due east of the Central Henge. The field is 4.6 hectares in area and previous fieldwalking uncovered significant evidence for later Neolithic and early Bronze Age activity, with a particular emphasis on the southern limit of the ridge, where the geophysical prospection, total collection and test-pitting was undertaken.

### 3.1.2 Geophysical prospection

No features of archaeological significance were revealed by the geophysical prospection (Biggins 2003, 14), the various anomalies being readily attributable to agricultural or natural factors.

### 3.1.3 Total collection

A total of 95 lithics were recovered by total collection from an area of 1.6 hectares. There were 58 flakes and 11 blades, representing 61% and 11.6% of the assemblage, 9 scrapers, five of which are later Neolithic or early Bronze Age (fig. 5; 16, 36, 38, 41, 91), and 4 cores, at least one of which is later Neolithic (fig. 5; 56). Also recovered were: a probably early Mesolithic microlith (Fig. 5; 83); 3 serrated pieces of Mesolithic or Neolithic date (Fig. 5; 74, 75, 92); a fragment of a Neolithic polished flint axe (Fig. 5; 96); a chisel or oblique arrowhead of middle to later Neolithic date (Fig. 5; 51); a piece of denticulate of later Neolithic or early Bronze Age date (Fig. 5; 19); and an early Bronze Age knife (Fig. 5; 93). Other lithics of note discovered by widespaced fieldwalking in 1995 were: a scalene triangle microlith of Mesolithic date; a leaf shaped arrowhead of early Neolithic date; an oblique arrowhead of later Neolithic or early Bronze Age date; an end scraper also of later Neolithic or early Bronze Age date; and a notched flake and blade of Neolithic or Bronze Age date.

### 3.1.4 Test-pitting

Fourteen test-pits were opened of which twelve were 2 m by 1 m and two 5 m by 5 m. Nine of the test-pits were excavated on the summit of the low ridge, followed by three at the base of the ridge, and then the two 5 m by 5m test-pits over possible geophysical anomalies, one on the slope to the south of the ridge and one on the slope to the east. The test-pits revealed a stratigraphy of topsoil, which was on average 0.28 m deep (varying between 0.26 m to 0.33 m), and an underlying drift geology of till. The topsoil was a firm, dark brown (7.5YR3/3), sandy clay, whilst the till was a firm, dark brown silty clay. Test pits 10, 11 and 12 had an average of 0.32 metres of topsoil, of a similar composition to that elsewhere, but a natural of compact, very dark brown (10YR3/4) silty sand. It is possible that this area is a relict stream bed.

A total of just 44 lithics were recovered from the test-pits. This surprisingly small collection consisted of 37 flakes or flake fragments, 2 scraper fragments including one from a very large flake, 2 blade fragments, 1 core fragment, 1 core rejuvenation flake fragment and a leaf shaped arrowhead. It is also curious that despite the field producing the largest single collection of surface flint no features were discovered by the test-pits. There are three possible explanations. Either surviving features were missed by all the test-pits, or original features have been completely destroyed by intensive ploughing, or no features were ever present. It is impossible to state with any certainty which of these is correct. The topsoil in this area is slightly shallower than elsewhere across the Thornborough landscape, but only by a few centimetres. The absence of subsoil, present at other excavations, suggests that a general trend of soil removal from the ridge top and its redeposition downslope has occurred. Such a gradual reduction over many years would slowly but surely destroy buried archaeological features (see Harding & Johnson 2004e). It is perhaps most likely, therefore, that any original features would have been destroyed by ploughing, thereby mobilising the high number of lithics in the ploughsoil and destroying any ceramic material.

This is not to say, however, that features definitely once existed in field 11. There is a well documented tendency during the Neolithic and early Bronze Age to deliberately discard pottery and lithics in pits. Examples survive locally and in large numbers at Nosterfield Quarry and on Marton-le-Moor (Roe 2003; Tavener 1996). But it is difficult to imagine these features being cut into the drift geology of till which mantles Chapel Hill and the excavation of the test-pits certainly proved a challenge. Hence, the worked flint and chert found on Chapel Hill may not have ever been associated with dug features.

### 3.1.5 Discussion

The small number of non-later Neolithic or early Bronze Age lithics from this area (they total just 2% of the definite diagnostic pieces in the assemblage from field 11) indicates its very occasional use prior to the third millennium BC. The primary period of activity can be ascribed to the later Neolithic and early Bronze Age, but it appears that the area was not used for long-term settlement. Of all the material collected in this area over the various seasons around 70% is tertiary debitage, as opposed to around 30-35% of the total from the study area as a whole, and it also produced a very small number of finished tools (3% of the assemblage), and in comparison to other ‘high’ density scatters, fewer cores

than would be expected. If people did indeed live here it must have been for very short periods of time and it is equally possible that the ridge was never occupied, but rather used for more specialised activity, as is perhaps best illustrated by the relatively large number of scrapers.

### 3.2 'Medium' density scatter – field 12 (fig. 6)

#### 3.2.1 Introduction

The scatter selected for investigation is on the fringes of the till to the south of Chapel Hill. It is in the south-west quadrant of field 12 on flat ground. Previous fieldwalking suggests that the area lies on the southern fringes of the 'high' density scatter in field 11, and possibly represents an extension of the scatter, although the diagnostic lithics recovered from field 12 are often of early Neolithic or later Mesolithic affinities. It was decided that further fieldwork in this area would either allow characterisation of the extent of the activity at Chapel Hill, or provide evidence for different, earlier activity, at the site.

#### 3.2.2 Geophysical prospection

The geophysics produced some possible, if unlikely, evidence for isolated pits (Biggins 2003, 17). A linear feature, not discussed in the geophysical report, can be seen running from north to south in the western part of the survey. This feature was confirmed by excavation (see below).

#### 3.2.3 Total collection

A total of only 6 lithics were recovered by total collection from an area of 1.6 hectares (3.75 flints per hectare). There were three flakes, one core and three scrapers, one of Neolithic or Bronze Age date. As with the 'high' density scatter, lithic numbers compare very poorly with the results of widespaced fieldwalking, when a total of 47 pieces of worked flint and chert were recovered, including: five scrapers, one a fine double sided and long end scraper of late Mesolithic or early Neolithic date and one nosed scraper, which may be of later Neolithic or later Mesolithic date; and a barbed-and-tanged arrowhead of early Bronze Age date.

#### 3.2.4 Test-pitting

Ten test pits were opened in this area, nine of which were 2 m by 1 m and the remaining one 2 m by 2 m. Three were then enlarged in order to expose more of possible geophysical anomalies — MDS09 to 3 m by 1 m, MDS02 to 3 m by 2 m, and MDS06 to 2 m by 2 m. Each test-pit was excavated through an average of 0.3 m topsoil onto the underlying drift geology of till. As at the 'high' density scatter there was no subsoil. The topsoil was a firm, yellow brown (10YR5/6) clay sand, whilst the natural was a very firm, light yellowish brown (10YR6/4) clay sand. Whilst these test pits are still on the till deposits it is a lot less clayey in this area than at the 'high' density scatter.

A total of 10 lithics were recovered. There were seven flakes, two irregular waste pieces and a fragment of retouched material. None of these finds were diagnostic. Of the enlarged test-pits only MDS06 revealed an archaeological feature, a linear ditch that varied in width between 1m and 1.8 m along its 2 m length revealed in the test-pit (fig. 7). Its depth was between 0.3 m and 0.4 metres. No finds were recovered from the features and the infill appeared to be from a natural silting process. Given its perpendicularity to the field boundary to the north, its irregularity and its sterility it is interpreted as the remnant of a destroyed field boundary, although it does not appear on any tithe maps.

#### 3.2.5 Discussion

The lack of Neolithic or Bronze Age archaeological features, as at the 'high' density scatter, is perhaps indicative of their destruction by ploughing, although it is equally the case that such features may never have existed in this area. Unlike field 11, however, there is a larger component of later Mesolithic and early Neolithic material from this area. At present a similar interpretation to the 'high' density scatter can be suggested, although it was presumably peripheral to the more intensive area of knapping immediately to the north.

### 3.3 'Medium' density scatter – field 16 (fig. 8)

#### 3.3.1 Introduction

Field 16 lies immediately to the south of the Triple Ring Ditch excavated in 2003 (Harding and Johnson 2004e). It is located on the eastern edge of the upper gravel terrace and slopes very gently from north to south across an old palaeochannel that probably predates the construction of the barrow. The monument sits on a low ridge presumably formed by the action of the old water course. The area selected for further investigation was in the western half of the field opposite the Triple Ring Ditch. It was hoped that the field would provide a basis for comparison between the scatters on the till and those on the gravel terrace. This had originally been planned for lower on the terrace, nearer the river, but problems with access meant that field 16 was the only possible candidate for analysing a 'medium' density scatter on the gravel terrace.

#### 3.3.2 Geophysical prospection

No geophysics was undertaken across field 16, but an aerial photograph clearly shows the location of the palaeochannel. There is no evidence for any archaeological features in this area.

#### 3.3.3 Total collection

A total of 22 lithics were recovered by total collection from an area of 1.6 hectares. These comprised fifteen flakes, five blades and two scrapers, one a probable thumbnail of Mesolithic or early Bronze Age date. Other lithics of note, from a total of 16 recovered by widespaced fieldwalking in 1995, include a 'piercer', a tool usually associated with hide-working, and a burin, usually used in the graving of antler and rare in Neolithic and Bronze Age assemblages.

#### 3.3.4 Test-pitting

Nine test pits were opened in this area, each 2 m by 1 m, through an average of 0.3 m topsoil onto the underlying drift geology of natural sand and gravel deposit. The topsoil was a loose, brown (7.5YR4/2, silty sand, whilst the natural was a loose, yellow brown (10YR5/6) sandy gravel. In test pits 04 and 07 a loose, yellow brown (10YR5/6) sandy cobble deposit was discovered, about 0.2 metres thick, which contained no archaeological features. This was interpreted as a palaeochannel. As at the previous two scatters there was no evidence of any subsoil.

These pits produced a total of 19 lithics consisting of five flakes, six blades, three cores, of which two are opposed platform pieces of Mesolithic date, and a serrated blade of Mesolithic or Neolithic date. No archaeological features were discovered in any of these test-pits.

#### 3.3.5 Discussion

The presence of a relatively high proportion of Mesolithic and Neolithic domestic tools in this area is intriguing, although broadly in keeping with the proposed model of widespread landscape use in earlier periods, but an increasing zonation on the later Neolithic and early Bronze Age. Lithic material from fieldwalking and excavation at the Triple Ring Ditch, suggests intensive, but probably sporadic and short term, Mesolithic and early Neolithic occupation in this area. The vast majority of the lithic pieces recovered are from tertiary reduction sequences on till/gravel material, and it is possible that this is a domestic or industrial site, exploiting material eroded by a nearby watercourse. The presence of early Neolithic Grimston Ware pottery sherds support this premise.

### 3.4 'Low' density scatter – field 18 (fig. 9)

#### 3.4.1 Introduction

The area selected for further investigation lies on the upper gravel terrace immediately to the east of the Central Henge, on ground which slopes very slightly downward from north to south at its southern end, but is flat to the north. Only four worked pieces of flint were discovered by widespaced fieldwalking in 1995, suggesting that very little archaeological activity occurred in the immediate vicinity of the monument complex.

### 3.4.2 Geophysical prospection

Possible geophysical features consisted of a rectilinear feature with associated pits, remnant medieval ridge and furrow, and a possible ditch feature (Biggins 2003, 14). There is only limited evidence for their existence.

### 3.4.3 Total collection

A total of 7 lithics were recovered by total collection from an area of 0.8 hectares. There were four flakes, one blade, a scraper fragment, and significantly, a possible fragment from a polished flint axe. No lithics of note had been recovered from widespaced fieldwalking.

### 3.4.4 Test-pitting

Nine 2 m by 1m test-pits were opened, each with an average of 0.3 m topsoil. The southern and central line of test-pits contained between 0.47-0.49 m and 0.22-0.28 m of subsoil respectively, but it was completely missing in the three northern ones. The reason behind this variation in stratigraphy is unclear. The presence of a larger percentage of medieval and post medieval pottery in this area (40% of the total material recovered, as opposed to between 12% and 14% at other scatters); the probable ridge and furrow discovered by the geophysical survey; and the remnant of what is probably a medieval field boundary in test-pit 07 (fig. 10), sited on the edge of the gentle slope, and comprising a stony feature in which some stones were 'on end' suggesting deliberate dumping, suggests that the variation in subsoil depth may be medieval in origin, although further work would have to be undertaken to confirm this. The topsoil consisted of a firm, dark brown (7.5YR3/3), sandy silty clay, whilst the subsoil deposits in the southern and central test pit lines were a loose, dark brown (7.5YR3/3), sandy silt. All the test-pits contained a natural geology of very firm, yellowish brown (10YR5/6), clayey gravel.

The test-pits produced 9 lithics comprising six flakes, one a core rejuvenation flake, one blade and a probable Mesolithic truncated blade.

### 3.4.5 Discussion

It would appear that medieval landuse across this area may have destroyed, or be masking, evidence of prehistoric activity. The lack of later Neolithic and early Bronze Age lithics suggests that any remaining evidence will most likely be from periods pre-dating the monument complex. Significantly, it is also possible that this medieval activity may preserve archaeological features associated with the cursus monument, sited only 40 m to the south.

## 4. CONCLUSIONS

### 4.1 Archaeological significance

It is believed that geophysical prospection, total artefact collection and targeted test-pitting have produced an invaluable palimpsest of data. Whilst the 'primary' aim of producing buried evidence for settlement or domestic activity, such as pits and hearths, was not achieved, the resulting information nonetheless provides an insight into the possible structure of the landscape during the Mesolithic, Neolithic and Bronze Age. It also offers an insight into how the later reuse of the landscape may have affected the recovery and interpretation of the available prehistoric material.

The intensive use of the area around Chapel Hill during the later Neolithic and early Bronze Age is now well attested, and whilst this project did not recover stratified archaeological deposits, allowing for more explicit models of activity, it has provided excellent evidence for the types of behaviour possibly undertaken across the ridge. It also indicates that the most likely place of discovering buried archaeology is in the landscape's dips and valleys.

It is apparent that medieval activity may well be masking archaeological features of the Neolithic and possible Bronze Age periods. The destruction by modern ploughing of what must have been an extensive medieval field system (there are at least five medieval villages, hamlets or manors around the Thornborough study area) has to a certain extent removed this medieval signature and, almost paradoxically, left a landscape that appears almost exclusively prehistoric. Excavations at the 'low' density scatter offer a rare insight into the impact of medieval agriculture, and highlights how we must understand this activity before we can develop a detailed appreciation of lithic distribution and the likelihood of contemporary features preserved beneath the ploughsoil.

### 4.2 Recommendations

The programme of geophysical survey, total collection and test-pitting can be usefully developed in two ways. Firstly, it may be informative to further assess and categorise some of those areas already targeted, particularly the 'high' density scatter, where follow-up geophysical prospection may detect traces of surviving archaeology away from the ridge-top, and highlight areas of high potential for excavation. Secondly, the strategy and techniques described here can be applied to other locations across the landscape. Of particular importance may be the 'high' density scatters identified by widespaced fieldwalking at Mire Barf Farm (field 32) and to the east of West Tanfield (field 2B). This new data would be exceptionally useful in the explanation, interpretation, conservation and management of the landscape as a whole and offer insights into the inter-relationship between the 'sacred' and the 'profane' at Neolithic and Bronze Age monument complexes.

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