NAA

POST-EXCAVATION ASSESSMENT REPORT

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WENSLEY QUARRY
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WENSLEY QUARRY, NORTH YORKSHIRE
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Summary

This document presents an assessment of the results of archaeological investigations undertaken at Wensley Quarry, in the parish of Preston-under-Scar, North Yorkshire (NGR SE 06662 92130). It has been prepared by Northern Archaeological Associates Ltd for Tarmac Ltd. The archaeological mitigation works were required as a condition of the planning permission for extension of the workings at the quarry, and comprised four phases of archaeological investigations. The results of each phase of work were used to inform the next.

The first phase of mitigation work (Phase 1) took place between 2002 and 2004 and was carried out by members of Bedale Archaeology and History Society. This phase involved a series of site visits followed by a programme of fieldwalking which was successful in recovering a small assemblage of 40 lithic fragments derived from animal burrows.

The following phase (Phase 2) was conducted by NAA and comprised the excavation of 128 test-pits across the area covered by the previous phase of fieldwalking followed by the excavation of a series of trial-trenches. In total an assemblage of 1201 lithic fragments were recovered across two discreet scatters.

Phase 3 of the mitigation works was carried out by NAA in 2014 ahead of a new programme of quarrying on land adjoining that investigated during Phases 1 and 2. This phase involved the excavation of 355 test-pits with a view to pinpointing any further lithic scatters. Three additional lithic scatters were identified during Phase 3, two of which were focused on a partially silted watercourse that ran across the site. The test-pitting was followed by a topographical survey of the area to be lost through quarrying which identified nine quarrying pits related to the Keld Heads lead smelt mill flue and two upstanding earthworks of possible prehistoric origins. Following the topographical survey, two trenches were excavated across the flue to record the underlying structure.

Phase 4 involved the excavation of four trenches (1-4), two of which were positioned over the lithic scatters that were identified during Phase 3 (Trenches 1 and 2). A trench was also excavated across each of the potentially prehistoric upstanding earthen features identified during the Phase 3 topographical survey.

Trench 3 revealed a stockpile of limestone blocks likely created during the construction of the adjacent post-medieval boundary wall. Trench 4 revealed an oval shaped prehistoric burnt mound, positioned next to the watercourse. Following the trial-trenching, two areas to the south and west of the flue (Area 1 and Area 2) were stripped of topsoil as part of the preparations for extraction. Within Area 1 tree boles and root holes produced lithics. In Area 2 three gullies, a posthole and five irregular oval features containing remnants of a prehistoric palaeosol were recorded. The majority of these produced small amounts of lithics.

Assessment of the results of the mitigation works have demonstrated that the recorded evidence is of regional significance and further analysis has the potential to greatly add to the corpus of information relating to the Mesolithic activity within Preston Moor, Wensleydale and the wider North-East region. This analysis, once compared with evidence from other contemporary sites within the northern Pennines and the wider region of northern England, will provide information relating to several regional, thematic and national research priorities as defined by current guideline documents.

A programme of further analysis is required, including specialist study and reporting on the combined lithic assemblage from all phases of work incorporating an investigation of the spatial and chronological patterns across the whole site. In addition, sixteen lithics recovered during Phase 2 of the mitigation and six from Phases 3 and 4 require illustration. Radiocarbon dating of carefully selected material from two of the cut features recorded in Area 2 is required due to the potential for these to relate to Mesolithic activity. This will comprise a maximum of three radiocarbon dates. Due to its potential prehistoric origin, an ironstone object recovered during Phase 4 should be subject to specialist study. If analysis of this object identifies it as being manmade then it should be subject to reflected light microscopy to investigate any use wear and potentially Raman spectroscopy to analyse any remaining surface residues.

The results of these investigations should be brought together within a single final report that will form the basis for a publication within a regional journal, such as the Yorkshire Archaeological Journal. Furthermore, due to the potential for future research upon the recovered remains and in line with national guidelines, the site archive for all phases of work (paper records, artefactual and environmental material) should be prepared and packaged for long term storage then transferred to the Dales Countryside Museum at Hawes.

Also, given the results of the investigations and the significance of the assemblages of worked flint recovered to date, archaeological monitoring of any further soil-stripping especially in the vicinity of the watercourse is recommended.

1.0 INTRODUCTION

1.1 This document presents an assessment of the results of several phases of archaeological investigations undertaken at Wensley Quarry, in the parish of Preston-under-Scar, North Yorkshire NGR SE 06662 92130 (Fig. 1). The investigations were required as conditions upon the extension of the workings at the quarry, and comprised four phases of archaeological investigations (Fig. 2). The results of each phase of work were used to inform the next.

- Phase 1 was carried out by Bedale Archaeology and History Society (BAHS) and comprised a programme of fieldwalking and site visits between 2002 and 2004 (Cooper 2006).

- Phase 2 was undertaken by Northern Archaeological Associates (NAA) in 2006. This stage of work comprised the excavation of 128 test-pits and monitoring of soil removal across the same area (NAA 2007).

- Phase 3, carried out by NAA in 2014, comprised the excavation of 355 test-pits in an adjacent area. Also undertaken were a topographical survey and the excavation of two trenches across the Keld Heads smelt mill flue.

- Phase 4, also conducted by NAA (in 2015), comprised the excavation of four trial-trenches and the subsequent monitoring of topsoil removal. The position of each trench was informed by the results of the test-pitting and topographical survey carried out during Phase 3. Following the trial-trenching of the site a programme of monitoring took place for topsoil stripping across Area 1 and part of Area 2.

1.2 This report was compiled by NAA for Tarmac Ltd, and details the work undertaken during Phases 3 and 4 during 2014 and 2015. The results of the first two phases of work were assessed in previous reporting (NAA 2007; Cooper 2006) but summaries of these have been incorporated within this document.

1.3 This report comprises a post-excavation assessment of the combined results of all four phases of work in line with current national guidelines (EH 2008; HE 2015; CIfA 2014a; 2014b). All archaeological works were undertaken in consultation with the archaeological officer for North Yorkshire County Council (NYCC) and in accordance with relevant standards, guidance and best practice published by Historic England (formerly English Heritage) (EH 2008; HE 2015) and the Chartered Institute for Archaeologists (CIfA) (2014a; 2014b; 2014c; 2014d).

2.0 LOCATION, TOPOGRAPHY AND GEOLOGY

2.1 The area of the quarry extension incorporated during Phases 3 and 4 consisted of approximately 16ha of heathland on the edge of Preston Moor, in the parish of Preston-under-Scar (Figs 1 and 2). The project area was demarcated to the south-west by the boundary of the existing quarry, to the north by a fenced public footpath and to the north-east by a drystone wall.

2.2 Preston Moor is located on the north side of Wensleydale on the eastern side of the Pennines and immediately outside the Yorkshire Dales National Park. The wider area is essentially an upland zone characterised by peaks separated by steep-sided, flat-bottomed valleys.

2.3 The underlying geology consisted of limestone, mudstone and gritstone of the Yoredale (BGS online) series overlain by glacial deposits, principally boulder clay. The soils are very shallow and comprise peaty, acid soils of Wilcocks 1 association (SSEW 1983; Jarvis *et al*. 1984).

3.0 SUMMARY ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

3.1 Below is a summary of the archaeological and historical background of Wensleydale. This section incorporates information compiled during each of the preceding phases of work (Cooper 2006; NAA 2007) and information from an assessment of the prehistory of the northern dales by Tim Laurie (Laurie 2003).

Mesolithic and Neolithic

3.2 Wensleydale is at the northern limit of the area of Britain known to have been occupied during the late glacial period c.12000-1000BC by hunter-gather groups whose prey animals included reindeer, horse and elk, in an open tundra environment (Jacobi 1978; 1991; Laurie 2003, 225). Prehistoric material gathered from sites within close proximity to Preston Moor such as at Semer Water, Stake Fell, Barningham High Moor and Thornton Rust Moor show that this occupation continued into the Mesolithic era, c.8300-4000BC and beyond (Laurie 2003, 231).

Preston Moor

3.3 Preston Moor is significant to the understanding of the early prehistory within Wensleydale due to widespread lithic scatters of Mesolithic and Neolithic character that have been previously recorded and the potential for the existence of associated below ground remains (*loc. cit.*). In addition to these scatters; a stream runs across the area, which is unusual for a limestone pasture such as this. Water sources were often foci for prehistoric activity; for instance, at Semer Water lithic scatters and other prehistoric artefacts including antlers and animal bone was found at the shore edge (*op. cit.,* 233-4).

3.4 Several findspots of Mesolithic and Neolithic lithics were previously recovered from Preston Moor, including microlith rods, points and scalenes, which are diagnostic of the Late Mesolithic period. Other finds such as a single leaf arrow-point, transverse arrow-points and barbed and tanged arrowheads have also been found from the edge of the scar to the west of Wensley Quarry (*op. cit.,* 231; Cooper 2006).

Stake Fell

3.5 Late Mesolithic and Early Neolithic lithic finds have also been recovered at Stake Fell, approximately 10km to the south-west of the quarry (Laurie 2003, 231-2). The Stake Fell assemblage very closely resembled the collection from Preston Moor, described by Laurie. These finds were of 'later Mesolithic character' but included a hollow base leaf-shaped Neolithic arrow-point. The collection was of patinated flint with some black Pennine chert. At a later date a series of twelve Bronze Age roundhouses with associated field systems were constructed at the site (*loc. cit.*) suggesting some level of permanence to the utilisation of this location.

Thornton Rust Moor

3.6 To the south-west of Wensley Quarry a significant group of flint and chert artefacts were recovered from Thornton Rust Moor. These artefacts included Late Neolithic or Early Bronze Age arrow-points recovered during heather burning in the vicinity of Dovestones Shooting Box (*op. cit.*, 232).

Semer Water

3.7 Late Mesolithic to Middle Bronze Age finds were also found approximately 15km to the south-west at Semer Water (*op. cit.*, 234). These included Late Mesolithic microliths, blades, various late prehistoric arrow-points, and chert and flint cores.

Laurie noted that the microliths from Semer Water were larger from those recovered from Preston Moor, but were also typologically similar as both collections included micro-scalene triangles, narrow rods and points.

Bronze Age

3.8 Later remains recorded in the vicinity of the site include two Bronze Age ring-cairns, one on the small scar to the west of Scarlet Wood (SE 0585 9180), 500m to the south, and one on the scar edge to the east of Scarth Nick (SE 0665 9180), 500m to the south-east. The latter was located within a banked and ditched feature enclosing 1ha of the scar edge, possibly representing a promontory fort of Bronze Age or Iron Age date. A round barrow survived as a standing mound at Preston-under-Scar, 1.5km to the south (Cooper 2006).

3.9 Bronze Age burnt mounds have been located on Preston Moor at Stopmore Rake Spring (SE 067 930) to the north of the site and were described by Tim Laurie as overlooking Mesolithic and Neolithic lithic scatters (Laurie 2003, 249). Further mounds have been recorded at Bellerby Moor Ranges, to the north-east of the site at (SE 08405 93377) and to the south-west of the site (SE 05149 92403) at Redmire Pasture (SWAAG online).

Iron Age

3.10 While there were no recorded Iron Age sites close to Preston Moor, a number of small, isolated settlements within Wensleydale and Swaledale are known to have existed. One example was excavated at Healaugh in Swaledale, 7km to the north-west of Preston Moor, where several circular buildings were recorded. One of these demonstrated several phases of occupation throughout the Iron Age and early Roman period (Fleming 1998, 148-52). A similar settlement was recorded on the western flank of Pen Hill, 6km to the south. More substantial later prehistoric sites in the wider region included the small hillfort of Maiden Castle (SE 022 981) approximately 5km north-west of Preston Moor and another at How Hill, Downholme (SE 107 979), 5.5km to the north-east.

Roman

3.11 During the Roman period, Wensleydale contained two forts. One was located at Bainbridge, 15km to the west of the site and the second was at Wensley, 4km to the south. These were probably located along a strategic route across the Pennines connecting a road and possible fort at Wittington, Lancashire (Margary 1973, 382) to another at Healam Bridge on Dere Street (Ottaway 2003, 126), the principal north to south route (now the A1 trunk road). No physical evidence of this road has been discovered but it was likely that it ran along the southern side of Wensleydale (*loc. cit.*).

3.12 Evidence for lead mining during the Roman period within the northern Yorkshire Dales exists in the form of stamped lead pigs (*op. cit.*, 149) although no associated workings have been identified. It has been hypothesised that several of the minor roads and tracks in the area were constructed during this period for the transportation of lead (Fleming 1996, 89-100).

Medieval

3.13 During the medieval period, the area surrounding Preston Moor was controlled by the Scropes at Bolton Castle. The castle was built in 1399 and their holdings included Bellerby Deer Park (SMR 15365) which comprised the area of moorland to the east of Preston Moor (NAA 2007).

3.14 The later medieval period saw the exploitation of coal and lead deposits in the wider area immediately to the north and east of Preston Moor. The principal form of agriculture was sheep-rearing although the flat valley bottoms were utilised for arable farming, identified by areas of surviving ridge and furrow earthworks (*op. cit.*).

Post-medieval to modern

3.15 The nature of industry around Preston Moor remained unaltered during the post-medieval period. To the north and north-east of the quarry, remains survived of 18th and 19th century lead-mining and processing operations including Cobscar Mill, millpond and chimney. Running to the east of the quarry site was a stone-built flue, which carried waste gases from a lead-smelting area to the north of Preston-under-Scar to the Cobscar chimney. A second chimney had been located nearby, but was used for artillery practice during the First World War.

3.16 During the late 19th century limestone extraction for agricultural purposes was undertaken along the base of Redmire Scar. Limekilns were constructed in several places; these were not recorded on the First Edition Ordnance Survey six-inch map of 1856 but appear on the 1914 Ordnance Survey map as 'old lime kilns', indicating a lifespan of around 50-60 years (*op. cit.*).

3.17 The limestone quarry now known as Wensley Quarry was opened in the early 20th century. The 1:10,560 Ordnance Survey map of 1914 showed a small pit to the north of the public road, while to the south Preston Scar Quarry was already well developed. The quarry began to expand under ownership of the South Durham Iron and Steel Company, which was later nationalised and became part of British Steel. The principal product of the quarry was sinter dust, which was used in the blast furnaces at Teesside as part of the steelmaking process. Quarry operations halted in the 1970s but recommenced in the late 1980s under the management of Tarmac in a joint venture with British Steel (*op. cit.*).

3.18 The survey area comprising Phases 3 and 4 has been under permanent pasture, but local knowledge suggested that it may have been ploughed during the later 19th and early 20th centuries (*op. cit.*). In the first half of the 20th century the area was also used for military training, both for infantry and armoured vehicles (*op. cit.*).

Previous work

3.19 The following section outlines previous archaeological work carried out at Wensley Quarry and details how each phase of archaeological work has informed the next. Furthermore, numerous developer-funded archaeological investigations undertaken in the vicinity of Wensley Quarry have also uncovered prehistoric evidence.

Wensley Quarry

3.20 A series of fieldwalking surveys and site visits were carried out by BAHS at Wensley Quarry between 2002 and 2004 (Phase 1). These revealed a concentration of Mesolithic flint (80 flints) centred at SE 063 923 which was part of a larger lithic scatter likely representing the presence of prehistoric camps (Cooper 2006).

3.21 The data gathered from Phase 1 was then used to inform the excavation of 128 test-pits (Phase 2) with a view to pin-pointing the extent of the lithic scatter. The data from the test-pitting was then used to inform an open area excavation; a total of 1201 lithics were recorded during Phase 2 (NAA 2007). This material suggested that a flint-working site existed in the vicinity where raw materials may have been collected and traded (Rowe 2007). The lithic scatter appeared to have been deposited around a series of wet, overgrown hollows which may have afforded some cover within the landscape. Indirect evidence of base camp activities was noted in the form of burnt flint, however, no hearths or structural evidence was identified (*op. cit.*).

3.22 The next phase of archaeological work (Phase 3) began in 2014, and arose as a direct consequence of the work carried out between 2002 and 2006, in response to further quarry expansion. This phase included the excavation of 355 test-pits within an area to the east of the previous lithic scatter. Following the test-pitting a topographical survey was conducted across the site. The data gathered from Phase 3 was then used to inform a series of trial-trenches and the monitoring of topsoil removal across two areas (Phase 4), the results of which are discussed below.

Wensleydale

3.23 In the wider area of Wensleydale two developer-funded programmes of archaeological mitigation uncovered small assemblages of lithics and a fourth recorded a possible Bronze Age enclosure.

3.24 During mitigation work associated with the construction of a waste water pipeline at Swinithwaite a prehistoric core fragment and fragments of chert debitage were recovered indicating prehistoric activity in the area (NAA 2002a). In advance of work taking place at Swinithwaite a topographical survey was carried out which identified a 55m wide prehistoric or Romano-British enclosure (NAA 2002b). Although this enclosure was not excavated, additional struck chert fragments of a prehistoric date were recovered from the surrounding area.

3.25 Monitoring work took place to the south of Wensley Quarry on Middleham High Moor in 1997 (NAA 1997). No archaeological features were recorded however, prehistoric worked flint, in the form of Neolithic or Bronze Age bladelets and flakes, was retrieved from topsoil removal and from disturbed soil as a result of animal burrowing.

3.26 To the east of Wensley Quarry, at Cranehowe Bottom Spring, a programme of watching briefs took place between 2005 and 2007. No archaeological features or deposits were recovered during these investigations, however, an associated desk-based assessment (NAA 2005) highlighted the presence of a Bronze Age/Iron Age enclosure overlain by the remains of a Deserted Medieval Village (SM 35471).

4.0 AIMS AND OBJECTIVES

4.1 The aims and objectives of the various phases of archaeological work at the quarry are detailed in previous reporting (Cooper 2006; NAA 2007) but in summary these were to determine whether unrecorded sub-surface archaeological remains existed within the extraction areas and to establish the extent of any lithic scatters identified with a view to maximising the recovery of artefacts. If sub-surface remains were present, the trial-trenching and test-pitting aimed to confirm their location, extent, nature, date and importance, in order that an informed assessment of the impact could be undertaken and a suitable mitigation strategy agreed.

4.2 The specific objectives of the phases of work detailed in this report (Phases 3 and 4) were:

- to provide a detailed record of archaeological remains in advance of their loss through extraction works;
- to fully understand the extent, nature and date of archaeological remains; the period of occupation and the relationships between the various periods of human activity;
- to recover and assess any associated structural, artefactual and environmental evidence to help inform understanding of the layout, date, function, phasing, development and economic basis of each area of activity; and
- to undertake a programme of investigation which will contribute to the relevant regional and national research priorities.

5.0 METHODOLOGY

5.1 The methodologies for Phase 1 (Cooper 2006) and Phase 2 (NAA 2007) have been detailed in previous reporting of the site. The following section details the methodologies used for Phase 3 and Phase 4.

Test-pitting (Phase 3)

5.2 A total of 355 test-pits were placed at 20m intervals on a regular grid across the site to gain a representative sample of the study area as a whole (Fig. 2).

5.3 The test-pits were hand-excavated down to natural bedrock, or as far as practicably possible, and the underlying bedrock was examined for traces of burning or cut features such as postholes.

5.4 The pits were located using sub-centimetre GPS and each context encountered was separated onto tarpaulin sheets and sieved using a 10mm mesh; finds recovered were bagged accordingly.

5.5 A large area to the west of the site that would have contained approximately 50 test-pits had been stripped prior to the start of archaeological mitigation works. The pits allocated for this area were relocated to areas of increased flint density in the un-stripped area.

5.6 Photographs were taken in both black and white and digital formats, to show a representative sample of the excavated test-pits.

5.7 Where microliths were encountered during excavation, soil samples were obtained to maximise recovery of smaller lithics that would otherwise have fallen through the sieve.

Topographical survey (Phase 3)

5.8 A walkover survey of the site was undertaken during January, 2015, any features identified were located using a Topcon sub-centimetre accurate post-processing GPS system. A full topographic earthwork survey was undertaken of these features, recording tops, bottoms and significant breaks of slope along with any other salient components.

5.9 Survey location data was downloaded and processed to an accuracy of up to 2cm using Topsurv software. This data was used to accurately locate the concurrent real-time kinematic (RTK) feature survey data onto 3D ordnance survey coordinates.

5.10 Interpretative hachure plans of pertinent features were produced and have been included in this and previous reports, along with base survey data of other features.

Trial-trenching (Phase 3)

5.11 Two trenches were excavated across the Keld Heads smelt mill flue. These were located at the northern and southern ends of the flue within the project area to investigate its structure. Both trenches were excavated by a mechanical excavator fitted with a toothless ditching bucket under direct archaeological supervision.

Trial-trenching (Phase 4)

5.12 In 2015 four trenches were excavated to investigate the lithic scatters and earthen structures identified during Phase 3.

5.13 Trenches 1 and 2 were excavated by a mechanical excavator fitted with a toothless ditching bucket under direct archaeological supervision. These trenches were located across lithic concentrations adjacent to a partially silted watercourse towards the northern end of the project area and a smaller scatter towards the southern end adjacent to the current quarry workings.

5.14 Trenches 3 and 4 were excavated to investigate two possible prehistoric earthen mounds identified during the topographical survey carried out in Phase 3. The excavation of these comprised hand-removal of turves and topsoil taking care to store turves to one side for reinstatement after the trenching was completed. Both trenches were then cleaned and recorded.

Monitoring (Phase 4)

5.15 A watching brief took place across Areas 1 and 2, during Phase 4, which incorporated a controlled topsoil strip across both areas and the removal of a safety bund along the southern and western edges of Area 1.

5.16 Topsoil across both areas was generally very shallow (as little as 0.05m in places) and was removed in one spit down to either a yellowish brown sandy clay (glacial till) or limestone bedrock, whichever was encountered first. A brief walkover of the bedrock areas was carried out to check for surface finds, rock-cut features and traces of former activity within the eroded crevices. All of the patches of soil and natural features encountered during monitoring were investigated. An appropriate sample of tree boles were fully excavated (c.20% of the total number) in order to better understand the nature of these discrete features and to maximise the recovery of artefacts and ecofacts.

5.17 Excavated sample sections of the archaeological features encountered constituted 10% of linear features and 50% of discreet features such as postholes and tree boles. A large hollow (Area 1) was fully investigated as it was thought to represent the possible position of a large standing stone which lay next to the feature. This feature was recorded in plan and section and also in three dimensions by digital photo-modelling.

Recording

5.18 The same recording methodologies were followed during all phases of work. A drawn record of all archaeological features/deposits was made at an appropriate scale; sections/profiles were drawn at a scale of 1:10, plans were drawn at a scale of 1:20. Drawings included appropriate data on levels relative to Ordnance Datum and were located within the site and the National Grid using sub-centimetre GPS.

5.19 Written descriptions of archaeological features/deposits were recorded on NAA pro forma context sheets, which employ standard archaeological recording conventions.

5.20 A photographic record of the site was taken using monochrome prints and colour digital photography.

Finds recording

5.21 All finds recovered were appropriately packaged and stored under optimum conditions. Finds recovery and storage strategies were in accordance with published guidelines (EH 1995; Watkinson and Neal 2001).

5.22 All finds processing, conservation work and storage was carried also out in compliance with guidelines issued by the Chartered Institute for Archaeologists (CIfA 2014c). Finds were appropriately recorded and processed and submitted for post-excavation assessment.

Environmental sampling

5.23 Forty-litre (or 100%) bulk palaeoenvironmental samples were taken from appropriate deposits and submitted for assessment of their environmental potential. Recovery and sampling of environmental remains was in accordance with published guidelines (Campbell *et al*. 2011; EH 2008; 2014).

6.0 RESULTS

6.1 As all of the phases of mitigation included lithics potentially from the same activity the following section presents the results from all the phases of the archaeological work carried out at Wensley Quarry. Phases 1 and 2 have been summarised as they are both detailed in previous reports.

Fieldwalking (Phase 1)

6.2 The 2002-2004 fieldwalking undertaken by BHAS revealed a concentration of flints centred at SE 063 923 (Cooper 2006). The main concentration was within an irregular area measuring approximately 100m diameter, although as the flints were recovered from molehills or the upthrow from rabbit burrows there was no certainty that this indicated the true extent of the scatter. No features of archaeological interest were recorded to confirm that this was a conventional 'site'. A total of 26 flints were recovered from the topsoil. Of these, two were microliths, a form only found in Mesolithic contexts. Other material present included blades, bladelets, piercers, cores and core rejuvenation flakes.

6.3 A site visit after topsoil removal during 2003 did not identify any archaeological features, but an old silted stream (palaeochannel) was recorded. This channel was approximately 5m wide by up to 0.4m deep and curved from south-eastwards to north-eastwards, towards an existing watercourse along the north-east boundary of the quarry.

6.4 During the fieldwalking in 2004 a further fourteen flints were recovered from the topsoil on the eastern edge of the main scatter. These included all of the tool types identified on the earlier fieldwalking except for microliths (Cooper 2006).

Wensley Quarry 2006 (Phase 2)

6.5 Following the fieldwalking carried out by BAHS between 2002 and 2004 a phase of work comprising the excavation of 128 test-pits followed by an open-area excavation was undertaken (NAA 2007).

6.6 These investigations identified the presence of subsoils filling hollows and channels within the limestone bedrock that appeared to have formed during overgrown and waterlogged ground conditions. Concentrations of lithics were identified within the upper levels of these deposits and an assemblage of some 1201 fragments was recovered. The assemblage comprised mainly blades and flakes with some cores but relatively few tools. Artefact types suggested a possible date range from the last quarter of the late 9th or early 8th millennium BC (Mesolithic). No material from later periods was identified (NAA 2007).

Wensley Quarry 2014 (Phase 3)

6.7 The following section presents the results of work carried out by NAA in 2014. This phase of work incorporated three separate stages. The first stage comprised the excavation of 355 test-pits across the next area of proposed extraction with a view to pinpointing the position of any possible lithic scatters using the same methodology that was adopted by NAA in 2006.

6.8 The second stage involved the excavation of two trial-trenches across the line of Keld Heads smelt mill flue, which ran across the site towards Cobscar Mill chimney to the north. This was carried out to examine and record the fabric and structure of the flue ahead of its loss through quarry expansion.

6.9 The third stage of work was a detailed topographical survey of the site, to examine the area and identify any upstanding earthwork features present in the project area.

Test-pitting results

6.10 The test-pitting revealed a central concentration of flint (Lithic Scatters A and B) focussed around a partially silted watercourse which ran through the site (Fig. 3). A third lithic scatter (Lithic Scatter C) was located to the south adjacent to an area lost through recent soil-stripping. All flints recovered from both areas were from secondary contexts, including topsoil and former soils (palaeosols).

6.11 Lithic Scatters A and B comprised 54 fragments of worked flint and chert, including microliths and flint working debitage; eighteen of these fragments were recovered from molehill spoil. The scatters followed the line of the watercourse and likely represented the presence of small camps or stands along the bank of the stream.

6.12 Lithic Scatter C was recovered from an area focussed upon test-pits 220 and 238 and included fragments of flint debitage. It was decided to excavate a further eleven test-pits in this area, the excavation of these did not yield any further lithic material. It was likely that this scatter represented a small area of flint working which may have extended further to the north-west. This was evident from the recovery of a partial flint arrowhead from the surface of the bedrock to the north-west.

6.13 One further area of interest identified during the test-pitting was located in the south east of the study area adjacent to a barn in the eastern field. In this area an unusually thick layer of silty clay (**1011**) was recorded overlying the natural bedrock. Although no worked flint was retrieved prior to the excavation of these pits within this area, it was decided to excavate a further ten test-pits to investigate this deposit. It was likely that the deposit encountered related to the watercourse running alongside this area.

Topographical survey

6.14 The majority of earthwork features identified within the survey area were probably associated with the lead smelting flue although two potential prehistoric earthen mounds were recorded adjacent to an existing stream (Fig. 4).

Keld Heads smelt mill flue

6.15 The flue identified within the survey area was built in 1855 as an extension of a previous flue at Keld Heads smelt mill. The original flue and chimney were constructed too close to the mill complex and the flue was later extended by over 3km to the north-west to join a chimney at Cobscar smelt mill. These types of horizontal flues were not only built to transport harmful waste gases away from populated areas, but also as a way of collecting lead fume for re-processing and thus increasing profit margins.

6.16 The Keld Heads flue bisected the study area from the south-east to north-west (SE 06912 91950 to SE 06606 92341) and was visible as a well defined linear bank running for roughly 800m (Fig. 5). The flue entered the site at the south-eastern corner adjacent to Scarth Nick road and followed the line of the northern field boundary for 180m where it then curved north-westward towards the chimney at Cobscar smelt mill.

6.17 A section of the flue had been lost at the northern end of the study area during the cutting of a drain. Along the line of the flue numerous quarrying pits, potentially relating to its construction, were recorded.

Quarry pits

6.18 The position of all features discussed below can be found on Figures 4 and 5.

6.19 Quarry Pit 1 (Fig. 4, QP1) was located on the south-west side of the flue at the northern end of the survey area adjacent to the current northern boundary wall. The pit measured approximately 10m by 10m, was visible up to 0.3m deep and was partially truncated by a modern drain. It was mostly overgrown by thick grass and was partially covered by upcast from the re-cutting of a drain. This pit was most likely associated with the construction of the flue, given its close proximity against the bank of the flue wall.

6.20 A second pit (Quarry Pit 2) was located close to the northern end of the flue where it began to curve westward. Similarly to Quarry Pit 1, it had been truncated slightly by the re-cutting of a modern drain and was only partially visible due to the long grass and upcast from the drain. The pit measured 10m by over 5m and was visible up to 0.3m deep.

6.21 A further pit (QP3) was located along the south-western side of the flue. It measured 16m by 5m and was visible as a shallow depression in the ground directly adjacent the flue bank. Given the position and alignment of the pit it has been interpreted as relating to the construction of the flue.

6.22 The largest of the quarrying pits (QP4) associated with the flue was located approximately midway down the length of the structure on its south-western face adjacent to a modern fence line. This pit measured 37m by 7m and was up to 0.75m deep.

6.23 Quarry Pit 5 was located at the junction between the area lost to stripping and a north-east south-west aligned wooden fence line. It measured 7m by 3m and was situated on the south-western face of the flue. The full extent of this feature was not apparent as it was heavily truncated and partially obscured by spoil from a safety bund associated with the current quarry workings.

6.24 The next quarry (QP6) was located almost opposite of Quarry Pit 5 on the north-eastern face of the flue; it measured 15m by 3m and was visible up to 0.3m deep as an irregular oval shaped depression in the ground. A working face could be seen showing the direction that the quarry was worked.

6.25 To the south-east of Quarry Pit 6, on the north-eastern face of the flue, Quarry Pit 7 was observed. It measured 15m by 3m and was again associated with the construction of the flue. During this phase of works a trench was excavated across Quarry Pit 7 and the flue (Trench 1) and is discussed below.

6.26 Quarry Pit 8 was located further south of Quarry Pit 7, and measured 5m by 3m. Unusually this feature was set away from the flue and was sub-oval in shape, which was unlike the other quarries. However, it was still considered likely that this pit was associated with the construction of the flue.

6.27 The largest of the quarries (QP9) was located on the eastern edge of the project area against a ruinous post-medieval boundary wall aligned east to west. The pit itself measured 40m by 30m in an irregular T-shape and was probably related to the construction of nearby boundary walls and a stone-built barn to the east. The wall and barn can be seen on First Edition Ordnance Survey mapping, before the flue was built, and was therefore earlier.

Earthworks

6.28 Two upstanding mounds (Fig. 4, M1 and M2) were identified during the topographical survey in close proximity within the north-eastern portion of the study area.

6.29 Mound 1 (M1) was circular in shape and measured 1.5m by 1.5m by up to 0.3m high. It was located in close proximity to a post-medieval field boundary aligned north-west to south-east.

6.30 The second mound (M2) was observed 20m to the north-east and measured 8m by 2m, it was located adjacent to the watercourse (see below).

Watercourse

6.31 The line of a partially silted watercourse, measuring up to 15m wide, was identified running across the site (Fig. 4). It was seen entering the project area at the north-western corner of the site and ran eastward where it was then cut by the flue before curving south-eastwards towards the barn in the eastern field. Upon further examination of aerial photography of the area the line of the watercourse was traced further to the south-east running through a large wooded area as far as Keldheads Lane.

Trial-trenching

6.32 A JCB fitted with a toothless ditching bucket was used to remove topsoil from two trenches across the Keld Heads flue (Fig. 5). Across both trenches all exterior walls were exposed by the JCB but the material in the flue itself was excavated by hand.

Trench 1

6.33 Trench 1 (6.25m by 2.95m) was excavated at the southern end of the study area at SE 92049 06848 (Fig. 5). This trench was located to investigate a linear depression running parallel to the flue to the north-east, thought to relate to its construction.

6.34 Within the excavated trench the flue (Fig. 6) consisted of two walls (1022 and 1021) with a rubble deposit (1029) between them. Originally a vaulted arch would have spanned the space between the walls but this had collapsed forming the rubble deposit. The walls were constructed from locally quarried stone, which was evidenced by numerous small quarry pits recorded adjacent to the flue during the topographical survey of the site.

6.35 Eastern wall 1022 was randomly coursed using un-faced, roughly-cut limestone blocks. The wall comprised two faces with a rubble interior; it was likely that this was utilised to minimise the amount of gas escaping the flue and hence to increase the yield of processable fume. The wall was built directly on top of the natural bedrock and no construction cut was apparent.

6.36 The opposite wall (1021) was also built from un-faced, roughly-cut locally quarried limestone blocks. However, this side of the flue was sunk into the bedrock with a natural face being utilised in the lower half of the wall. This was done to keep the base of the flue level, as the surrounding ground sloped gently to the north-east.

6.37 Unlike wall 1022, wall 1021 was constructed only one skin deep as the bedrock face acted as a second skin holding the gas inside the flue.

6.38 A large amount of angular roughly tapered limestone blocks (1029) were excavated from the interior of the flue. These represented the voussoir blocks used in the construction of the vaulted arch. Underneath deposit 1029 was a greyish blue silty clay layer approximately 0.08m thick that covered the entirety of the base of the flue. It is likely that this deposit related to the function of the flue probably both helping to seal it and facilitating the flow of waste gasses.

6.39 The base of the flue consisted of cut limestone bedrock that had been deliberately worked to obtain a level foundation for the flue. The levelled bedrock ran directly underneath wall 1022 for approximately 1.20m then dipped off sharply. This dip in the bedrock represented a quarrying face and was in excess of 1.5m deep.

Trench 2

6.40 A second trench was excavated across the flue to the north (SE 92206 06744) and investigated a rectangular structure on its south-western side (Fig. 5).

6.41 This northern section of flue was of a similar construction to that of the southern end (Fig. 7). It consisted of two walls (1014 and 1017) with a deposit formed from a collapsed vaulted arch (1015) between them.

6.42 The south-western wall (1017) was of similar construction to that recorded in Trench 1 and was randomly coursed with roughly-cut and un-faced locally quarried limestone blocks of varying sizes. It was constructed with an inner and outer face and a rubble core. The north-eastern wall (1014) was constructed in the same fashion. Unlike in Trench 1, a construction cut for both walls could be seen at both sides of the flue (1025 and 1013).

6.43 The rubble interior (1015) of the flue was excavated down to the bedrock base. It consisted of large angular roughly tapering limestone blocks similar to the southern section of the flue. Underneath the fallen vaulted arch the same greyish blue silty clay material was uncovered. Similarly to the southern end of the flue this deposit was approximately 0.08m thick and spread evenly across the base of the flue.

6.44 A straight-sided channel (1024) was observed cut into the bedrock within Trench 2 between walls 1014 and 1017. This feature ran parallel to the flue and was likely a construction cut for an interior baffle wall, perhaps removed or collapsed later. Baffle walls were often used in horizontal flues such as these to increase the surface area of the interior to increase the yield of processable fume.

Wensley Quarry 2015 (Phase 4)

6.45 Further archaeological work at Wensley Quarry began in August 2015 (Phase 4) in direct response to the results of Phase 3 (Fig. 2). This phase of work involved the excavation of four trial-trenches located over areas of archaeological interest identified during Phase 3. Two trenches were located over Lithic Scatters A and C, the remaining two trenches were located across the two earthen mounds (M1 and M2) identified during the topographical survey.

6.46 A programme of monitoring also took place during the subsequent soil-stripping of Area 1 and the partial soil-stripping within Area 2. The results of the trial-trenching and monitoring are discussed below.

Trial-trenching

Trench 1

6.47 A trench measuring 2m by 15m aligned east to west was excavated at the southern edge of the study area across Lithic Scatter C (Fig. 8). After the trench was excavated and cleaned to examine the surface archaeology, a 1m by 1m sondage was sunk at the south-western end. This was done to gain a clearer understanding of the stratigraphical sequence of deposits in this area.

6.48 The earliest deposit encountered, within Trench 1, comprised a grey-brown silty clay (104) infilling natural solution hollows within the underlying limestone paving. This layer contained one fragment of worked ironstone (Appendix G). Overlying deposit 104 was an orangish-yellow clayey sandy silt (101) measuring up to 0.15m deep. This was the same deposit encountered during the test-pitting phase in 2014 which was demonstrated to contain lithic material. Four fragments of worked chert and a single fragment of worked brown flint were recovered from deposit 101. These fragments showed clear signs of human modification, were less than 20mm in size and have been classed as debitage (Foulds 2016).

6.49 A gully (102) was encountered within Trench 1 cutting deposit 101. Gully 102 measured 1.05m wide by 0.18m deep and was aligned broadly north to south. It was filled by deposit 103 which was a pale greyish sandy silt with occasional small limestone inclusions, which produced a single fragment of flint debitage. Once this area was stripped it became apparent that gully 102 did not extend much further than the width of the original trial-trench. This could mean that this feature was in fact part of a tree bole. The excavated area was sealed by topsoil 100 which varied in depth from 0.10m to 0.15m and contained a further two fragments of chert.

Trench 2

6.50 Trench 2 measured 20m by 2m and was located between the flue and the watercourse to investigate Lithic Scatter A (Fig. 9).

6.51 Similar to Trench 1, the earliest deposit encountered was a brownish-grey silty clay (203) infilling natural fissures and solution hollows within the underlying limestone pavement. No finds were recovered from this deposit.

6.52 Above this layer was deposit 202 which was an orangish-yellow sandy silty clay that contained occasional limestone fragments with frequent patches of natural iron panning. Deposit 202 within Trench 2 and deposit 101 within Trench 1 have been interpreted as the same horizon. One fragment of struck brown flint was recovered from deposit 202.

6.53 Overlying deposit 202 was a spread of irregular sized limestone rocks 205. These stones varied in size from approximately 0.15m up to 0.50m. A fragment of worked flint was recovered from within this spread of stone, suggested it may have been redeposited from elsewhere. It was unclear as to what this spread of stone represented.

6.54 Abutting deposit 205 on the south-west side and sealing subsoil 202 was a firm dark grey silty clay palaeosol (201). Twenty-seven lithic fragments were recovered by hand from this deposit (through sieving) including seven flakes, twelve blades/bladelets and eight fragments of debitage. It was thought that this deposit represent a small hollow or depression which had silted up during prehistory. It was likely that the majority of the lithics derived from scatter A came from this deposit. Full interpretation of this layer was problematic as only a small portion of it was revealed during the trial-trenching phase. However, similar palaeosol layers were encountered during the monitoring of Area 2 (Phase 4). These were broadly oval in shape and varied in depth from 0.10m to 0.15m and were also demonstrated to contain lithic material similar to that recovered within Trench 2.

6.55 Cut into deposit 202 at the northern end of the trial-trench was a small drainage gully or possible robbed out wall (206). This feature was linear in shape aligned north-west to south-east and seemed to run parallel to 205. The feature was filled by 207, a pale grey silty clay with frequent stone inclusions.

Trench 3

6.56 Trench 3 (Fig. 10) was located close to the eastern edge of the site adjacent to the watercourse and boundary wall (Fig. 2). The trench was located to investigate an upstanding earthen feature (Mound 1), possibly a cairn (see paragraph 6.29), identified during the initial topographical survey of the site in 2014 (Phase 3; Fig. 4, M1).

6.57 The earliest deposit encountered was a patchy thin layer of subsoil 301. This infilled the solution hollows and fissures within the natural bedrock and was comprised of a mid to light brown silty clay with occasional small stones. No finds were recovered from this deposit.

6.58 Above deposit 301 was the material making up the mound (303). This consisted of a spread of stone measuring 2.60m by 2.10m by 0.15m high made up of a dark brown silty loam with frequent limestone rocks and stones laid directly on top of deposit 301.

6.59 The mound material was sealed by topsoil (300), which comprised a firm dark brown black silty clay, no finds were recovered from this deposit.

6.60 It was likely that this feature, given the close proximity to the boundary wall, represented a stockpile, or a dump of stone associated with the construction of the wall and was likely post-medieval in date, contemporary with the construction of the field boundary.

Trench 4

6.61 This trench (Fig. 11) was located adjacent to the watercourse towards the north-eastern corner of the project area (Fig. 2) and measured 6m by 6m. The trench was positioned to investigate one of the possible prehistoric earthen features (Fig. 4, M2) initially thought to be a cairn.

6.62 The earliest archaeological deposit encountered (403) comprised angular, fire-cracked fragments of sandstone within a dark grey silty sand matrix that formed a mound c.6.4m long by 4.4m wide by up to 0.3m high. This mound lay directly upon limestone bedrock (402) and 35 lithic fragments (including burnt flint) were recovered from within it. The position of the mound directly adjacent to a watercourse and its composition of fire-cracked stone made it likely that this feature was a burnt mound.

6.63 During excavation of this feature charcoal was observed within the matrix of the mound and adhering to the surface of some fire-cracked stones. However, none of this charcoal was recovered through palaeoenvironmental sampling. This was likely due to the small fragment size of the charcoal present causing it to dissolve during sample processing.

Monitoring

Area 1

6.64 Area 1 incorporated an area of approximately 6000m^2 adjacent to the current quarry workings (Fig. 12). The natural geology, encountered during the monitoring of topsoil removal in this area, was a yellowish brown sandy clay (1001). Cut into this was a large number of tree boles and root holes (Fig. 13) which were sealed by topsoil (1000). The topsoil was generally very shallow (0.05m in places) indicating that this area had not been ploughed.

6.65 Areas of outcropping bedrock (1002) were also exposed and were investigated with a view to locating any surface lithics or traces of archaeological activity. No lithic fragments or archaeological features were encountered.

6.66 A large number of natural features, including tree boles and in-filled solution hollows were also identified across the stripped area. All of the natural features identified during topsoil removal of Area 1 were investigated and an appropriate representative sample of these features were excavated and recorded. The majority of these were filled by a dark grey peaty soil unless disturbed by recent burrowing activity. This peaty fill had likely formed under waterlogged anaerobic conditions suggesting that this area had flooded or was part of a larger floodplain possibly associated with the watercourse within Area 2. Excavation of these features yielded two fragments of worked flint including a denticulate flint blade from the fill of tree bole 1023, two flint flakes from feature 1065, a single flint flake from bole 1109, single chert flakes from root holes 1033 and 1037 and a core tablet from the fill of tree bole 1087.

6.67 A large pit-like feature (1011) was investigated due to the presence of a large lozenge shaped limestone block which lay on the surface prior to machining. Excavation of the central pit showed that the feature was likely a large solution hollow, which had been filled in and subsequently disturbed by recent burrowing animals. Excavation of this feature showed that it cut the surrounding tree boles however, many of the relationships between these features have been disturbed.

Area 2

6.68 Area 2 was located close to the northern edge of the site and incorporated a large area of land bisected by the lead smelting flue running north-west to south-east (Fig. 12).

6.69 A small area approximately 100m by 50m was stripped at the north-western end of Area 2. Similarly to Area 1, the natural geology exposed comprised a yellowish brown sandy clay (2004). A total of ten possible features were recorded in this area (Fig. 14). These included three possible gullies (2006, 2009 and 2012) a potential posthole (2020), five irregular shallow hollows containing remnants of the palaeosol (2015, 2016, 2017, 2018 and 2019) and a possible burnt root hole (2014).

6.70 The linear gullies (2006, 2009 and 2012) ran broadly parallel to each other aligned north to south close to the edge of the partially silted watercourse (2001). One fragment of flint and two fragments of struck chert were retrieved from the fill (2007) of gully 2006. Three fragments of struck chert were recovered from the fill (2013) of gully 2012. These features were irregular in profile and their fills contained small amounts of larger stones that may have been used to support posts suggesting they may have been short sections of fence or 'wind-breaks'. Alternatively, given the lack of dating evidence they may represent later disturbance or even root holes or animal burrows. Two of the three linear gullies had, however, been recut at a later date suggesting human activity and sustained use.

6.71 A single small posthole or pit (2020) and a possible roothole (2014) containing charcoal were recorded at the western end of Area 2 immediately adjacent to the watercourse. Feature 2020 yielded the highest quantity of charcoal from the environmental samples taken during the project. A total of 41.85g of oak (*Quercus* sp.) and *Alnus*-type (either hazel- *Corylus avellana* or alder- *Alnus glutinosa*) charcoal was collected providing suitable material for radiocarbon dating (Appendix I).

6.72 Five irregular and hollows (2015, 2016, 2017, 2018 and 2019) were recorded in a line towards the western side of Area 2. These features were shallow in depth (ranging from 0.01m to 0.10m in depth) and had irregular profiles. All of these features contained occasional fragments of struck chert or flint comprising two fragments of chert debitage from 2015, single flint flakes from 2016 and 2019, a chert core from 2018 and a piece of chert debitage from 2017.

6.73 It is possible that these hollows represented the remains of Mesolithic 'hut scoops' similar to those discovered at Howick in Northumberland (Waddington *et al.* 2003), Ronaldsway Airport, the Isle of Man (OAN 2016), at Castlandhill in Rosyth and Echline Fields in South Queensferry (Robertson *et al.* 2013) and further afield at Hawkcombe Head, Somerset (Gardiner 2007) and in North-Western Europe (e.g. Bjerck 2008, 91-6; Sørensen 2009, fig. 81.2 etc). The lack of associated hearths, post- and stakeholes and concentrations of charcoal, lithics and food remains, however, suggested that these features were more likely to have been natural hollows such as tree root boles.

6.74 The dominant feature within Area 2 a partially silted watercourse aligned broadly east to west. A dark grey peaty soil (2001) was observed infilling the channel that produced ten fragments of grey and black struck chert including flakes, blades and debitage of a Mesolithic and possibly Neolithic date.

6.75 The presence of three linear gullies and a posthole/pit within Area 2, a burnt mound within Trench 4, a possible wall structure within Trench 1 and the close proximity of Lithic Scatters A, B and C indicated that this watercourse was likely a focus of sustained activity.

7.0 DISCUSSION

7.1 The combined archaeological evidence gathered during all four phases of mitigation work at Wensley Quarry has shown that the area was a focus of sustained prehistoric activity centred on, but not limited to, the watercourse which ran across the site.

7.2 The initial evidence for prehistoric activity on the site at Wensley Quarry was gathered during Phase 1, which demonstrated the presence of a lithic scatter on land adjacent to the quarry. This was later confirmed and expanded upon during the test-pitting and trenching of the area during Phase 2.

7.3 The evidence from Phase 2 revealed the presence of three discreet lithic scatters of Mesolithic date, one of which was located close to the watercourse identified later in Phases 3 and 4, and showed that this area of land was utilised during the Mesolithic, which was consistent to the results of the mitigation works carried out as part of the later phases during 2014-15.

7.4 Phases 3 and 4 demonstrated the importance of the watercourse as a focus of activity during the Mesolithic as predicted by Tim Laurie (Laurie 2003, 232). This was initially hinted at through the presence of Lithic Scatter A identified during Phase 3 and later confirmed through trenching across the scatter during Phase 4. The lithic assemblage gathered through both of these phases strongly suggested a Mesolithic (c.8300-4000BC) date with a few examples of Early Mesolithic and later Neolithic fragments showing that this area of land was occupied over a large span of time.

7.5 The fieldwalking, test-pitting, topographical survey and trial-trenching methodologies carried out across all four phases of archaeological investigations at Wensley Quarry were critical in the recovery of this considerable Mesolithic assemblage totalling 1436 lithic fragments. Most prehistoric lithics exist within modern topsoils and subsoils and machine stripping would have removed any record of the early prehistoric activity at Wensley Quarry. The gridding of the site followed by sieving of material from each test-pit allowed a broad plotting of the position of each find in order to gain an understanding of distribution patterns. It was only through these appropriate methodologies that the regional significance of the Mesolithic archaeology discovered could be properly realised.

7.6 In addition to the mainly Mesolithic, and possible Neolithic activity on the site there was also evidence for Bronze Age activity in the form of a burnt mound found adjacent to the watercourse towards the eastern end of the site. Burnt mounds are important archaeological features as they are poorly understood (Laurie 2004, 85).

7.7 Importantly burnt mounds are typically associated with watercourses and are usually found next to streams (*op. cit.*, 79). Further burnt mounds are known on Preston Moor at Stopmore Rake to the north of the site and described by Tim Laurie as overlooking Mesolithic and Neolithic lithic scatters (Laurie 2003, 249). Further mounds have been recorded at Bellerby Moor Ranges, to the north-east of the site at (SE 08405 93377) (SWAAG 2011) and to the south-west of the site (SE 05149 92403) at Redmire Pasture (SWAAG 2012). Apart from the mound excavated at Wensley Quarry, no others are known to have been excavated on Preston Moor.

8.0 ASSESSMENT OF THE SITE ARCHIVE

Initial analysis

Quantification of site archive

8.1 During the course of the fieldwork, the finds and environmental samples were transported to the offices of NAA. Environmental samples were catalogued and processed in preparation of their specialist assessment (Campbell *et al*. 2011). Finds were cleaned, identified, marked (where appropriate), catalogued and properly packed for long-term storage, in accordance with national guidelines (EH 1995; Watkinson and Neal 2001; CIfA 2014c).

8.2 An initial quantification of each category of the site archive has been made. Quantifications of environmental samples and the principal categories of recovered finds have also been carried out. These are listed in tabular form below.

Record category	No.
Context descriptions	116
Drawing sheets	29
Plans	19
Sections	36
Black and White photographs and negatives (films)	8
Digital images	328

Finds category	No.
Worked lithics (flint and chert)	1436
Worked stone fragments	1
Environmental samples taken	7

Recommendations for further work

Storage and curation

8.3 The written, drawn and photographic records are currently held by NAA. Analysis of the palaeoenvironmental samples has been undertaken by NAA. Artefacts recovered from this process have been assessed by the relevant specialists and returned.

8.4 Subject to finalisation of discard policies (particularly with respect to environmental material) it is intended that the site archive (paper records, artefactual and environmental material) will be transferred to the Dales Countryside Museum at

Hawes. All material has been appropriately packaged for long-term storage in accordance with both national guidelines and to the requirements of the museum.

8.5 Archiving work will be carried out in accordance with local policy (Turnpenny 2012), national guidelines (Brown 2011; CIfA 2014d) and the archive will be assembled in accordance with the specifications set out by Historic England (formerly English Heritage) (EH 2008; HE 2015). Also in line with the local policy NAA completed and submitted a 'Project Initiation Form' to the recipient museum and North Yorkshire County Council Historic Environment Team (NYCCHET) after they have been commissioned but before the start of the fieldwork (Turnpenny 2012, appendix 1). A 'Mid-Project Agreement Form' was also be sent to the recipient museum and North Yorkshire County Council Historic Environment Service at the half-way point of the fieldwork (*op. cit.*, appendix 3) and on completion a 'Completion Form' will be submitted (*op. cit.,* appendix 4).

8.6 The site archive will contain all of the data collected during the investigative work, including records, finds and environmental samples. It will be quantified, ordered, indexed and internally consistent.

8.7 Adequate resources were provided during fieldwork to ensure that records were accurate and internally consistent. Archive consolidation was undertaken immediately following the conclusion of archaeological fieldwork; As part of this consolidation:

- the site records were checked, cross-referenced and indexed as necessary;
- all retained finds were cleaned, conserved, marked and packaged in accordance with the requirements of the recipient museum;
- all retained finds were assessed and recorded by suitably qualified and experienced staff. Pro forma recording sheets were used. Initial artefact dating was integrated with the site matrix; and
- all retained environmental samples were processed by suitably experienced and qualified staff and recorded using pro forma recording sheets.

8.8 In addition to the site records, artefacts, environmental remains and other sample residues, the archive will contain:

- site matrices where appropriate;
- a summary report synthesising the context record;
- a summary of the artefactual record; and
- a summary of the environmental record.

8.9 The integrity of the primary field record was preserved. Security copies were maintained where appropriate.

8.10 The archiving of any digital data arising from the project was undertaken in a manner consistent with professional standards and guidance (ADS/Digital Antiquity 2011).

8.11 An online OASIS form was initiated immediately before fieldwork commenced and key fields will be completed on the Details, Location and Creators forms. Upon completion of the fieldwork, all parts of the OASIS online form were completed for submission to the North Yorkshire Historic Environment Record. This will include an uploaded .pdf version of the entire report (a paper copy will also be included with the project archive). The OASIS form will be validated by NYCCHES once they have received the report, which will become a public document upon submission.

8.12 A copy of all reports and the full site archive will be deposited with Dales Countryside Museum, Hawes on completion of the final report. Deposition will be subject to the agreement of the client. Deposition shall be in accordance with written guidelines on archive standards and procedures (Brown 2011). The archaeological contractor has liaised with the museum curator regarding requirements for ordering, boxing and labelling the site archive.

8.13 In addition to the deposition of the archive, copies of all relevant reports will be deposited with the North Yorkshire Historic Environment Record, the Historic England Regional Science Advisor and the National Monuments Record.

8.14 Unless agreed otherwise with the local planning authority, the archaeological condition will be considered discharged once the archive and all reports, including any warranted publication report, have been approved with and deposited with NYCC.

Further analysis

8.15 Due to the significance of the prehistoric evidence recorded at Wensley Quarry it is recommended that the prehistoric remains recorded during all the phases of work be analysed together as a whole. This work should incorporate the evidence from further specialist analysis upon selected artefacts (see below) and the suggested programme of radiocarbon dating within a single report. The recommended analysis should also include an investigation of spatial and chronological patterns within the evidence and a comparison of the Wensley Quarry evidence with contemporary sites in Wensleydale and the wider region of northern England.

8.16 The post-medieval remains do not require further work.

Publication

8.17 Due to the significance of the recorded evidence it is recommended that the results of the archaeological investigations need to be published within a regional journal such as the Yorkshire Archaeological Journal. This report will form a short synthesised summary account of the archaeological remains, the finds and environmental data set within a local, regional or national context. This will be the final report on the archaeological investigation.

9.0 SPECIALIST FINDS ASSESSMENTS

Lithics

9.1 The lithic assemblages recovered during Phases 1 and 2 at Wensley Quarry have been previously assessed by relevant specialists (Cooper 2006; NAA 2007). A summary of this and the specialist assessments from Phases 3 and 4 are presented below.

Archaeological potential

Phase 1 (Peter Makey)

9.2 A total of 39 items of worked flint and a single chert utilised flake were recovered during the Phase 1 mitigation works. Approximately seven pieces of debitage could not be accurately dated, although these could have been of a later Mesolithic or Neolithic date. The remaining material was characteristic of a later Mesolithic assemblage, with the possible exception of a single discoidal core (PMR02, record 23). This form of core is more frequently found in the regions later Neolithic assemblages, however associations of this typological form are far from perfect.

9.3 Two microliths (records 25 and 26) were present in the assemblage. One piece (record 25) was an idiosyncratic form; the other was a micro-oblique point (LHS) of almost rod form and possessing ancillary basal retouch. These forms typically characterise the very latest development of the microlith and are usually of a very late Mesolithic date.

9.4 A notable feature of the material was the high incidence (20%) of both microscopic and macroscopic edge utilisation. In some cases this was present as a slight edge gloss.

9.5 The cores were generally consistent with the flakes and bladelets, but tended to be much smaller. The cores had clearly been worked down from much larger examples and had been heavily rejuvenated. It appeared that pre-worked cores were being used on the site.

9.6 As a whole, the material probably indicates the presence of settlement activity in the immediate vicinity.

Phase 2 (Peter Rowe)

9.7 A total of 1201 lithics were recovered during Phase 2. The lithic technology of this assemblage demonstrated that the area was utilised in the Late Mesolithic period for the reduction of flint and local chert through the basic technology of direct percussion with hard and soft hammers. Cores were abundant accounting for 4.8% of the assemblage. This is in direct contrast to the type site for this period at Howick where cores accounted for 0.8% of the assemblage (Waddington *et al.* 2003) and more local sites such as Marne Barracks (Young 2006) where cores are all but absent. Locally recorded sites with high proportions of cores exist including Barningham High Moor, Teesdale and Police Field, Weardale (Coggins *et al.* 1989, 167, 172) but these had a fuller complement of tools types than Wensley Quarry.

9.8 The principal product of the Wensley Quarry industry was the parallel sided blade which was reduced to smaller sections, usually by snapping, but with some evidence of the microburin technique. The presence of several microliths suggested that they were one of the intended products of the blade industry, although blades were also used unmodified for basic cutting tasks.

9.9 The remaining tools at the site were all extremely basic with scrapers, burins and denticulates all absent. Retouch was ad hoc in nature, suggesting that a piece would be trimmed for a one-off task, rather than retained as part of a toolkit.

9.10 The assemblage of lithic material suggests that this was an unusual site with no close parallels in contemporary northern assemblages. The composition suggests that this was principally a flint working area. The lack of finished tools suggests that base camp activities such as processing animal carcasses did not take place here although the presence of burnt flint indicates that camp fires were maintained. The variety of raw materials utilised included both local and imported stone suggesting that this was a recognised knapping place, where raw materials may have been collected and traded. It may have been exploited as part of the seasonal round but activities other than knapping were limited.

Phase 3 (Hannah Russ)

9.11 A total of 84 worked stone fragments were recovered during test-pitting undertaken as part of Phase 3 of the mitigation works at Wensley Quarry in 2014. Flint and chert formed the bulk of the assemblage, with a single fragment of possible worked quartz.

9.12 In summary, the assemblage represented evidence for Mesolithic activity at the site, with the remains of bladelet cores and bladelet core fragments being a common feature. Recognised tool forms were rare and this in combination with the numerous core and core fragments and both flint and chert debitage, suggested that tool production was an activity carried out at the site. The presence of pieces with cortex also supported this interpretation. The lack of tools within the assemblage suggested that these may have been taken away from the site for use.

9.13 Burnt flint and chert were common within the assemblage. Some researchers believe that, especially flint, could be modified using heat to make it easier to work (Crabtree and Butler 1964; Mandeville 1973). As it is clear that flint and chert working was taking place at Wensley Quarry, the presence of burnt material may suggest that this is true.

Phase 4 (Frederick Foulds)

9.14 The lithic assemblage recovered during the 2015 mitigation works (Phase 4) comprised 111 items and primarily included flakes and blades produced on a mixture of flint and chert. The selection of flint showed a preference for translucent brown raw material similar to the assemblage recovered during Phase 1. Chert however was more abundant, making up over half the assemblage.

9.15 While much of the material was not diagnostic of a particular period, the blade cores recovered, the high degree of blade fragmentation, and the evidence of microburin technique suggested a Mesolithic date for the assemblage as a whole. The use of chert evidences a possible reliance on locally available raw materials and its use echoes that seen at inland Mesolithic sites elsewhere in the North of Britain (Passmore and Waddington 2009). However, only a single diagnostic artefact was present: a microdenticulate/serrated blade. Microdenticulates are considered to be more common in the Early Mesolithic (Butler 2005), though can occur in the later Mesolithic. If this tool is a serrated blade, however, it belongs to the Early Neolithic.

9.16 The lack of further tools within the assemblage, as well as the lack of retouch on most pieces, provided evidence that reduction was carried out in an expedient manner, with flakes and blades produced for simple tasks and then likely discarded. Production of microliths appeared to have been a primary focus, especially in the vicinity of Trench 2, and it appeared that these, and probably any other formal tools, were curated away from the site.

9.17 Despite the probably later movement of material, there appeared to be a clear distinction in the distribution of the artefacts, with most originating from Trenches 2 and 4, as well as Area 2. These locations were close to a watercourse, which may suggest an association between this and the lithic reduction that took place at the site.

9.18 Overall, the composition of the lithic assemblages primarily evidences Mesolithic activities, with the possible intrusion of later periods. The focus appeared to have been on the production of blades/bladelets for the creation of microliths, which were then removed from the site. The lack of finished tools suggests that the area was principally for flint working, whereas other activities, such as carcass processing, took place elsewhere.

Recommendations

9.19 The composition of the assemblages of lithics recovered during all phases of archaeological mitigation works at Wensley Quarry represent a significant addition to the corpus of material relating to the Mesolithic utilisation of Preston Moor and Wensleydale. The importance of Preston Moor was stated by Laurie (2003, 231) as lithics previously recovered potentially indicated that it was the site of settlement activity and that any contemporary below ground remains would be key to characterising and providing dating evidence for this activity.

9.20 Due to the size and character of the combined assemblage the material is considered to be of regional significance. The whole assemblage should be subject to further specialist analysis and cataloguing in order that it can be presented within the final publication. This analysis should be in line with current guidelines (Andrefsky 2005; Butler 2005) and include considerations of: the chronologies of the material, technologies and knapping sequences, patination, raw materials; debitage size, proportions of identifiable tools against waste; and an examination of potential use wear and re-fitting of pieces if appropriate. Furthermore comparison of the Wensley assemblage with material from other sites in Wensleydale, the northern Pennine uplands and the northern region as a whole will place the material within its wider context.

9.21 Given the importance of the assemblage and its potential for future research, it is recommended that all of the knapped material is curated; items identified as natural can be discarded.

9.22 Sixteen items recovered during Phase 2 of the mitigation works (Appendix D, Table D5) and six items from Phases 3 and 4 (Appendix F, Table F14) have been selected for illustration and these should be presented as black and white line drawings, preferably at a scale of 1:1.

Worked stone assessment (Elizabeth Foulds)

Archaeological potential

9.23 An ironstone object from Trench 1 (Phase 4) had very smooth surfaces with shallow surface scratches. The smooth surface and manner in which it tapered suggested that it may have been used as a polisher. On its own, it was not indicative of a particular period, but it was found below a layer containing flint and chert flakes, which were reported on elsewhere.

9.24 A piece of burnt shale from Trench 4 (403) was found in a mound which also yielded evidence for burning. There was no evidence the object had been modified.

9.25 A fragment of fired clay from Trench 2 (200) from the topsoil was not indicative any particular activity type or period.

Recommendations

9.26 The assemblage does not include any material that is diagnostic of any particular chronological period.

9.27 The possible ironstone polisher is very unusual. Further analysis by a specialist is recommended in order to understand the object type and its cultural context. In addition, subject to specialist advice, if the object is considered to have been used then investigation of any use wear by Scanning Electron Microscope should be undertaken. If any residue from its use is identified, this should be investigated via a scientific technique such as reflected light microscopy or Raman spectroscopy (e.g. Milner *et al*. 2016, section 5.2). Pending the results of analysis, the ironstone object should be fully illustrated and photographed for the report, and retained in the site archive.

9.28 The burnt shale and fired clay are not considered to be significant and can therefore be discarded.

Palaeobotanical and charcoal assessment (Lynne F Gardiner)

Archaeological potential

9.29 All samples from Phase 3 originated from shovel test-pits. The magnetic matter from the scanning of the fine fraction residues from these did not produce any hammerscale. Charcoal recovery was poor with only samples 1006 AA and 1006 AD yielding any, albeit in very small quantities. These very few fragments were identified as oak (*Quercus* sp.). Only one sample (1008 AA) yielded charred plant remains; single grains of bread wheat (*Triticum aestivum ssp. aestivum*), cf. barley (cf. *Hordeum sp*.) and cf. oat (cf. *Avena sp*.). The grains were heavily abraded and only the bread wheat grain may be suitable for AMS dating, however, these grains were from a heavily rooted sample with earthworm capsules which indicated a high probability that these grains were intrusive.

9.30 A total of 211kg (191 l) of sediment from eleven samples was processed as part of the Phase 4 mitigation works. The flots consisted mostly of roots.

9.31 Three samples yielded charcoal. The sample from the fill of a large circular feature (1012 AA) from Area 1 yielded 0.62g of twig-like charcoal. The majority of the fragments identified could be attributed to heather (*Calluna vulgaris*). The two other charcoal yielding samples were from Area 2. A single, very small fragment of oak (*Quercus sp.)* charcoal was observed in the sample from the fill of linear 2012. The greatest weight of charcoal recovered from a sample was from the charcoal fill of posthole/pit 2020. A total of 41.85g was observed and the fragments identified were oak and *Alnus*-type (either hazel- *Corylus avellana* or alder- *Alnus glutinosa*).

Recommendations

9.32 No further palaeobotanical work is recommended upon the palaeoenvironmental material recovered during all four phases of work at Wensley Quarry. However, charcoal from feature 2020 would be a suitable for radiocarbon dating.

9.33 All the sample residues, flots and plant remains may be discarded. Depending on the results of radiocarbon dating, the charcoal can be discarded.

Radiocarbon dating (Gav Robinson)

Archaeological potential

9.34 Radiocarbon dating is a versatile and essential method of dating organic material independently of often inaccurate typological-based chronologies (Aitken 1990, 1).

9.35 The importance of radiocarbon dating is clearly stated in all current regional, national and thematic research framework documents (for example Manby Moorhouse and Ottaway 2003, 42; Haselgrove *et al.* 2001, 3-7; Petts and Gerrard 2006, 130-1, 136-7; Brennand 2007, e.g. 34, 38-9; EH 2010, 12; Blinkhorn and Milner 2014, 33-4). Most of these guideline documents also highlight that multiple dating of the same material or context and the use of statistical analysis to refine the date ranges achieved are routine requirements for most projects (Manby, King and Vyner 2003, 42; Haselgrove *et al.* 2001, 3-7; Petts and Gerrard 2006, 130-1, 136-7).

9.36 With regard to the Wensley Quarry project and the potential association of the features recorded within Area 2 with the regionally significant flint assemblage there is a clear need to independently date their use. Conversely, this dating may indicate that the features were related to other important early prehistoric activity in the vicinity.

9.37 A detailed and expensive programme of multiple radiocarbon dating combined with statistical analysis of the results is, however, deemed to be beyond the scope of the Wensley project as only small amounts of datable material were recovered from the features in question (see Appendix E and F).

9.38 Radiocarbon dating of the charred plant remains recovered from posthole/pit 2020 and gully 2012 will accurately test the association of these features with the lithic material.

9.39 Also, as the charcoal from feature 2020 has been shown to include both oak and alder/hazel then radiocarbon dating would confirm the presence of these trees/shrubs close to that location. In other words, radiocarbon dating of charcoal provides direct evidence of the types of trees/shrubs present in the vicinity free of the problems of environmental reconstruction from pollen data alone (Hall and Huntley 2007, 16, 25-7).

9.40 Dual dating of the material from feature 2020 is considered appropriate due the potential importance (if early prehistoric in date) as this will increase the confidence of the date ranges achieved, and will highlight any unexpected intrusive material (see Gibson and Bayliss 2009). Simple statistical analysis (pooled means) may also refine the date ranges achieved from the dual dating. In this way the significance of the actual measurement of the ages of the samples will be enhanced.

9.41 However, if the features prove to be unrelated to the prehistoric activity on Preston Moor then their significance would be less and dual dating would not be appropriate. Hence it would be advisable (if timescales permit) to carry out this dating in two phases and to discard the second sample from feature 2020 if the first measurements return an Iron Age or later date.

9.42 The selection of material to be dated is crucial to the interpretation of the measured dates, careful attention should be taken of the material submitted and the depositional processes that led to its inclusion within the contexts. This is an important issue that is fundamental to achieving a meaningful age measurement that will contribute to an accurate interpretation of the context in question (Bayliss 1998; Gibson and Bayliss 2009, 41, 67-72; Haselgrove *et al.* 2001, 5; Ashmore 1999).

9.43 All of the material to be dated should be from relatively short-lived species and twig charcoal should be favoured over timbered or heartwood fragments. In this way artificially young dates created by the 'old wood effect' (Waterbolk 1971; Gillespie 1984; Aitken 1990) should be minimised. Also, as detailed above, dual dating of contexts can be used to check for residuality of the organic remains.

Recommendations

9.44 Radiocarbon dating of suitable material from the features recorded in Area 2 will enhance the contribution of the recovered information to stated regional, thematic and national research priorities listed in Section 10.0.

9.45 Considering the potential for all of the features and indeed the tree boles recorded in Areas 1 and 2 to be of a Mesolithic date radiocarbon dating of a large number of these would be appropriate. However, after careful consideration of the material available for submission (Appendix I) only feature 2020 is suitable for dual dating. A small amount of material was also recovered from gully 2012 which would be suitable for a single date. Due to the potential importance of these features (if Mesolithic in date) and the presence of both oak and alder-type charcoal (within feature 2020) three radiocarbon dates are deemed appropriate.

9.46 However, given the uncertainty of the chronology of these features it is proposed that two dates be measured (one from each feature) in the first instance and if these successfully indicate an early prehistoric date (Mesolithic, Neolithic or Bronze Age) another sample from feature 2020 be submitted for measurement.

10.0 STATEMENT OF POTENTIAL

10.1 The Mesolithic is defined as the period after the last glacial period (c.9-10,00BC) to the transition to farming in the Neolithic (c.4000BC). It was a long period of dramatic environmental and technological change which is still poorly understood (Manby 2003, 31-3; Petts and Gerrard 2006, 11-13; Milner *et al.* 2013, 9; Finlayson 1998, 7; EH 2010, 8; Spikins 2008, 1).

10.2 In the UK the vast majority of Mesolithic sites are, however, hidden below modern landscapes (EH 2010), such as that found at Wensley Quarry and are notoriously difficult to find and investigate (Petts and Gerrard 2006, 11). Furthermore, due to the age of these sites many have been completely ploughed out and survive only as scatters of material within the topsoil (EH 2010, 14), whilst others have been submerged due to rising sea-levels (Petts and Gerrard 2006, 11-3). To date, very few large assemblages of Mesolithic flint have been recovered from the North-East (*op.*

cit., fig. 9) or the northern Pennine Dales (Laurie 2003), and fewer still intact associated remains have been discovered (Petts and Gerrard 2006, 15).

10.3 Due to their ephemeral nature Mesolithic remains are notoriously difficult to identify and are often 'invisible' to modern prospecting techniques such as geophysical and earthwork surveys. As a consequence of this the Mesolithic Research and Conservation Framework (Blinkhorn and Milner 2014), carried out in partnership between Historic England, University of York and the Council for British Archaeology, highlighted the need for further research to develop robust strategies for prospection of Mesolithic sites. This included the broader use of fieldwalking and test-pitting to identify the sometimes small and discrete nature of Mesolithic lithic scatters as well as larger palimpsest assemblages (*op. cit.*, 30) such as that found at Wensley Quarry. The Mesolithic Research and Conservation Framework also states that where these methodologies have been applied and have been successful in identifying locations of Mesolithic activity they should communicated across all sectors; the best way of achieving this would be through the publication of said results.

10.4 In addition to the Mesolithic Research and Conservation Framework; Historic England's (now Historic England) Thematic Research Strategies for Prehistory (EH 2010) outlines a number of themes and critical priorities for the continued understanding and protection of prehistoric sites across England. Five of these themes and three critical priorities directly relate to the work carried out at Wensley Quarry.

10.5 The most relevant of these is concerned with the understanding of sites without structures (Critical Priority 3) with particular emphasis on improving characterisation and the understanding of ephemeral sites, especially lithic scatters (*op. cit.,* 14). There was very little evidence of physical structures to identify Wensley Quarry as a traditional site. It has only been through the fieldwalking, test-pitting, topographical survey, trenching and monitoring of topsoil removal that this regionally significant assemblage was recovered. Correct investigative techniques, such as those carried out at Wensley Quarry, together with the appropriate publication of such results will help to inform further management of ephemeral sites and help to mitigate their loss in the future.

10.6 Another major theme within the research strategy is concerned with landscape perspectives (Theme PR1 and Critical Priorities 1 and 2) and states that prehistoric sites can only be properly understood as part of a wider landscape (*op. cit.*, 11-3). The site at Wensley Quarry is most likely part of a much larger concentration of prehistoric sites in the surrounding area which are still poorly understood (Laurie 2003, 230-1). This is demonstrated by the retrieval of similar lithics from Stake Fell and Semer Water which show similarities to the Wensley material. It is therefore clear that the lithic assemblage recovered at Wensley Quarry needs to be studied within its contemporary landscape.

10.7 Two further important themes identified by Historic England relate to how the evidence recorded at Wensley Quarry should be studied. Theme PR5 'Realising the full potential of scientific techniques' states that scientific dating methods as well as study of organic residues and microwear should be utilised where practical (EH 2010, 15). It is clear that radiocarbon dating of suitable material from the potential Mesolithic features recorded in Area 2 and analysis of microwear and potential residues on the ironstone object and selected worked lithics will greatly enhance the interpretation of the recorded remains.

10.8 Furthermore, the collation of existing palaeoenvironmental evidence for the area surrounding Preston Moor in combination with radiocarbon dating of the identified species within the recovered charcoal assemblages will add data regarding theme PR6 'studying human interactions with the environment' (*loc. cit.*).

10.9 One further area consistently identified in regional research agendas and other guideline documents is a chronic under-reporting of fieldwork from developer-funded projects. The need to make available the results of smaller interventions, and to publish larger developer-funded work, is stated both at regional and national level (EH 1997, 18; EH 2010, 17; Petts and Gerard 2006, 132).

10.10 Furthermore, although the regional research agenda for Yorkshire is yet to be completed several of the stated research themes and priorities in the North East Regional Research Framework (NERF; Petts and Gerrard 2006) are also relevant to the Wensley Quarry site due to its proximity to the Durham Pennine uplands.

10.11 Of prime importance is the 'dating and chronology' of Mesolithic occupation (M2) where scientific dating of *in situ* Mesolithic remains is essential (*op. cit.,* 122). Also the framework document states the need to develop new field methodologies for the prospection and recording of Mesolithic remains (Theme M4). Further analysis of the Wensley evidence also has the potential to help address five of the ten stated key research priorities (*op. cit.,* 123-6) including: questioning the apparent lack of Early Mesolithic sites in the North-East (Miii); the Mesolithic/Neolithic transition (Miv), analysis of lithics (Mv); vegetation sequences (Mvi) and activity and occupation in the wider landscape (Mvii).

10.12 In addition to the large lithic assemblage recovered at Wensley Quarry; a burnt mound, of prehistoric origin, located next to a watercourse was also discovered at the eastern end of the site. This feature contained numerous fragments of burnt flint and chert. This feature is also of some importance as prehistoric burnt mounds are not widely understood and could have a number of potential uses. Though the material recovered from this feature does not require further specialist analysis (other than the residual flint) and no suitable samples for radiocarbon dating were retrieved, the feature itself needs to be part of the publication. A brief consideration of similar sites in the vicinity and the wider region should be included.

10.13 In conclusion it is clear that further analysis of the lithics recovered during all the phases of the project along with consideration of their regional context in combination with radiocarbon dating of material from the potentially associated cut features recorded within Area 2 (Phase 4) is required. This analysis has the potential to provide new vital information regarding important critical priorities and themes stated at the regional, thematic and national level and hence should be published within a regional journal.

10.14 Conversely, no further work is recommended upon the palaeoenvironmental material recovered or the post-medieval flue and quarry pits associated with Keld Heads smelt mill.

10.15 Considering the results of the investigations and the significance of the assemblages of worked flint recovered to date, archaeological monitoring of any further soil-stripping especially in the vicinity of the watercourse is recommended.

11.0 CONCLUSION AND RECOMMENDATIONS

11.1 The archaeological mitigation works undertaken at Wensley Quarry between 2002 and 2015 have revealed important prehistoric (predominantly Mesolithic) remains comprising an assemblage of 1436 lithics, a small number of potentially contemporary features and a Bronze Age burnt mound. The combined collection of lithics is potentially the largest assemblage recovered in Wensleydale and ranks amongst the larger collections recovered from North Yorkshire and Durham (Bonsall 1977; Laurie 2003). This assemblage and the potentially associated features are regionally significant and further analysis will provide new data relating to current regional, thematic and national research priorities. In summary, further analysis will improve present understanding of Mesolithic utilisation of Preston Moor, Wensleydale and the wider North-East region.

11.2 The proposed analysis stage of work will include:

- further specialist analysis and cataloguing of the entire lithic assemblage from all phases of work in line with current guidelines (Andrefsky 2005; Butler 2005) and comparison of the material with assemblages recovered from other sites in Wensleydale, the northern Pennine uplands and the North-East region;

- illustration of sixteen lithics recovered during Phase 2 and six items from Phases 3 and 4;

- specialist analysis of the ironstone object and, subject to specialist advice, investigation of any use wear by Scanning Electron Microscope and any residues present via a scientific technique such as reflected light microscopy or Raman spectroscopy. Pending the results of analysis, the ironstone object should be fully illustrated, photographed and retained in the site archive;

- a sample of charcoal from features 2020 and potentially 2012 should be submitted for radiocarbon dating. Should these return early prehistoric dates one more sample (preferably from different tree/shrub species) will be submitted;

- due to the significance of the results of the mitigation works the prehistoric remains recorded during all phases of work should be analysed and reported on within their regional context incorporating the results of the specialist analysis and radiocarbon dating. This should include an investigation of spatial and chronological patterns within the lithics;

- in line with regional and national guidelines the results of this analysis should be published within a regional journal such as the Yorkshire Archaeological Journal; and

- the site archive for all phases of work (paper records, artefactual and environmental material) will be transferred to the Dales Countryside Museum at Hawes. All material will be appropriately packaged for long-term storage in accordance with both national guidelines and to the requirements of the museum.

11.3 Also if further extension to quarrying in this area is proposed archaeological monitoring of any soil-stripping especially in the vicinity of the watercourse is recommended.

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APPENDIX A

CONTEXT CATALOGUES

Phase 3 test-pitting

Context	Trench	Description	Notes
1001		Topsoil	
1002		Subsoil	
1003		Bedrock	
1004	TP 10	Possible post setting	
1005	TP 10	Fill within 1004	
1006	TP 69	Reddish yellow subsoil	peatier than 1002
1007	TP 128	Possible post setting	VOIDED
1008	TP 136	Topsoil	more charcoal than 1001
1009	TP 216	Layer beneath 1006 greyish brown.	
1010	TP 256	Thick subsoil deposit at south-east of area adjacent to barn.	
1011	TP 256	Clay underneath 1010	
1012	TP 324	Clay underneath 1006	
1013	Flue North	Construction cut for flue wall 1014	
1014	Flue North	Flue wall - east	
1015	Flue North	Rubble infill	
1016	Flue North	Structure number for northern section of flue.	
1017	Flue North	Flue wall west	
1018	Flue North	Blue deposit underneath 1015	
1019	Flue North	Brown clay infilling fissures in base of flue	
1020	Flue South	Structure number for southern section of flue	
1021	Flue South	Flue wall west	
1022	Flue South	Flue wall east	
1023	Flue South	1023 cut in bedrock	
1024	Flue North	cut of gully in base of flue north.	
1025	Flue North	Construction cut for wall 1017	
1026	Flue North	Bank material either side of flue	
1027		VOID	
1028		VOID	
1029	Flue South	rubble infill of flue south	
1030	Flue South	bank material either side of flue south	
1031	Flue South	Blue clay above bedrock flue south	
1032	Flue South	Construction cut for wall 1021	
1033	Flue South	Loose mid brown silt filling 1023	

Phase 4 trial-trenching

Context	Same as	Trench	Description	Relationships	Notes
100	200, 300, 400	1	Topsoil		
101	202	1	Subsoil	same as (202)	
102		1	Cut of gully		
103		1	Fill of [102]		
104	101	1	Trapped subsoil beneath (101)	same as (203)	Polished stone. Sampled bulk 104aa x 2 tubs
105		1	Bedrock natural		
200	100, 300, 400	2	Topsoil		
201	208	2	pale grey subsoil	same as (208)	Sieved onsite
202	101	2	orange clayed subsoil	same as (101)	
203	104	2	light brown clay beneath (202)	same as (104)	Sampled bulk 203aa x 2 tubs
204		2	Bedrock natural		
205		2	Stone rubble	beneath (201)	
206		2	Cut of possible	Filled by (207)	

Context	Same as	Trench	Description	Relationships	Notes
			wall or gully.		
207		2	Fill of gully	fills [206]	
208	201	2	pale grey subsoil	same as (201)	
300	100, 200, 400	3	Topsoil		
301		3	Subsoil		Sampled bulk 301aa 2 tubs
302		3	Bedrock natural		
303		3	Stone dump		
400	100, 200, 300	4	Topsoil		
401		4	Subsoil		
402		4	Bedrock natural		
403		4	Burnt mound		Sampled bulk 403aa x 3 tubs

Phase 4 monitoring

Context	Area	Interpretative description	Relationships	"Trench	Notes
1000	1	Topsoil		Area 1	
1001	1	Yellow sandy clayey natural		Area 1	
1002	1	Bedrock natural		Area 1	
1003	1	Cut of tree bole	Filled by (1004), (1005)	Area 1	Drawn, plotted and recorded
1004	1	Fill of tree bole (1003)	Fills (1003)	Area 1	
1005	1	Fill of tree bole (1003)	Fills (1003)	Area 1	
1006	1	Spread of material beside tree bole (1003)		Area 1	
1007	1	Cut of tree bole	Filled by (1008)	Area 1	
1008	1	Fill of tree bole	Fills (1007)	Area 1	
1009	1	Cut of tree bole	Filled by (1010)	Area 1	
1010	1	Fill of tree bole	Fills (1009)	Area 1	
1011	1	Cut of large circular feature	Filled by (1012)	Area 1	
1012	1	Fill of large circular feature.	Fills (1011)	Area 1	
1013	1	Cut of tree bole	Filled by (1014). Cut by (1011)	Area 1	
1014	1	Fill of tree bole	Fills (1013), cut by (1011)	Area 1	
1015	1	Cut of tree bole	Filled by (1016), cut by (1011)	Area 1	
1016	1	Fill of tree bole	Fills (1015), cut by (1011)	Area 1	
1017	1	Cut of tree bole.	Filled by (1018) cuts tree bole (1019)	Area 1	
1018	1	Fill of tree bole	Fills (1017)	Area 1	
1019	1	Cut of tree bole	Filled by (1020), cut by (1011), (1017)	Area 1	
1020	1	Fill of tree bole	Fills (1019)	Area 1	
1021	1	Cut of tree bole	Filled by (1022)	Area 1	
1022	1	Fill of tree bole	Fills (1021)	Area 1	
1023	1	Cut of tree bole	Filled by (1024)	Area 1	
1024	1	Fill of tree bole	Fills (1023)	Area 1	
1025	1	Cut of tree bole		Area 1	Plotted
1026	1	Fill of tree bole		Area 1	Plotted
1027	1	Cut of tree bole		Area 1	Plotted
1028	1	Fill of tree bole		Area 1	Plotted
1029	1	Cut of tree bole		Area 1	Plotted
1030	1	Fill of tree bole		Area 1	Plotted
1031	1	Cut of tree bole		Area 1	Plotted
1032	1	Fill of tree bole		Area 1	Plotted
1033	1	Cut of tree bole		Area 1	Plotted
1034	1	Fill of tree bole		Area 1	Plotted
1035	1	Cut of tree bole		Area 1	Plotted
1036	1	Fill of tree bole		Area 1	Plotted

Context	Area	Interpretative description	Relationships	"Trench	Notes
1037	1	Cut of tree bole		Area 1	Plotted
1038	1	Fill of tree bole		Area 1	Plotted
1039	1	Cut of tree bole		Area 1	Plotted
1040	1	Fill of tree bole		Area 1	Plotted
1041	1	Cut of tree bole		Area 1	Plotted
1042	1	Fill of tree bole		Area 1	Plotted
1043	1	Cut of tree bole		Area 1	Plotted
1044	1	Fill of tree bole		Area 1	Plotted
1045	1	Cut of tree bole		Area 1	Plotted
1046	1	Fill of tree bole		Area 1	Plotted
1047	1	Cut of tree bole		Area 1	Plotted
1048	1	Fill of tree bole		Area 1	Plotted
1049	1	Cut of tree bole		Area 1	Plotted
1050	1	Fill of tree bole		Area 1	Plotted
1051	1	Cut of tree bole		Area 1	Plotted
1052	1	Fill of tree bole		Area 1	Plotted
1053	1	Cut of tree bole		Area 1	Plotted
1054	1	Fill of tree bole		Area 1	Plotted
1055	1	Cut of tree bole		Area 1	Plotted
1056	1	Fill of tree bole		Area 1	Plotted
1057	1	Cut of tree bole		Area 1	Plotted
1058	1	Fill of tree bole		Area 1	Plotted
1059	1	Cut of tree bole		Area 1	Plotted
1060	1	Fill of tree bole		Area 1	Plotted
1061	1	Cut of tree bole		Area 1	Plotted
1062	1	Fill of tree bole		Area 1	Plotted
1063	1	Cut of tree bole		Area 1	Plotted
1064	1	Fill of tree bole		Area 1	Plotted
1065	1	Cut of tree bole		Area 1	Plotted
1066	1	Fill of tree bole		Area 1	Plotted
1067	1	Cut of tree bole		Area 1	Plotted
1068	1	Fill of tree bole		Area 1	Plotted
1069	1	Cut of tree bole		Area 1	Plotted
1070	1	Fill of tree bole		Area 1	Plotted
1071	1	Cut of tree bole		Area 1	Plotted
1072	1	Fill of tree bole		Area 1	Plotted
1073	1	Cut of tree bole		Area 1	Plotted
1074	1	Fill of tree bole		Area 1	Plotted
1075	1	Cut of tree bole		Area 1	Plotted
1076	1	Fill of tree bole		Area 1	Plotted
1077	1	Cut of tree bole		Area 1	Plotted
1078	1	Fill of tree bole		Area 1	Plotted
1079	1	Cut of tree bole		Area 1	Plotted
1080	1	Fill of tree bole		Area 1	Plotted
1081	1	Cut of tree bole		Area 1	Plotted
1082	1	Fill of tree bole		Area 1	Plotted
1083	1	Cut of tree bole		Area 1	Plotted
1084	1	Fill of tree bole		Area 1	Plotted
1085	1	Cut of tree bole		Area 1	Plotted
1086	1	Fill of tree bole		Area 1	Plotted
1087	1	Cut of tree bole		Area 1	Plotted
1088	1	Fill of tree bole		Area 1	Plotted
1089	1	Cut of tree bole		Area 1	Plotted
1090	1	Fill of tree bole		Area 1	Plotted
1091	1	Cut of tree bole		Area 1	Plotted
1092	1	Fill of tree bole		Area 1	Plotted
1093	1	Cut of tree bole		Area 1	Plotted
1094	1	Fill of tree bole		Area 1	Plotted
1095	1	Cut of tree bole		Area 1	Plotted
1096	1	Fill of tree bole		Area 1	Plotted
1097	1	Cut of tree bole		Area 1	Plotted
1098	1	Fill of tree bole		Area 1	Plotted

Context	Area	Interpretative description	Relationships	"Trench	Notes
1099	1	Cut of tree bole		Area 1	Plotted
1100	1	Fill of tree bole		Area 1	Plotted
1101	1	Cut of tree bole		Area 1	Plotted
1102	1	Fill of tree bole		Area 1	Plotted
1103	1	Cut of tree bole		Area 1	Plotted
1104	1	Fill of tree bole		Area 1	Plotted
1105	1	Cut of tree bole		Area 1	Plotted
1106	1	Fill of tree bole		Area 1	Plotted
1107	1	Cut of tree bole		Area 1	Plotted
1108	1	Fill of tree bole		Area 1	Plotted
1109	1	Cut of tree bole		Area 1	Plotted
1110	1	Fill of tree bole		Area 1	Plotted
1111	1	Cut of tree bole		Area 1	Plotted
1112	1	Fill of tree bole		Area 1	Plotted
1113	1	Cut of tree bole		Area 1	Plotted
1114	1	Fill of tree bole		Area 1	Plotted
1115	1	Cut of tree bole		Area 1	Plotted
1116	1	Fill of tree bole		Area 1	Plotted
1117	1	Cut of tree bole		Area 1	Plotted
1118	1	Fill of tree bole		Area 1	Plotted
2000	2	Topsoil		Area 2	
2001	2	Peaty infill of watercourse.		Area 2	
2002	2	Pale sandy fill beneath (2001)		Area 2	
2003	2	Bedrock natural		Area 2	
2004	2	Sandy clay		Area 2	
2005	2	Bright yellow thick clay making up the bank of the watercourse.		Area 2	
2006	2	Cut of linear	Filled by (2007), (2008)	Area 2	
2007	2	Fill of linear (2006)		Area 2	
2008	2	Fill of linear (2006)		Area 2	
2009	2	Cut of linear	Filled by (2011), (2012)	Area 2	
2010	2	Fill of linear (2009)		Area 2	
2011	2	Fill of linear (2009)		Area 2	
2012	2	Cut of linear	Filled by (2012)	Area 2	
2013	2	Fill of linear (2012)		Area 2	
2014	2	VOIDED		Area 2	
2015	2	Patch of grey palaeosol infilling hollow		Area 2	
2016	2	Patch of grey palaeosol infilling hollow		Area 2	
2017	2	Patch of grey palaeosol infilling hollow		Area 2	
2018	2	Patch of grey palaeosol infilling hollow		Area 2	
2019	2	Patch of grey palaeosol infilling hollow		Area 2	
2020	2	Cut of post hole or small burnt pit.	Filled by (2020)	Area 2	
2021	2	Charcoal fill of (2020)		Area 2	No finds but 100% sampled.
2022	2	Cut of tree bole	Filled by (2022)	Area 2	
2023	2	Fill of (2022)		Area 2	
2024	2	Recut within (2006)	Filled by (2008)	Area 2	
2025	2	Recut within (2009)	Filled by (2011)	Area 2	

APPENDIX B

PHASE 3 TEST-PITTING RESULTS

Pit	Topsoil depth (cm)	Subsoil depth (cm)	Contexts beneath subsoil - depth (cm)	Flint qty	Other finds	Notes
1	5	35		0	0	
2	10	30		0	0	
3	11	28		0	0	
4	12	22		0	0	
5	10	20		2	0	
6	50	5		0	0	
7	10	3		0	0	
8	10	16		0	0	
9	12	15		0	0	
10	11	25		0	0	
11	12	15		0	0	
12	25	0		0	0	
13	22	0		0	0	
14	20	0		0	0	
15	16	14		0	0	
16	7	9		0	0	
17	16	4		1	0	
18	28	0		0	0	
19	25	5		0	0	
20	32	10		0	0	
21	36	0		0	0	
22	15	10		2	0	
23	28	4		0	0	
24	10	10		1	0	Unworked flint in topsoil.
25	20	3		0	0	
26	10	5		0	0	Bedrock at base.
27	16	28		0	0	Unworked flint in topsoil.
28	15	0		0	0	
29	10	6		0	0	Bedrock at base.
30	20	0		0	0	Bedrock at base.
31	17	29		0	0	Bedrock at base.
32	14	0		0	0	Bedrock at base.
33	25	0		0	0	Unworked flint in topsoil.
34	14	16		0	0	Fissure in bedrock not bottomed.
35	17	5		1	0	Possible coal shale.
36	20	4		0	0	Two flints from topsoil.
37	10	0		0	0	Bedrock at base.
38	11	31		0	0	
39	18	28		0	0	Bedrock at base.
40	5	0		0	0	Adjacent to flue.
41	14	10		0	0	
42	16	14		0	0	Bedrock at base
43	9	13		0	0	Bedrock at base
44	19	5		1	0	Microlith in topsoil.
45	26	0		0	0	
46	28	0		0	0	Bedrock at base.
47	12	4	N/A	0	0	
48	24	N/A	N/A	0	0	Pit in swampy area.
49	7	26	N/A	0	0	
50	15	N/A	N/A	0	0	
51	23	5	N/A	0	0	Subsoil in hollow of bedrock
52	8	13	N/A	0	0	
53	10	20	N/A	0	0	
54	40	N/A	N/A	0	0	Natural clay by small stream.

Pit	Topsoil depth (cm)	Subsoil depth (cm)	Contexts beneath subsoil - depth (cm)	Flint qty	Other finds	Notes
55	10	21	N/A	0	0	Sandstone.
56	5	21	N/A	0	0	
57	15	N/A	N/A	0	0	Bedrock at base.
58	10	17	N/A	0	0	
59	9	21	N/A	0	0	Natural clay
60	21	N/A	N/A	0	0	Bedrock at base.
61	13	15	N/A	0	0	Bedrock at base.
62	21	13	N/A	0	0	Clayey
63	30	N/A	N/A	0	0	Not on grid but placed to look at suspicious mound.
64	14	N/A	N/A	0	0	Bed rock at base.
65	29	N/A	N/A	0	0	Bed rock at base.
66	19	N/A	N/A	0	2	Bed rock at base. Coal
67	17	N/A	N/A	0	0	Bed rock at base.
68	7	15	N/A	2	0	Natural clay at base with two unworked flint.
69	26	4	N/A	3	0	Adjacent to modern stream.
70	13	N/A	N/A	0	0	1 Possible unworked flint. Bedrock at bse.
71	8	17	N/A	1	0	1 Possible unworked flint. Bedrock at bse.
72	42	N/A	N/A	0	0	Bedrock at base.
73	16	N/A	N/A	0	0	Bedrock at base.
74				0	0	
75	10	25	N/A	1	0	5 Possible unworked flint. Bedrock at bse.
76	16	N/A	N/A	0	0	Bedrock at base.
77	12	15	N/A	0	0	5 Possible unworked flint. Bedrock at bse.
78	13	13	N/A	0	0	Bedrock at base.
79	22	N/A	N/A	0	0	Bedrock at base.
80	30	N/A	N/A	0	0	Bedrock at base.
81	14	N/A	N/A	1	0	Natural clay at base.
82	14	23	N/A	0	0	Bedrock at base.
83	15	15	N/A	0	0	Bedrock at base.
84	17	N/A	N/A	0	0	Bedrock at base.
85	40	N/A	N/A	0	0	Bedrock at base.
86	6	21	N/A	0	0	Bedrock at base.
87	31	N/A	N/A	0	0	Bedrock at base.
88	12	16	N/A	0	0	Natural clay at base.
89	13	16	N/A	0	0	Bedrock at base.
90	8	10	N/A	1	0	Natural clay at base.
91	28	N/A	N/A	0	0	Bedrock at base.
92	11	14	N/A	0	0	Bedrock at base.
93	10	19	N/A	0	0	Bedrock at base.
94	18	N/A	N/A	0	0	Natural stone bedrock.
95	14	18	N/A	0	0	Natural stone bedrock.
96	8	18	N/A	0	0	Natural stone bedrock.
97	14	22	N/A	0	0	Natural stone bedrock.
98	15	10	N/A	0	0	
99	62	N/A	N/A	0	0	West side taken up by natural stone formation.
100	6	10	N/A	0	0	Natural stone bedrock.
101	16	N/A	N/A	0	0	Natural stone bedrock.
102	8	N/A	N/A	0	0	Very shallow topsoil onto bedrock.
103	10	N/A	N/A	0	0	Very shallow topsoil onto bedrock.
104	12	18	N/A	0	0	Not bottomed due to fissure.
105	7	21	N/A	0	0	Natural stone bedrock.
106	14	17	N/A	0	0	Natural stone bedrock.
107	19	N/A	N/A	0	0	Natural stone bedrock.
108	15	N/A	N/A	0	0	Natural stone bedrock.

Pit	Topsoil depth (cm)	Subsoil depth (cm)	Contexts beneath subsoil - depth (cm)	Flint qty	Other finds	Notes
109	24	N/A	N/A	0	0	Natural stone bedrock.
110	9	13	N/A	0	0	Natural stone bedrock.
111	29	N/A	N/A	0	0	Natural stone bedrock.
112	35	N/A	N/A	0	0	Natural stone bedrock.
113	16	19	N/A	0	0	Natural clay at base.
114	20	N/A	N/A	0	0	Natural stone bedrock.
115	25	4	N/A	0	0	Natural stone bedrock.
116	36	N/A	N/A	2	0	Natural stone bedrock.
117	16	N/A	N/A	0	0	Natural stone bedrock.
118	17	N/A	N/A	0	0	Natural stone bedrock.
119	40	20	N/A	0	0	Natural stone bedrock.
120	10	N/A	N/A	0	0	Natural stone bedrock.
121	19	N/A	N/A	0	0	Natural stone bedrock.
122	22	N/A	N/A	0	0	Natural stone bedrock.
123	11	34	N/A	0	0	Natural stone bedrock.
124	38	14	N/A	0	1	Natural stone bedrock. Possible worked stone and unworked flint.
125	14	16	N/A	0	0	Natural clay at base.
126	11	21	N/A	0	5	Natural clay at base and brick or degraded limestone.
127	28	N/A	N/A	0	0	Natural stone bedrock.
128	21	N/A	N/A	0	0	Natural stone bedrock. Worked hole in base of bedrock. Plan 2 sheet 2
129	20	N/A	N/A	0	0	Natural stone bedrock.
130	21	N/A	N/A	0	0	Natural stone bedrock.
131	19	N/A	N/A	0	0	Natural stone bedrock.
132	15	N/A	N/A	0	0	Natural stone bedrock.
133	17	N/A	N/A	2	0	Natural clay at base.
134	14	N/A	N/A	0	0	Natural stone bedrock.
135	13	N/A	N/A	0	0	Natural stone bedrock.
136	14	32	N/A	0	0	Sampled.
137	12	13	N/A	0	0	Natural stone bedrock.
138	8	20	N/A	0	0	Natural stone bedrock.
139	8	14	N/A	0	0	Natural stone bedrock.
140	26	N/A	N/A	0	0	Bedrock at base.
141	23	N/A	N/A	0	0	Bedrock at base.
142	18	13	N/A	0	0	Clay at base.
143	26	N/A	N/A	0	0	Bedrock at base.
144	32	N/A	N/A	0	0	Bedrock at base.
145	21	N/A	N/A	0	0	Bedrock at base.
146	30	N/A	N/A	0	0	Bedrock at base.
147	5	N/A	N/A	0	0	Bedrock at base.
148	26	N/A	N/A	0	0	Bedrock at base.
149	15	18	N/A	0	0	Bedrock at base.
150	12	17	N/A	0	0	Bedrock at base.
151	17	N/A	N/A	0	0	Bedrock at base.
152	22	N/A	N/A	0	0	Clay at base.
153	20	N/A	N/A	0	0	Bedrock at base.
154	16	21	N/A	0	0	Bedrock at base.
155	36	N/A	N/A	0	0	Bedrock at base.
156	20	N/A	N/A	0	0	Clay at base.
157	14	N/A	N/A	0	0	Bedrock at base.
158	30	N/A	N/A	0	0	Bedrock at base.
159	24	N/A	N/A	0	0	Clay at base.
160	10	23	N/A	0	0	Clay at base.
161	10	24	N/A	0	0	Clay at base.
162	29	N/A	N/A	0	0	Bedrock at base.
163	17	14	N/A	0	0	Possible flint. Peaty topsoil onto subsoil.
164	25	N/A	N/A	0	0	Natural stone formation at base.

Pit	Topsoil depth (cm)	Subsoil depth (cm)	Contexts beneath subsoil - depth (cm)	Flint qty	Other finds	Notes
165	13	18	N/A	1	0	Natural stone formation at base. Three possible flints.
166	22	N/A	N/A	0	0	Natural stone at base.
167	17	20	N/A	0	0	Natural stone at base.
168	25	N/A	N/A	0	0	Natural stone at base.
169	12	N/A	N/A	0	0	Natural stone at base.
170	40	N/A	N/A	0	0	Not bottomed due to natural fissure.
171	20	N/A	N/A	0	0	Natural stone at base.
172	10	N/A	N/A	0	0	Natural stone at base.
173	13	N/A	N/A	0	0	Natural stone at base.
174	15	N/A	N/A	0	0	Natural stone at base.
175	20	N/A	N/A	0	0	Natural stone at base.
176	17	N/A	N/A	0	0	Natural stone at base.
177	23	N/A	N/A	0	0	Natural stone at base.
178	34	N/A	N/A	0	2	Natural stone at base.
179	19	12	N/A	0	6	Natural stone at base. Degraded brick fragments? Sandstone
180	40	N/A	N/A	0	0	Natural clay at base.
181	32	N/A	N/A	0	0	Not bottomed due to natural fissure.
182	30	N/A	N/A	0	0	Bedrock.
183	7	N/A	N/A	0	0	Bedrock.
184	20	N/A	N/A	0	0	Bedrock.
185	13	N/A	N/A	0	0	Bedrock.
186	12	18	N/A	0	6	Nat stones, clay and solid clay at base.
187	26	N/A	N/A	0	0	Natural stone at base.
188	21	N/A	N/A	0	0	Natural clay at base.
189	12	N/A	N/A	0	0	Straight to bedrock.
190	20	N/A	N/A	0	0	Straight to bedrock.
191				0		
192	27	N/A		0	1	Natural clay at base.
193	13	N/A		0	0	Bedrock at base.
194	19	18		0	0	Bedrock at base.
195	23	N/A		0	0	Bedrock at base.
196	31	N/A		0	0	Bedrock at base.
197	25	53		0	0	Topsoil very peaty with 1006 subsoil onto bedrock.
198	19	8		0	0	Natural clay at base.
199	24	N/A		0	0	Natural stone at base.
200	26	N/A		0	0	Natural clay at base.
201	14	N/A		0	0	Natural clay at base.
202	27	N/A		1	0	Natural clay at base.
203	23	N/A		0	0	Natural clay at base.
204	25	35		0	0	Flints from subsoil.
205	23	N/A		0	0	Nat clay at base. Flint from topsoil.
206	15	N/A		0	0	Nat clay and stone at base.
207	16	10		0	0	Nat clay and stone at base.
208	16	20		0	0	Bedrock at base. Bad light.
209	15	44		0	0	Subsoil onto bedrock.
210	23	27	N/A	0	0	1006 present and bedrock at base.
211	15	23	N/A	0	0	Natural clay at base
212	15	20	N/A	0	0	Subsoil to bedrock.
213	19	22	N/A	0	0	Nat clay, sandstone at base.
214	15	20	N/A	0	0	To bedrock. Not bottomed but tested with road iron.
215	20	N/A	N/A	0	0	Possible flint in topsoil. Straight to bedrock.
216	13	18	(1009) - 15	0	0	Bedrock at base. (1009) layer beneath subsoil.
217	12	21	N/A	0	0	Natural clay at base.
218	22	21	N/A	0	0	Subsoil to bedrock.

Pit	Topsoil depth (cm)	Subsoil depth (cm)	Contexts beneath subsoil - depth (cm)	Flint qty	Other finds	Notes
219	11	10	N/A	0	0	(1009) beneath subsoil with bedrock at base.
220	20	8	N/A	2	0	Bedrock beneath subsoil.
221	15	10	(1009) - 10	0	0	bedrock beneath (1009)
222	25	20	N/A	0	0	Bedrock underneath subsoil. Three unworked flint from subsoil.
223	18	N/A	N/A	0	0	Straight to bedrock.
224	23	N/A	N/A	0	0	Straight to bedrock.
225	25	N/A	N/A	0	0	Straight to bedrock.
226	20	8	(1009) 10	0	0	1009 to bedrock
227	29	N/A	N/A	0	0	Straight to bedrock.
228	45	N/A	N/A	0	0	Straight to bedrock.
229	20	N/A	N/A	0	0	Straight to bedrock.
230	13	35	N/A	0	0	Straight to bedrock.
231	20	12	(1009) - 25	0	0	Not bottomed but tested with road iron. One flint from topsoil.
232	36	N/A	N/A	0	0	Straight to bedrock.
233	19	12	(1009) - 40	0	0	Straight to bedrock.
234	31			0	0	Straight to bedrock. 1x possible worked flint.
235	15	7	(1009) - 12	0	0	Straight to bedrock.
236	18			0	0	Straight to bedrock. Not bottomed but tested with road iron.
237	12	44		0	0	Straight to bedrock
238	14	17	(1009) - 5	4	0	Shallower bedrock
239	65	6	(1009) - 12	0	0	Not bottomed due to fissure in bedrock.
240	15	20	N/A	0	0	Not bottomed due to fissure in bedrock.
241	22	9	N/A	0	0	Greyish brown at base (1011)
242	18	21	N/A	0	0	Nat clay and stone at base.
243	41	N/A	N/A	0	0	Nat clay and stone at base.
244	30	N/A	N/A	0	0	Straight to bedrock.
245	21	N/A	N/A	0	0	Straight to bedrock.
246	21	11	N/A	0	0	(1011) at base not bottomed.
247	21	12	N/A	0	0	Nat clay and stone at base.
248	10	N/A	N/A	0	0	Bedrock
249	17	N/A	N/A	0	0	Bedrock
250	20	40	N/A	0	0	Not bottomed but tested with road iron.
251	26	5	(1011) 67	0	0	Nat clay at base (1011)
252	20	N/A	N/A	0	0	Straight to bedrock.
253	22	47	N/A	0	0	Fissure between bedrock.
254	32	N/A	N/A	0	0	Straight to bedrock
255	16	N/A	N/A	0	0	Straight to bedrock
256	20	12	(1011) - 34	0	0	To bedrock. Not bottomed but tested with road iron.
257	50	N/A	N/A	0	0	Straight to bedrock
258	22	20	N/A	0	0	Nat clay at base, flint is from topsoil.
259	30	N/A	N/A	0	0	Straight to bedrock.
260	16	N/A	N/A	0	0	Straight to bedrock.
261	17	N/A	N/A	0	0	Straight to bedrock.
262	12	N/A	N/A	0	0	Straight to bedrock.
263	14	16	N/A	0	0	Straight to bedrock.
264	18	9	N/A	0	0	Straight to bedrock.
265	20	N/A	N/A	0	0	Straight to bedrock.
266	30	N/A	N/A	0	0	Straight to bedrock.
267	15	17	N/A	0	0	Straight to bedrock.
268	26	N/A	N/A	0	0	Straight to bedrock.
269	31	N/A	N/A	0	0	Topsoil to bedrock

Pit	Topsoil depth (cm)	Subsoil depth (cm)	Contexts beneath subsoil - depth (cm)	Flint qty	Other finds	Notes
270	20	48	N/A	0	0	Straight to bedrock.
271	22	N/A	N/A	0	0	Straight to bedrock.
272	34	N/A	N/A	0	0	Straight to bedrock.
273	14	N/A	N/A	0	0	Straight to bedrock.
274	24	N/A	N/A	0	0	Straight to bedrock.
275	22	N/A	N/A	0	0	Straight to bedrock.
276	26	24	N/A	0	0	Straight to bedrock.
277	17	19	N/A	0	0	Nat stone and clay at base.
278	23	14	N/A	0	0	Straight to bedrock.
279	24	N/A	N/A	0	8	Charcoal x 8 and bedrock at base.
280	16	N/A	N/A	0	0	Straight to bedrock.
281	16	13	(1011) - 64	0	0	Bedrock beneath (1011)
282	20	20		0	0	Straight to bedrock.
283	15	15	(1011) - 20	0	0	Bedrock beneath (1011)
284	17	14	(1011) - 38	0	0	Bedrock at base.
285	12	N/A	N/A	0	0	Bedrock at base.
286	16	46	N/A	0	0	Not bottomed. Bedrock tested with road iron.
287	15	N/A	N/A	0	0	Straight to bedrock
288	30	N/A	N/A	0	0	Straight to bedrock
289	19	N/A	N/A	0	0	Straight to bedrock
290	17	N/A	N/A	0	0	Straight to bedrock
291	20	N/A	N/A	0	0	Straight to bedrock
292	20	8	(1011) - 60	0	0	
293	18	N/A	N/A	0	0	Straight to bedrock
294	11	N/A	N/A	0	0	Straight to bedrock
295	12	N/A	N/A	0	0	Straight to bedrock
296	9	N/A	N/A	0	0	Bedrock at base
297	16	N/A	N/A	0	0	Straight to bedrock
298	10	N/A	N/A	0	0	Straight to bedrock
299	26	N/A	N/A	0	0	Straight to bedrock
300	22	N/A	N/A	0	0	Straight to bedrock
301	10	N/A	N/A	0	0	Straight to bedrock
302	43	N/A	N/A	0	0	Fissure in bedrock. 4 possible flints.
303	22	35	N/A	0	0	Bedrock at base
304	22	20	N/A	0	0	Nat stone, clay at base.
305	29	N/A	N/A	0	0	Nat stone at base.
306	16	18	N/A	0	0	Nat stone at base.
307	28	N/A	N/A	0	0	Nat stone at base.
308	16	N/A	N/A	0	0	Nat stone at base.
309	30	N/A	N/A	0	0	Straight to bedrock
310	12	17	N/A	0	0	Nat stone at base.
311	16	N/A	N/A	0	0	Nat stone at base.
312	23	N/A	N/A	0	1	Nat stone at base.
313	12	N/A	N/A	0	0	Nat stone at base.
314	28	N/A	N/A	0	0	Nat stone at base.
315	20	25	N/A	0	0	Microliths? Dubious.
316	21	10	(1009) -14	1	0	Bedrock at base
317	11	N/A		2	0	Bedrock at base
318	26	N/A		0	0	Bedrock at base.
319	15	18		0	5	Bedrock at base. Burnt stone.
320	10	10	(1009) - 22	0	1	Bedrock at base.
321	25	N/A		0	0	Bedrock at base.
322	41	N/A		0	0	Bedrock at base.
323	14	18		4	0	Bedrock at base.
324	16	10	(1012) - 22	24	0	Bedrock at base. Flints from subsoil. Plus flints from samples.
325	10	21		0	0	Bedrock at base.
326	19	13	(1011) - 32	0	0	Bedrock at base.
327	29	30	(1012) - 36	0	0	Bedrock at base.
328	13	12	(1009) - 23	0	0	Bedrock at base.

Pit	Topsoil depth (cm)	Subsoil depth (cm)	Contexts beneath subsoil - depth (cm)	Flint qty	Other finds	Notes
329	18	5	(1009) - 24	0	0	Bedrock at base.
330	24	7	(1009) - 23	0	0	Bedrock at base.
331	22	40	N/A	0	0	Bedrock at base. Not bottomed but tested with road iron.
332	11	28	N/A	0	0	Bedrock at base.
333				0		
334	16	13	(1011) - 48	0	0	Bedrock at base.
335	21	37	N/A	0	0	Bedrock at base.
336	20	10	(1011) - 54	0	0	Not bottomed but tested with road iron.
337				0		
338	18	10	(1011) - 65	0	0	Not bottomed but tested with road iron.
339	24	27	N/A	0	0	Bedrock at base.
340	17	22	N/A	0	0	Bedrock at base.
341	18	13	(1011) 46	0	0	
342	21	27	N/A	0	0	
343	20	26	N/A	2	0	
344	20	37	(1009) 37	0	0	
345	19	N/A	(1009) 114	0	0	Not bottomed but bottom tested with road iron.
346	25	N/A	(1011) 66	0	0	Not bottomed but bottom tested with road iron.
347	16	N/A	N/A	0	0	Bedrock at base.
348	21	42	N/A	0	0	Bedrock at base.
349	17	N/A	N/A	0	0	Bedrock at base.
350	17	N/A	(1009) 41	0	0	Bedrock at base.
351	18	N/A	(1009) 22	0	0	Bedrock at base.
352	22	N/A	N/A	0	0	Waterlogged
353	21	N/A	N/A	0	0	Bedrock at base.
354		N/A	N/A	0	0	
355	25	N/A	N/A	0	0	Bedrock at base.

APPENDIX C

PHASE 1 FLINT ASSESSMENT

By P. Makey

INTRODUCTION

A total of 39 items of worked flint and a single chert utilised flake were recovered during the PMR 02 and PMR 04 mitigation works.

Approximately seven pieces of debitage cannot be accurately dated, although they could be of Neolithic or later Mesolithic date. The remaining material is characteristic of a later Mesolithic assemblage, with the possible sole exception of a discoidal core (record 23, Table A5). This form of core is more frequently found in the regions later Neolithic assemblages; however associations of this typological form are far from perfect.

Two microliths (records 25 and 26, Table A5) are present; both of these were within the PMR 02 assemblage. One piece (record 25, Table A5) is an idiosyncratic form; the other is a micro-oblique point (LHS) of almost rod form and possessing ancillary basal retouch. These forms typically characterise the very latest development of the microlith and are usually of a very late Mesolithic date.

The assemblage is in a far fresher state than might be expected and does not appear to be greatly mixed. It is reasonable to class the two assemblages together. A preliminary division of the assemblage into different flint groups suggests the presence of six (Table A4) different parent blocks/nodules of raw material.

The assemblages from both phases of work may be part of the same parent assemblage.

A notable feature of the material is the high incidence (20%) of both microscopic and macroscopic edge utilisation. In some cases the microscopic edge use is present as a slight - edge gloss. It is clear that most of the blade form pieces have been used (Tables A1-3).

The cores are generally consistent with the flakes and bladelets, but tend to be much smaller. The cores have clearly been worked down from much larger examples and have been heavily rejuvenated. It appears as though pre-worked cores are being used on the site.

STATE

Only 10% of the pieces have been subjected to breakage and nearly 75% of the material is in a fresh to very fresh state. In two instances the breakages are a bending fracture that appears to have occurred through usage. The cores and core rejuvenation flakes are in a slightly less crisp state than the blades and bladelets.

RAW MATERIAL AND KNAPPING:

No conjoining pieces are present in the assemblage, although a bladelet and micro-bladelet (records 12 and 13, Table A5) from the PMR 02 assemblage come close to refitting.

The material has been struck by the application of hard hammer technique and a high standard of regularity/bladedness is a feature of the assemblage. Over 72% of the material comes from tertiary stages of core reduction. The remaining pieces retain very limited traces of cortex.

The assemblage is composed predominately of fine-grained olive grey and light olive grey coloured vitreous flint. The raw material appears to be till derived, fist sized gravel pebbles characteristic of the material from the boulder clay till deposits around the east coast. A sole piece of struck chert is present (record 30, PMR 04). The piece is coarse-grained flake and is greenish black in colour. The piece is notable since a naturally fractured termination, retains traces of microwear that suggests that the piece may have been used as a piercer. The source of the chert is probably very near the site.

BURNING

Seven pieces, (17.5%) betray slight traces of burning, consistent with the burning of heather. None of the burning can currently be attributed to a prehistoric origin.

PATINATION

Twenty-seven of the pieces (67.5%) exhibit traces of patination. The patination tends to be a dense covering and white in colour. The patination appears to be directly related to localised soil conditions, although all the burnt pieces are patinated.

SIGNIFICANCE

The site probably represents a concentration that is indicative of settlement in the immediate vicinity.

Table A1: Composition of the flint assemblage:

Typological class	Number total	Number broken	Class as % of assemblage	Use wear			
				Total	Both	Macroscopic	Microscopic
Debitage							
Cores	3		7.5				
Core rejuvenation flakes	4		10				
Chunks	1		2.5				
Spalls	3		7.5				
Flakes	10	1	25	6	2	3	5
Blades	3	1	7.5	3	3	3	3
Bladelets	9	2	22.5	6	5	5	6
Micro bladelets	2		5	2	2	2	2
Retouched							
Microliths	2		5				
Piercers	3		7.5	3	1	2	2
TOTALS	**40**	**4 (10%)**	**100%**	**20 (50%)**	**13 (32.5%)**	**15 (37.5%)**	**18 (45%)**

Table A2: Composition of the PMR02 flint assemblage:

Typological Class	Number total	Number broken	Use wear			
			Total	Both	Macroscopic	Microscopic
Debitage						
Cores	2					
Core rejuvenation flakes	2					
Chunks						
Spalls						
Flakes	7	1	6	2	3	5
Blades	2		2	2	2	2
Bladelets	7	2	6	5	5	6
Micro bladelets	2		2	2	2	2
Retouched						
Microliths	2					
Piercers	2		2	1	2	1
TOTALS	**26**	**3**	**18**	**12**	**14**	**16**

Table A3: Composition of the PMR04 flint assemblage

Typological class	Number total	Number broken	Use wear			
			Total	Both	Macroscopic	Microscopic
Debitage						
Cores	1					
Core rejuvenation flakes	2					
Chunks	1					
Spalls	3					
Flakes	3					
Blades	1	1	1	1	1	1
Bladelets	2					
Retouched						
Piercers (Inc a flake used as a piercer)	1		1			1
TOTALS	**14**	**1**	**2**	**1**	**1**	**2**

Table A4: Provisional raw material groupings

Typological Class	Total	Group					
		A	B	C	D	E	F
Debitage							
Cores	3		1	2			
Core Rejuvenation Flakes	4	2	1	1			
Chunks	1		1				
Spalls	3		1		2		
Flakes	10	4	1	4		1	
Blades	3			1	2		
Bladelets	9	1	5	2	1		
Micro Bladelets	2			1	1		
Retouched							
Microliths	2	1		1			
Piercers (Inc a flake used as a piercer)	3		1		1		1
TOTALS	40	8	11	12	7	1	1

Table A5: Lithic catalogue

Code	Record number	Group	Artefact type	Sub - Type	Colour	Burning	Notes	Date
PMR'02	1	A	Flake	(Sub-blade)	NA	L-HB		L Meso
PMR'02	2	A	Flake	Spall	Brownish	L-HB		L Meso

Code	Record number	Group	Artefact type	Sub - Type	Colour	Burning	Notes	Date
					Orange			
PMR'02	3	A	Bladelet / Br		Brownish Orange	L-HB	Possible snap termination.	L Meso
PMR'02	4	A	Flake		L Olive Brown	L-HB	Very slight upper surface gloss.	L Meso
PMR'02	5	B	Bladelet	(Pointed)	L Olive Grey		Pointed distal.	L Meso
PMR'02	6	B	Bladelet / Br		L Olive Grey			L Meso
PMR'02	7	B	Bladelet		L Olive Grey			L Meso
PMR'02	8	B	Flake	(Sub-bladelet)	L Olive Grey			L Meso
PMR'02	9	B	Bladelet		L Olive Grey			L Meso
PMR'02	10	B	Bladelet		L Olive Grey			L Meso
PMR'02	11	B	Piercer?	On a blade	L Olive Grey		Two very shallow distal RHS notches define a small point.	L Meso
PMR'02	12	C	Bladelet		L Olive Grey			L Meso
PMR'02	13	C	Micro Bladelet		L Olive Grey			L Meso
PMR'02	14	C	Primary Guide Blade		L Olive Grey			L Meso
PMR'02	15	C	Flake / Br	Crested	L Olive Grey	L-HB	Bending fracture.	L Meso
PMR'02	16	D	Blade		Olive Grey		Slight tip crushing. The piece may have been anvil struck.	Meso / Neo
PMR'02	17	D	Micro Bladelet		Olive Grey			L Meso
PMR'02	18	D	Piercer?	(Irregular)	Olive Grey		Point formed by irregular flaking of butt.	Meso / Neo
PMR'02	19	E	Flake	Irregular	D Olive Grey			Any
PMR'02	20	B	Core	UC. 5 Platformed	NA		Irregular chunk with 4 platforms. Micro flake & blade removals.	L Meso
PMR'02	21	B	Core Rejuvenation Flake	Class C.	L Olive Grey		V fine. Plunging rem from base to rem plat. From trimmed rejuvenated core with at least 2 plats. Mic rems.	L Meso
PMR'02	22	A	Core Rejuvenation Flake	Class D.	L Olive Grey	L-HB	Large, plunging, full platform removal. Previously rejuvenated.	L Meso
PMR'02	23	C	Core	Discoidal	L Olive Grey		Oval disc worked around almost the whole periphery.	Meso / Neo
PMR'02	24	C	Flake	(Sub-blade)	Olive Grey		Almost microlithic.	L Meso
PMR'02	25	A	Microlith (Idiosyncratic)	DS/OB-LS	NA	L-HB	3.7mm Area of retouch on a small nondescript spall. Oblique DS-RHS. NB Microliths are upside down.	L Meso

Code	Record number	Group	Artefact type	Sub - Type	Colour	Burning	Notes	Date
PMR'02	26	C	Microlith	Point. LS, OB/DS-RS	Olive Grey		12mm LS retouch. 4mm OB-RS Ret. V fine almost a rod.	L Meso
PMR'04	27	D	Bladelet	(Cortical)	Olive Grey			L Meso
PMR'04	28	D	Blade / Br	Broad	Olive Grey		Bending fracture. Gloss looks like sickle gloss.	Meso / Neo
PMR'04	29	C	Flake	Broad	Olive Grey		Hinged termination. Hertzian cone on platform.	Neo / EBA
PMR'04	30	F	Flake (Used as piercer)	Chert. Irregular	Greenish Black		Very crude cherty flake. Slight area of UF gloss. Natural point poss used as a piercer.	Any
PMR'04	31	B	Chunk	(Sub-Core Frag)	L Olive Grey		From a pebble.	Any
PMR'04	32	C	Flake	Irregular	L Olive Grey		Traces of a dorsal hinged removal.	Any
PMR'04	33	D	Spall		Olive Grey		Almost square.	Any
PMR'04	34	D	Spall		Olive Grey		Small.	Any
PMR'04	35	A	Core Rejuvenation Flake	Class C.	L Olive Grey		Struck from base of core, removing part of platform. Possibly from a 2 platformed core.	Mesolithic
PMR'04	36	C	Core Rejuvenation Flake	Class B.	L Olive Grey		Removal of overhang. Probably from a fine sub pyramidal core.	L Meso
PMR'04	37	C	Core	UC. 4 Platformed	NA		Very small micro flake core. Heavily rolled. Dorsal hinged removals.	L Meso
PMR'04	38	C	Bladelet	Hinged. Crude	NA		Crude dorsal hinges.	L Meso
PMR'04	39	A	Flake	(Sub-bladelet)	L Olive Grey			Any
PMR'04	40	B	Spall	Fine trimming	NA		Very fine small dorsal micro removals and platform edge trimming.	L Meso

APPENDIX D

PHASE 2 FLINT ASSESSMENT

Peter Rowe

INTRODUCTION

Lithic material was collected from several episodes of archaeological investigation at Preston Moor, Wensley Quarry, Redmire in 2006. The lithics were recovered in the following quantities:

Table D1: Quantities of lithics by investigative phase

Investigative Phase	No. of Lithics
Phase 1 - Test-pitting	70
Phase 2 - Site stripping	160
Phase 3 - Area 1	17
Phase 3 - Area 2 Slots 1, 4 & 5	61
Phase 3 - Area 2 Small finds	105
Phase 3 - Area 2 Grid	610
Phase 3 - Area 2 Test-pits	18
Phase 3 - Area 3	4
Phase 3 - Area 4	146
Phase 3 - Area 4 Test-pits	10
Total	**1201**

The lithics are all thought to be from secondary contexts, principally topsoil and water-transported deposits. Given the lack of firm context the entire assemblage will be discussed as a whole rather than as discrete collections given the random factors associated with their deposition.

The entire assemblage has been catalogued using Microsoft Excel. For the purposes of the catalogue each flint has been given a unique identification number (between 1 and 1202; including one piece of shrapnel) which has been marked on the packaging. The following variables have been catalogued:

- raw material type (e.g. flint, chert, agate)
- raw material colour
- percentage of cortex
- cortex type (e.g. reduced, chalky)
- patina colour and percentage
- type of artefact (e.g. flake, blade, core)
- interpretation (e.g. scraper, arrowhead)
- period
- maximum dimensions

- method of knapping (e.g. hard hammer percussion)
- whether burnt
- whether damaged

The full catalogue is available with the site archive.

GENERAL CHARACTER

Raw material

The assemblage is composed of flint (920 pieces; 78% of knapped material) and chert (265 pieces; 22% of knapped material) with examples of natural pieces of ironstone, quartz and unidentified siliceous stone present. There are no examples of more unusual materials such as agate, jasper or other fine-grained stones such as tuff. A summary of the raw materials is presented as Table D2 below:

Table D2: Raw Material (excluding natural pebbles of ironstone, quartz etc).

Raw material type	Number	Percentage
Chert (colour undetermined due to burning)	4	0.3
Chert (brown)	60	5.1
Chert (black)	101	8.5
Chert (blue/grey)	90	7.6
Chert (white)	10	0.8
Flint (colour undetermined due to burning)	88	7.4
Flint (brown)	679	57.4
Flint (grey)	44	3.7
Flint (orange)	1	0.1
Flint (grey/white)	18	1.5
Flint (white)	90	7.6
Total	**1185**	**100**

The principal material exploited is a light brown flint (679 pieces; 57.4%). This material has a tendency to patinate producing a uniform milky grey surface which could be mistaken for grey flint. However when backlit the thinner translucent edges of these pieces reveal a brown core consistent with the non-patinated items. The predominant use of this material corresponds to Laurie's observations for the Sleigill Late Mesolithic site in Swaledale to the north, where translucent brown flint dominated the lithic collection at 90% (Coggins, Laurie and Young, 1989, 173).

Although brown flint dominates the group there is considerable variability. The next most common flint types are a white cherty flint (90 pieces; 7.6%) and a grey/white cherty flint (eighteen pieces; 1.5%) which can be considered as one group (108 pieces; 9.1%). This is typical of material deriving from the Yorkshire Wolds and is still available today from eroding seams in the chalk cliffs of the East Yorkshire coast. An additional ten pieces recorded as white chert represent further variance in this raw material. Recent excavations at a Late Mesolithic knapping platform at Marne Barracks, Catterick (Young 2006) recovered over 1000 flints of which 99% were this material.

The remainder of the flint items are of a grey material (44 pieces; 3.7%) with a single orange item. These are also consistent with the beach sources available on the north-east coast but do demonstrate less variance than the North Yorkshire, Cleveland and Durham coastal industries which tend to include small proportions of honey coloured and red flints.

Cortex is present on a reasonable proportion of the flints (22%). Where this is the case it is cream or light brown in colour and thin in section, having been heavily reduced by glacial or wave action.

A significant proportion of the assemblage is derived from a variety of cherts (22%). These are dominated by black pieces (101 items; 8.5%) with a tremendous range in quality. The poorer samples are lighter in colour with a grainy matrix, produce poor conchoidal fractures and have many inherent cracks and flaws. The better examples are a more homogenous, dark black material with an almost glassy lustre with good fracturing qualities.

Of poorer quality are the brown (60 pieces; 5.1%) and grey/blue quartzy cherts (90 pieces; 7.6%), although both types have proven suitable for the knapping of flakes and blades.

It has been noted that chert is underrepresented in Weardale assemblages, given its local availability from Carboniferous deposits (Young 1984), but is common in the more southerly Teesdale assemblages with sites such as Staple Crag having a similar proportion of black or brown chert present (Coggins, Laurie and Young 1989, 171).

Post-deposition damage

The material from the excavations has some surface glossing and light edge chipping consistent with damage caused by movement within a soil matrix. Iron staining is also apparent to a limited degree.

There has also been some post-excavation damage caused by the bagging of multiple items together, evident by the small chips present within the bags and corresponding scars. Given the extent of post-depositional edge chipping a cautious approach has been taken to the identification of utilised pieces.

The formation of surface patina has already been mentioned in relation to the masking of the raw material. However in general terms the assemblage as a whole has limited development of patina caused by water penetration.

Burning

One hundred and eight (9%) of the lithics are burnt. This presumably occurred in antiquity during deposition. Fire damage has generally had a catastrophic impact with 100% white or grey patination of the surface, often penetrating several millimetres into the artefact. Surface crazing, spalling and pot lid fractures are common and have led to the majority of the burnt items being classified as irregular burnt fragments.

TECHNOLOGY

A summary of the material is presented in Table D3 below:

Table D3: Flint summary

Type	Test-Pits	Strip	Area 1	Area 2 Slots	Area 2 SFs	Area 2 Grid	Area 2 Test-Pits	Area 3	Area 4	Area 4 Test-Pits	Total
Blade or blade fragment (utilised/unutilised)	2/12	7/17	0/2	2/11	0/14	7/83	0/6	0	2/28	0/2	195
Chips	3	4	1	10	30	56	0	1	8	2	115
Cores	1	11	0	1	5	31	0	0	7	1	57
Core trimming flake	2	0	0	0	0	6	0	0	1	0	9
Debitage (utilised/unutilised)	0/20	0/61	0/5	0/20	1/30	2/249	0/10	0/3	0/61	0/2	464
Flakes or flake fragment (utilised/unutilised)	6/11	7/31	1/3	0/10	1/11	14/82	0/1	0	3/25	0/2	208
Irregular burnt pieces	7	2	3	6	10	53	1	0	8	1	91
Natural pieces	5	18	2	1	2	10	0	0	2		41
Microburin	0	0	0	0	0	1	0	0	0	0	0
Microlith	1	0	0	0	0	4	0	0	1	0	6
Other retouched pieces	0	2	0	0	1	11	0	0	0	0	14
Total	**70**	**160**	**17**	**61**	**105**	**610**	**18**	**4**	**146**	**10**	**1201**

Assemblage composition

The assemblage is characterised by a high proportion of knapping debris, including primary waste, angular debitage, spent cores and regular flakes and blades. There are relatively few finished tools.

As discussed above, 22% of the flints retain cortex. Of these, seventeen pieces (8% of those items with cortex) are primary flakes or debris with 100% of the dorsal surface retaining cortex. Secondary removals are also present with dorsal surface cortex varying from between 10% to 90%.

The striking technology at the site included the use of both hard (217 incidences; 18%) and soft hammers (484 incidences; 40%) although a significant amount were angular shatter (389 incidences; 32%) resulting through flaws in the raw material or thermal damage. Many pieces had their bulbar ends deliberately removed (71 incidences; 6%) and the remainder were unhammered natural pieces.

Cores

Spent cores are abundant at the site with 57 examples (or approximately 5% of the knapped assemblage. Core morphology is summarised in Table D4.

Table D4: Core morphology

Core type	Platforms	Quantity
Blade	Single platform	26
	2 platforms (opposed)	9
	2 platforms (at right angles)	2
	3 platforms (opposed and at right angles)	2
Flake	Single platform	6
	2 platforms (opposed)	5
	2 platforms (at right angles)	1

Core type	Platforms	Quantity
	3 platforms (ad hoc)	4
	3 platforms (opposed and at right angles)	1
	4 platforms (opposed and at right angles)	1
Total		**57**

The cores are split into two groups; those whose final removals were blades, and those whose final removals were flakes. In both instances the single platform type dominates (e.g. Blade Core: Flint 1015, Area 2 Grid P7; and Flake Core: Flint 356, Area 2 Small Find BV). Where two platforms are present they are usually opposed (e.g. Blade Core: Flint 292, Area 2 Slot 5). In rarer cases cores with two platforms have them arranged at right angles to each other or combine both opposed and right angled platforms (e.g. Blade Core: Flint 913, Area 2 Grid M9). Less formal cores are also present in the form of multi-faceted examples such as Flint 1010 (Area 2 Grid P6).

The small size of the cores (with principal knapped faces ranging from 14mm to 44mm in length) and changes in orientation of platforms suggests that it was necessary to maximise the use of the available raw materials.

Evidence for the curation of cores was recorded in the form of nine core trimming flakes. These all consist of flakes struck at 90 degrees to the platform to reduce the pitch of the knapping face (e.g. Flint 50, pit 134).

Blades, flakes and debitage

The main product of the lithic industry at this site are small, parallel sided blades (195 examples; 16.2 %). When complete their lengths range from 7mm to 60mm, widths from 3mm to 25mm and thickness from 1mm to 12mm. However they are generally found as shorter segments resulting from simple snap fractures, probably achieved by gripping the blade in a simple wooden or antler vice and applying lever pressure until fracture occurred. There are 104 complete blades (53.2%), 42 proximal ends (21.4%), 32 mid-sections (16.3%) and eighteen (9.1%) distal ends.

There were limited examples of the use of the microburin technique. One complete microburin (Flint No. 699, Area 2 Grid J2) was recovered along with two further blades with evidence of notching (Flint 150, Strip 1 and Flint 428, Area 2 Grid A6). In both of these latter cases the blade had snapped above the notch rather than through its middle.

Blades are roughly matched in quantity at the site by flakes (208 examples). The flake production at this site can be seen as a necessary part in the core reduction process to produce blades. Experimental knapping has demonstrated that initial removals from small cores generally tend to be flake-like with later removals becoming straighter as they follow the ridge scars left by previous removals (Whittaker 1994, 230). The presence of cortex on the dorsal faces of flakes is also more common than the rare instances where it is observed on blades, lending weight to this theory.

Flakes also seem to have been removed from cores towards the end of their life to maximise use of raw material. Many of the flakes have blade scars on their dorsal surfaces and spent cores have been utilised for flake production at the final stages prior to discard.

The remainder of the knapping waste consists of angular shatter, irregular debitage or small preparation chips. The waste is generally small in dimension with only fifteen of 464 of the angular pieces having a maximum dimension greater than 40mm.

Microliths

There are six microliths present, all made from flint. These are all narrow blade examples. One of these (Flint 698, Area 2 Grid J2) is fragmentary. It may be part of a backed blade or trapeze form. Flint 643 (Area 2 Grid H8) is a complete scalene triangle with retouch along the longest edge. A second scalene triangle (Flint 812, Area 2 Grid L5) has retouch along both its shorter sides and a slight convexity to the longer edge. The third and final scalene example (Flint 1115, Area 4, context 9) is broken at the tip with retouch along the shorter surviving side. The final two microliths both fall into the rod category and are both fragmentary. Flint 27 (Phase 1 test-pit 29) is backed along both edges with steep retouch but is broken at both ends. A smaller fragment of rod (Flint 523, Area 2 F1) is backed along one edge only with steep retouch and is broken at one end.

Other retouched or utilised pieces

There are very few tool types to complement the microliths. Deliberate retouch was noted on six blades other than the microliths and on fourteen flakes and pieces of debitage.

Examples of retouched blades include a long thin example (Flint 766, Area 2 Grid K5) with retouch on the ventral surface along the distal end of the left edge. Edge retouch was the most common form on the blades; however there were two examples of end retouch. Flint 727 (Area 2 Grid J8) has a distal truncation forming a point at the right edge whilst Flint 585 (Area 2 Grid G5) has retouch along its distal edges forming an awl like implement.

Similar retouch is seen on flakes. In the recorded examples it was confined to simple blunting along one or more edges. Flint 445 (Area 2 Grid B7) is an example of this. In this case a large flint flake, with previous blade scars, has a short length of retouch on a right ventral edge and a corresponding length on its right dorsal side.

The ad hoc nature of retouch for edge modification rather than tool creation is particularly apparent when it is noted on angular pieces of debitage, for example Flint 216 (Phase 2, Site strip 7), a chunk of chert. Five further pieces of angular waste demonstrate this method of modification.

Evidence for unmodified edge use is less certain given the degree of post-deposition damage and chipping to the edges of the flints. There are however 57 examples that show microscopic damage consistent with the cutting of soft materials, such as food or wood. This is predominantly confined to the edges of finer flakes and blades in roughly equal proportions.

CONCLUSION

The assemblage appears to be from a single period of prehistory, the Late to Very Late Mesolithic. The microliths suggest a possible date range from the last quarter of the late 9th or early 8th millennium cal BC, when narrow blade scalene triangles are first noted (Waddington in press), to the very close of the Mesolithic. Although the sample size is small, rods account for 33% of the microliths suggesting that the date should be towards the later end of this range. There is no evidence of contamination from later periods with the raw materials and technology consistent throughout the phases of archaeological intervention and distinct areas of the site.

Unfortunately the material has been moved from its primary context and it is not possible to comment on discrete spatial patterns.

The lithic technology demonstrates that the area was utilised in the Late Mesolithic period for the reduction of flint and local chert through the basic technology of direct percussion with hard and soft hammers. Cores were abundant at the site accounting for 4.8% of the assemblage. This is in direct contrast to the type site of Howick for this period where cores account for 0.8% of the assemblage (Waddington, forthcoming) and more local sites such as Marne Barracks (Young 2006) where cores are all but absent. There are local sites with high proportions of cores such as Barningham High Moor, Teesdale and Police Field, Weardale (Coggins, Laurie and Young 1989, 167, 172) but these have a fuller complement of tools types than Wensley Quarry.

The principal product of the Wensley Quarry industry was the parallel sided blade which was reduced to smaller sections, usually by snapping, but with some evidence of the microburin technique. The presence of several microliths suggests that they were one of the intended products of the blade industry, although blades were also used unmodified for basic cutting tasks.

The remaining tools at the site are all extremely basic with scrapers, burins and denticulates all absent. Retouch was ad hoc in nature, suggesting that a piece would be trimmed for a one-off task, rather than retained as part of a toolkit.

This is an unusual site and no close parallels were noted in contemporary Northern assemblages. The composition suggests that this was principally a flint working area. The lack of finished tools suggests that base camp activities such as processing animal carcasses did not take place here although the presence of burnt flint indicates that camp fires were maintained. The variety of raw materials, of both local and imported origin suggests that this was a recognised knapping place, where raw materials may were collected and traded. It may have been exploited as part of the seasonal round but activities other than knapping were limited.

RECOMMENDATIONS

Sixteen items have been selected to illustrate this report and these should be presented as black and white line drawings, preferably at a scale of 1:1.

Table D5: Phase 2 flint illustrations.

Flint No.	Description
1015	Single platform chert blade core
356	Single platform flint flake core on flake blank
292	Opposed platform flint blade core
913	Multi platform flint blade core with opposed platforms and one at right angles.
1010	Multi-faceted flint core
50	Core trimming flake
699	Microburin
643	Scalene triangle microlith
812	Scalene triangle microlith
27	Microlithic rod fragment
523	Microlithic rod fragment
766	Retouched blade

Flint No.	Description
727	Truncated blade
585	Awl
445	Retouched flake
216	Retouched chert waste

The composition of the lithics and their date make this a regionally important site that adds to the picture of Late Mesolithic activity in the Durham and Yorkshire Dales. The results of the work would benefit from exposure to a wider audience than a traditional grey literature report would normally reach. Publication is recommended in a regional journal such as the Durham Archaeological Journal, the Yorkshire Archaeological Journal or similar.

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APPENDIX E

PHASE 3 FLINT ASSESSMENT

Dr Hannah Russ

In summary, the assemblage recovered during this phase of work represents evidence for Mesolithic activity at the site, with the remains of bladelet cores and bladelet core fragments being a common feature. Recognised tool forms are rare in the assemblage, and alongside the numerous core and core fragments and both flint and chert debitage, suggest that tool production was an activity carried out at the site, but that completed tools were taken away from the site for use. The presence of pieces with cortex also supports this interpretation.

Burnt flint and chert is a common feature in the assemblage. Some researchers believe that, especially flint, could be modified using heat to make it easier to work (Crabtree and Butler 1964; Mandeville 1973). As it is clear that flint and chert working was taking place at Wensley Quarry, the presence of burnt material may suggest that this is true.

The flint and chert are of various colours and quality, suggesting that, as raw materials, they were likely collected locally. The flint was most likely sourced from glacial till deposits, while the chert would have come from natural outcrops, which can be found in the Carboniferous limestone areas at the northern end of the Pennine Chain, straddling Lancashire and North Yorkshire, local to the Wensley Quarry site.

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APPENDIX F

PHASE 4 FLINT ASSESSMENT

Frederick Foulds

INTRODUCTION

This report presents the analysis of the lithic material found at Wensley Quarry, North Yorkshire, during the 2015 mitigation works. A total of 127 pieces were recovered from three of the four trenches excavated during this period of work, as well as from monitoring of soil-stripping in Areas 1 and 2. A further three pieces were recovered from unstratified contexts. Of the total 130 lithics, sixteen can be definitively said to be of natural origin, while the remaining 114 evidence signs of human modification. Table F1 displays the distribution and quantities of the lithic material across the excavated areas.

Table F1: Composition of assemblage.

Location	Knapped	Natural
Trench 1	8	0
Trench 2	27	2
Trench 4	36	3
Area 1	13	8
Area 2	27	3
Unstratified	3	0
Total	**114**	**16**

The majority of the finds originate from the topsoil and subsoil, especially those from Trenches 1 and 2, while in Trench 4 the material comes from the burnt mound. The finds from Area 1 also sees about half of the lithics recovered from the topsoil, while the remaining were found in the cut/fills of tree boles. In Area 2 lithics were mainly found in the topsoil and peaty fill of the partially silted watercourse, with others recovered from the fill of hollows and the linear features within this area. It therefore appears that the majority of the lithics were recovered from secondary contexts. Burrowing animals have also populated the area, which increases the likelihood that the material has been disturbed.

Despite the evidence for disturbance of the material, the assemblage is discussed as discrete collections according to the localities from which they were recovered, as opposed to treating the whole as a single assemblage. This is to allow for a clearer understanding of how the finds relate to the excavated areas.

METHODOLOGY

All material was inspected by eye and catalogued in a spreadsheet using Microsoft Excel. For the purpose of the catalogue each individual lithic was provided with a unique identification, ranging from L001 to L130. These numbers have been marked on the packaging to enable further analysis of the material where necessary. Variables are described as follows:

SITE INFORMATION

Context No. The context number.

Trench No.	The number of the trench/area where the find was recovered.
Flint No.	A unique number assigned for the purposes of the lithic catalogue.
Quantity	Number of pieces. Usually '1' and used to calculate total numbers
RAW MATERIAL	
Material	Whether flint, chert, quartz etc.
Material colour	A description of the colour of the raw material.
Cortex	The amount of cortex present on dorsal surface, expressed as a percentage value.
Cortex colour	A description of the colour of the cortex, where present.
Patina	The amount of patination, expressed as a percentage value.
Patina colour	A description of the colour of the patination, where present.
TECHNOLOGY	
Type	The type of artefact, e.g. 'flake', 'blade', 'debitage', 'core', 'burnt fragment', or tool types, such as 'scraper', 'arrowhead', 'burin'.
Size	Individual measurements have not been taken at this stage. Sizes are provided in 5mm increments, with the maximum dimension, or in the case of flakes, maximum length, given.
Reduction Sequence	Stage of the knapping sequence, given as 'primary', 'secondary' or 'tertiary'. The term 'thermal' is used to note heat fracture.
Platform	The type of platform (for flakes, where present), based on Andrefsky (2005, 96), 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 based on Cotterell and Kamminga (1987), i.e. 'feathered', 'step', 'hinge', or 'overshoot'. An addition of 'complex' is also where termination evidence is present, but not clear.
Interpretation	An indication of further working, e.g. 'retouch' or 'edge use'.
Working	A description of working, e.g. 'abrupt', 'invasive' etc.
DAMAGE	
Burnt	This column uses an ordinal scale to indicate 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 original form); 3 = heavily fired (complete surface and interior patination, pot lid fractures, shattering, original form cannot be determined).
Damage	Description of any other damage present, e.g. 'plough', 'frost', 'edge chipping' etc.

INTERPRETATION

Period	Where the artefact is chronologically distinctive then the period is noted.
Notes	A further field to note any other observations, i.e. if items refit.

RAW MATERIAL

Discussion of the raw material begins with an overall assessment of the assemblage as a whole, followed by the composition of each discrete collection.

Overall, the assemblage is composed of flint (59 pieces; 45.4% of the total assemblage) and chert (71 pieces; 54.6%). No unusual materials are present (e.g. agates, jasper etc.). Four of the flint pieces and twelve of the chert pieces are considered to be natural in origin. Therefore, of the knapped material, 48.2% is flint and 51.8% chert. A summary of the utilised raw materials is provided in Table F2.

Table F2: Raw materials (excluding natural material)

Raw material type (colour)	**Number**	**Percentage**
Flint (brown)	47	41.2
Flint (grey)	5	4.4
Flint (white)	1	0.9
Flint (indeterminate)	2	1.8
Chert (black)	46	40.4
Chert (grey)	11	9.6
Chert (brown)	2	1.8
Total	**114**	**100**

The principle raw materials utilised are cherts (58 pieces; 50.9%) and translucent brown flint (47 pieces; 41.2%). The latter is heavily patinated in most cases, generally with a milky-grey stain that can initially be mistaken as grey flint. However, backlighting of patinated pieces with an LED torch reveals the original colour of these artefacts. The presence of this brown flint is consistent with the flint assemblage recovered during the 2006 archaeological investigations at Wensley Quarry (Rowe 2007), as well as that from Sleigill (Coggins, Laurie and Young 1989). However, in these assemblages flint is the predominant raw material, whereas the 2015 Wensley Quarry assemblage shows an almost even split in the use of flint and chert.

Other types of flint are grey (five pieces; 4.4%), with two indeterminate pieces (1.8%), where the colour cannot be determined due to either suspected burning or heavy patination, and a single white flint (0.9%).

Cherts are the other dominant form of raw material. The majority are black cherts (46 pieces; 47.4%), which display considerable variation in quality. Good quality pieces are more homogeneous, with a glossy lustre and evidence excellent fracture properties. Poorer examples, on the other hand, have a grainier matrix and often exhibit examples of shatter and poor conchoidal fractures. Several pieces display banding and inclusions of larger crystal size.

The cherts also present several examples of grey (eleven pieces; 9.6%) and brown (two pieces; 1.8%) colour. These tend to be generally of poorer quality, although both have been used in the production of flakes and blades.

The presence of chert is not surprising, given its presence in the assemblage from the earlier work at Wensley Quarry. It would have been locally available in Carboniferous deposits, such as those in Weardale and Teesdale (Young 1984), and has been known to occur in clayey-sands within North Yorkshire (Harrison *et al*. 2006), as well as the Carboniferous Limestone deposits within the Yorkshire Dales, such as the Yoredale series (Sargent 1929). What is of interest is the much higher level of chert use within the assemblage under analysis compared to that from the earlier investigations.

Raw material by discrete collection

Tables F4 to F8 provide the raw material distribution for each of the discrete collections recovered. Only the knapped material is recorded. The unstratified material is not shown, but consisted of two flint flakes and a single chert flake.

Table F4: Raw material distribution for Trench 1

Raw material type (colour)	Number
Chert (black)	7
Flint (brown)	1

Table F5: Raw material distribution for Trench 2

Raw material type (colour)	Number
Chert (black)	8
Chert (grey)	2
Flint (brown)	15
Flint (indeterminate)	1

Table F6: Raw material distribution for Trench 4

Raw material type (colour)	Number
Chert (black)	9
Chert (grey)	5
Flint (brown)	19
Flint (grey)	3

Table F7: Raw material distribution for Area 1

Raw material type (colour)	Number
Chert (black)	6
Chert (grey)	1
Flint (brown)	5
Flint (grey)	1

Table F8: Raw material distribution for Area 2

Raw material type (colour)	Number
Chert (black)	15
Chert (grey)	2
Chert (brown)	2
Flint (brown)	7
Flint (white)	1
Flint (grey)	1

TECHNOLOGY

The lithic technology for each of the discrete collections recovered is discussed below. Outside of these collections are three unstratified pieces. Two of these were produced on flint, with one (WEN15_L079) showing signs of burning, while the other (WEN15_L077) displays evidence of pressure flaking along one edge to both the dorsal and ventral surfaces. Its shape is reminiscent of a projectile point, but the lack of extensive retouch may indicate early abandonment before it was finished. The remaining find is a small chert flake.

Trench 1

A total of eight lithic artefacts were recovered from Trench 1 and are listed by type in Table F9. Only four show clear indications of human modification. The remaining four pieces are angular shatter and chips showing minimal signs of human working. Although these may result from natural processes, signs of flake scarring on the surface of these pieces may indicate human modification and they are thus classed as debitage. The majority of the material is chert, with only a single flint flake. Most of the artefacts are under 20mm in size and there is no diagnostic material that can be used to pinpoint an accurate period for its production.

Table F9: Composition of lithics recovered from Trench 1 by knapped form.

Knapped Form	Quantity
Flake	4
Debitage (angular waste)	4
Total	8

Trench 2

Trench 2 produced a total of 29 lithics, of which two are identified as natural. The remainder can be classified as shown in Table F10. Of the debitage, three pieces could also be classified as natural shatter. The majority of remaining material is small, with most artefacts under 30mm (24 pieces; 88%), and can be classified as small flakes and parallel-sided blades/bladelets. There is a high degree of breakage in the latter, with seven of the twelve examples either being proximal or distal end fragments. In many cases, there is evidence of deliberate breakage of these blades, as opposed to damage caused during knapping. As Rowe (2007) has suggested previously, this deliberate breakage may have been achieved through the use of an antler or wooden vice.

Table F10: Composition of lithics recovered from Trench 2 by knapped form

Knapped Form	Quantity
Flake	7
Blade/Bladelet	12
Debitage (angular waste)	8
Total	27

The evidence for deliberate breakage of the blades and their highly fragmentary nature is highly suggestive of Mesolithic knapping practices, with the intention being to produce blade segments for the production of microliths (Butler 2005). There is limited evidence of use of the microburin technique (Inizan *et al*. 1992; Neely and Barton 1994, Piel-Deruisseaux 2002), although a single example (WEN15_L030) displays a notch, although this blade has been snapped above this.

Over a third of the artefacts (ten pieces; 34.5%) have some cortex retention, although none represent primary flakes or debris. This suggests that, while initial core working took place within the area, cores may have been in a tested or prepared state. However, the small size of the collection precludes an accurate assessment of this hypothesis.

The majority of the artefacts display evidence of soft hammer reduction. Despite the fact that only nine artefacts have extant proximal ends that display clear evidence of this through diffuse bulbs, the thin nature of the flakes and blades, their small size, and unpronounced ripple marks are all characteristic of soft hammer technique. Only two artefacts display pronounced bulbs of percussion, and even then, these may be caused by the application of increased force with a soft hammer.

Trench 4

Trench 4 provided the highest quantity of lithic material from the 2015 mitigation works. A total of 39 lithics were recovered, of which three are identified as natural shatter. The knapped artefacts are classified in Table F11. Only one of the finds was recovered from the topsoil, with the remaining attributed to context 403 and thus associated with the burnt mound. However, only one of these displays any evidence of burning, with a white patina and slight weathering and crazing to the surface (WEN15_L063).

Table F11: Composition of lithics recovered from Trench 4 by knapped form.

Knapped Form	Quantity
Flake	22
Blade/Bladelet	5
Debitage (angular waste)	9
Total	36

The majority of the artefacts (22 pieces; 61%) were produced on flint, with the remainder on chert. In contrast to what is seen in Trench 2, the assemblage consists mainly of flakes and debitage, with only five blades/bladelets present. Many of the artefacts are small, with the majority under 30mm (32 pieces; 97%). Of the blades/bladelets, only two show signs of breakage, with one having a deliberate notch that indicates presence of the microburin technique, although the breakage appears to have occurred above this. Again, this is suggestive of Mesolithic knapping techniques.

Very few of the lithics display cortex retention (five pieces; 14%) and only one flake can be considered to come from the primary reduction sequence. The majority of the material is of tertiary nature, suggesting that decorticated raw material was being utilised in this area.

Similar to the collection from Trench 2, the majority of the knapped material displays evidence of soft hammer percussion, with only two examples exhibiting pronounced bulbs of percussion, both of which are on chert. Where platforms are present, this demonstrates that both flat and abraded platforms were used, and there is a clear dichotomy between chert (predominantly flat platforms) and flint (predominantly abraded).

Area 1

Monitoring of the soil-stripping in Area 1 revealed a total of 21 lithics, of which eight are considered to be natural. Four of these natural pieces refit but show no evidence of human modification. Most of the natural is chert and originates from the topsoil (context 1000). Only two pieces came from the fills of tree boles. A single flint piece is classed as natural shatter and may show signs of burning, but otherwise displays no evidence of knapping. The remaining thirteen pieces display good evidence of human modification. These are classified in Table F12.

Table F12: lithics recovered from Area 1 by knapped form

Knapped Form	Quantity
Flake	7
Microdenticulate/serrated blade	1
Core tablet/fragment	2
Debitage (angular waste)	3
Total	13

Flakes dominate, making up over half the knapped material (seven pieces; 53.8%) and provide little diagnostic material for determining a date. The majority were recovered from cuts/fills of tree boles, with only two found in the topsoil.

Three pieces are suggested to be debitage, either shatter or small chips. Two pieces come from the topsoil, with the remaining from the fill of a tree bole (context 1066) and can be associated with a flint flake.

A single flint blade was found in the cut of a tree bole (context 1023). Tiny pressure flaking along both lateral edges indicates application of denticulation. This is the only formal tool from all of the discrete collections. It may be classed as a microdenticulate, which are usually attributed to the earlier Mesolithic, becoming rare in the later part of this period. However, denticulation along both lateral edges is strange, as the notching to create the denticulation is generally only applied to one edge (Butler 2005). This technique is seen in serrated blades of the Early Neolithic, albeit rarely. As a result, it is difficult to pin this tool to a particular period.

Two final pieces are interesting in that they evidence core working at the site. Both of these pieces are chert. One (WEN15_L108) is a possible core tablet, given its thickness and the recurrent flake scars around its edge. Evidence for a point of percussion can be seen on the ventral surface indicating human modification, and it was likely removed to rejuvenate the platform of a blade core. A second piece (WEN15_L098) appears to be a core fragment. The dorsal surface evidences several blade removals, the majority of which terminate in hinge/step fractures. This piece has a visible, albeit complex, ventral surface, suggesting that this may have been removed from a larger core in an effort to remove mistakes. This may have resulted in destruction/exhaustion of the core. The chert selected for this core is a deep, glossy black and appears to have been of good quality for flaking.

None of the knapped pieces exhibit any cortex, suggesting that they all result from tertiary reduction.

In contrast to the rest of the assemblage, there is a higher degree of harder hammer technique seen amongst the Area 1 material, which is not limited to the chert. In fact, this is more prevalent amongst the flints. However, as with Trench 4, there is a dichotomy between abraded platforms used when reducing flint, while flat, unprepared platforms appear to have sufficed for the reduction of the chert.

Area 2

Monitoring of the soil-stripping in Area 2 revealed a total of 30 lithics, making it the second largest discrete collection after Trench 4. The majority of the material is chert, with only eight flints (27% of the assemblage) present. Three chert pieces were identified as likely to come from natural shatter, with no visible evidence for human modification. These come from the topsoil and the fill of one of the linear features (context 2007). The remaining 27 lithics show signs of human modification and are classified in Table F13. A large number of these (twelve pieces; 44% of the knapped material) were recovered from the peaty fill of the watercourse. The remainder were found in the fills of linear features (nine pieces; 33%) and in the grey subsoil of several hollows (six pieces; 22%).

Table F13: Composition of lithics recovered from Area 2 by knapped form.

Knapped Form	Quantity
Flake	12
Blade/bladelet	3
Core	3
Debitage (angular waste)	9
Total	27

The majority of the collected lithics are made up of flakes and debitage/angular waste. Flakes are somewhat larger in size compared to the other discrete collections. The debitage is mainly formed of angular shatter displaying some evidence of flake scars. Two pieces refit (WEN15_L126 and 127) and may have been part of a core, given the scarring to their surfaces. However, limited evidence of platforms can be discerned, so this hypothesis cannot be wholly supported.

Three blades/bladelets are present, with only a single example produced using flint, which has been broken at the distal end. Of the chert examples, one is a much thicker, cruder piece and may have been an initial removal or corrective effort.

Area 2, like Area 1, also produced evidence for core working, with three pieces identified as probable cores. A single example in flint is seen (WEN15_L090), which appears to be an exhausted bidirectional blade core. It was probably produced from a small nodule or pebble, given there is some cortex retention. Evidence of hinge fracture scars may indicate the reason for its discard. The other two cores were produced using chert. One (WEN15_L114) is a small worked chert pebble displaying multidirectional flake scars cutting through the weathered outer surface. The flakes removed would have been small and flake scars are few. It is likely that this was a tested piece for only a minimal number of removals. The other (WEN15_L130) is a much larger blade core, displaying evidence for two opposing platforms. Several hinge/step fractures are in evidence, which may have resulted in its discard.

A larger proportion of the worked material in Area 2 displays cortex retention, with some eleven pieces (41%), this being the highest for all the collections from the 2015 investigations. This primarily is attributed to flakes and debitage, suggesting that these would have been in the early stages of reduction. Two of the cores also display cortex, again suggesting early stage reduction, but also highlighting that these would have likely been produced from small pieces of raw material, given their size (30-35mm).

Again, the knapping strategy appears to demonstrate a preference for soft hammer, with only one flake displaying a pronounced bulb. The dichotomy between the use of abraded/prepared platforms during flint knapping, versus flat platforms for flaking chert is also in evidence, as seen amongst the other collections.

CONCLUSIONS

The lithic technology recovered from the 2015 mitigation works is primarily formed from flakes and blades produced on a mixture of flint and chert. The selection of flint shows a preference for translucent brown raw material similar to the assemblage recovered during the 2006 excavations. Chert however is more abundant, making up over half the assemblage.

While much of the material is not diagnostic of a particular period, the blade cores found, high degree of blade fragmentation, and the evidence of microburin technique point towards a Mesolithic date for the assemblage as a whole. The use of chert evidences a possible reliance on locally available raw materials and its use echoes that seen at inland Mesolithic sites elsewhere in the North of Britain (Passmore and Waddington 2009). However, no microliths are present amongst the lithic artefacts. This makes providing an accurate date for the assemblage difficult. Only a single diagnostic artefact is present: a microdenticulate/serrated blade. Microdenticulates are considered to be more common in the Early Mesolithic (Butler 2005), though can occur in the later Mesolithic. If this tool is a serrated blade, however, it belongs to the Early Neolithic.

The lack of further tools within the assemblage, as well as the lack of retouch on most pieces, provides evidence that reduction was carried out in an expedient manner, with flakes and blades produced for simple tasks and then likely discarded. Production of microliths appears to have been a primary focus, especially in the vicinity of Trench 2, and it appears that these, and probably any other formal tools, were curated away from the site.

It is likely that much of the material has been moved, given the large proportion that was found within the topsoil and subsoil. Other finds from the watercourse, linear features, and fill of hollows and tree boles is also likely not in primary context. The fill from the tree boles also suggests periodic flooding, which further enhances the need for caution when analysing the spatial distribution of the artefacts.

Despite the probable movement of the artefacts, there appears to be a clear distinction in their distribution, with most originating from Trenches 2 and 4, as well as Area 2. This is close to the watercourse, which may suggest an association between this and the lithic reduction that took place at the site. In addition, the highest volume of knapped material came from within the burnt mound. Burnt mounds commonly placed in later prehistory and usually dated to the Bronze Age. If this is the case, then the question exists concerning how the lithic material entered this context, especially since it does not appear to have affinities to Bronze Age lithic industries, and provides some, albeit minimal, evidence of microlithic production techniques. The fact that very little of this material shows clear signs of burning may suggest later deposition into this context subsequent to the burning event.

Overall, the composition of the lithic assemblages primarily evidences Mesolithic activities, with the possible intrusion of later periods. The focus appears to have been on the production of blades/bladelets for the creation of microliths, which were then removed from the site. The lack of finished tools suggests that the area was principally for flint working, whereas other activities, such as carcass processing, took place elsewhere.

RECOMMENDATIONS

Six items are suggested to illustrate this report as black and white line drawings:

Table F14: Recommended illustrations

Lithic ID	Description
L077	Broken flake with retouch.
L030	Notched bladelet
L044	Notched bladelet
L083	Denticulate
L098	Core fragment from blade core.
L090	Bidirectional blade core

The composition of the lithics adds to the picture of Mesolithic landscape and raw material usage within the area. It is recommended that all of the knapped material is curated. Items identified as natural can be discarded.

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APPENDIX G

PHASE 4 WORKED STONE AND FIRED CLAY

Elizabeth Foulds

INTRODUCTION

Three finds comprising a fragment of ironstone, a piece of burnt shale and a fragment of fired clay recovered during archaeological excavations at Wensley Quarry, North Yorkshire were submitted for assessment. The results of quantification and assessment of these items are presented below.

The assemblage

The material was not chronologically diagnostic, and lacked evidence for human modification (Tables G1 and G2).

Table G1: Summary of material quantities.

Material	Quantity	Weight (grams)
Stone (non-lithic)	2	49.7
Fired clay	1	4.9
Total	3	54.6

Table G2: Summary of material by period.

Period	Quantity
Un-diagnostic	3

RESULTS

Trench 1: Context 104 (subsoil)

A possible ironstone polisher in three refitting fragments was recovered from layer 104. It was cuboid in shape, with one end tapering in both width and height. One of the rectangular surfaces was very smooth, although it had some shallow surface scratches. The opposing surface had broken away in a sheet measuring 4.9mm thick to reveal a rich iron and silica content. The outer surface of this fragment was also worn smooth with some surface scratches. Dimensions: 65.6mm x 21.8mm x 22.5mm (max thickness) (although it was probably originally larger). Weight: 44.8g.

Trench 2: Context 200 (topsoil)

Fragment of fired clay of unclear origin. Weight 4.9g.

Trench 4: Context 403 (burnt mound)

Fragment of burnt shale that was heated to temperatures high enough to melt the silica. Weight: 4.9g.

DISCUSSION AND RECOMMENDATIONS

The assemblage did not include any material that was diagnostic to any particular chronological period.

The possible ironstone polisher was very unusual, further analysis by a specialist is recommended in order to understand the object type and its cultural context. In addition, reflected light microscopy and Raman spectroscopy would permit an analysis of remaining surface residues, which may greatly add to understanding how it was used (Milner *et al*. 2016). Pending the results of analysis, the ironstone object should be fully illustrated and photographed for the report, and retained in the site archive.

The burnt shale and fired clay are of limited archaeological potential and can therefore be discarded.

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APPENDIX H

PHASE 3 PALAEOBOTANICAL AND CHARCOAL ASSESSMENT

Lynne F Gardiner

INTRODUCTION

Seven bulk environmental samples were taken during the course of an archaeological evaluation at Wensley Quarry, North Yorkshire in 2014.

The preliminary results of the evaluation are presented above. This report presents the results of the assessment of the palaeobotanical and charcoal remains in accordance with Campbell *et al*. (2011) and Historic England (1998).

METHODOLOGY

The bulk environmental samples were processed at NAA. The colour, lithology, weight and volume of each sample were recorded using standard NAA pro forma recording sheets. cf. Table H1. The samples were processed with 500 micron retention and flotation meshes using the Siraf method of flotation (Williams 1973). Once dried, the residues from the retention mesh were sieved to 4mm and the artefacts and ecofacts removed from the larger fraction were forwarded to the relevant specialists. The smaller fractions were scanned with a magnet in order to attract any magnetic matter but the residues were not examined and have been retained.

The flot, plant macrofossils and charcoal were retained and scanned using a stereo microscope (up to x50 magnification), cf. Table H2. Any non-palaeobotanical finds were noted on the pro forma.

The plant remains and charcoal were identified to species as far as possible, using Cappers *et al* (2006), Cappers and Bekker (2013), Cappers and Neef (2012), Hather (2000), Jacomet (2006) and the NAA reference collection. Nomenclature for plant taxa followed Stace (2010) and cereals followed Cappers and Neef (2012).

RESULTS

All the samples originated from the shovel test-pits. The magnetic matter from the scanning of the fine fraction residues did not contain any hammerscale. Charcoal recovery was poor with only 1006 AA and 1006 AD yielding any, albeit in very small quantities. These very few fragments were identified as oak (*Quercus*). Only one sample (1008 AA) yielded charred plant remains; single grains of bread wheat (*Triticum aestivum ssp. aestivum*), cf. barley (cf. *Hordeum* sp.) and cf. oat (cf. *Avena sp*.). The grains were heavily abraded and only the bread wheat grain may be suitable for AMS dating, however, these grains were from a heavily rooted sample with earthworm capsules and may indicate presence through bioturbation thus not a reliable specimen.

DISCUSSION

The low quantities of charred plant remains and charcoal limit any further discussion.

STATEMENT OF POTENTIAL AND RECOMMENDATIONS

The bread wheat grain may be suitable for AMS dating, however, the caveat stated previous about bioturbation and reliability should be noted.

All the sample residues, flots and plant remains may be discarded.

The recovery of charred plant remains and charcoal suggested that future recovery would be possible therefore further archaeological work in the area should reflect this potential for the recovery of ancient plant remains and charcoal.

Table H1: Sample data

C	SC	TQ	CP	TP	MP	PW	PV	CS	TS	Components (sorting)	SW	SV	SW>	SV>
1006	AA	1	Dark brown	Loose	Silty sand	6	5	Pale brown	Loose	Stone>1cm 40%: stone<1cm 40%: sand 20%	2397	1700	1656	1000
1006	AB	2	Brown	Plastic	Silty sand	16	14	Brown	Loose	Stone>1cm 30%: stone<1cm 40%: sand 30%	3681	2900	2273	1700
1006	AC	1	Dark brown	Loose	Silty sand	8	8	Brown	Loose	Stone>1cm 40%: stone<1cm 30%: sand 30%	1950	1400	1021	600
1006	AD	1	Dark brown	Loose	Silty sand	6	5	Reddish grey	Loose	Stone>1cm 30%: stone<1cm 30%: sand 40%	916	800	441	400
1008	AA	1	Black	Loose	Silty sand	10	10	Black	Loose	Stone>1cm 20%: stone<1cm 30%: sand 50%	1889	2000	981	900
1008	AA	1	Black	Loose	Silty sand	11	10	Black	Loose	Stone>1cm 10%: stone<1cm 10%: sand 80%	2041	3200	792	1700
1010	AA	1	Yellowish brown	Friable	Clayey silt	11	10	Grey	Loose	Stone>1cm 40%: stone<1cm 30%: sand 30%	2064	1600	1351	1100

Key: C= context, SC= sample code, TQ= quantity of tubs in sample, CP= colour of pre-processed sediment, TP= texture of pre-processed sediment, MP= matrix of pre-processed sediment, PW= weight (kg) of pre-processed sediment, PV= volume (l) of pre-processed sediment, CS= colour of sorted residue, TS= texture of sorted residue, SW= weight (g) of sorted residue, SV= volume (ml) of sorted residue, SW>= weight (g) of >4mm sorted residue, SV>= volume (ml) of sorted residue

Table H2: Palaeobotancial and charcoal data

C	SC	R?	Wt flot (g)	Identifiable plant remains	AMS?	Charcoal id	Components	EWC
1006	AA	yes	3.6	-	no	single oak fragment	Very fine rootlets 100%	-
1006	AB	yes	3.7	-	no	-	Very fine rootlets 100%	1
1006	AC	yes	2.5	-	no	-	Sand 5%: very fine rootlets 95%	-
1006	AD	yes	8.4	-	no	few very small oak fragments	Very fine rootlets 100%	-
1008	AA	yes	13.2	T. *aestivum ssp. aestivum* (1), cf. *Hordeum sp.* (1), cf. *Avena sp.* (1)	yes	-	Comminuted charcoal (c.10 fragments), sand 5%: very fine rootlets 95%	3
1008	AB	yes	17.2	-	no	-	Very fine rootlets 100%	1
1010	AA	yes	6.3	-	no	-	Very fine rootlets 100%	4

Key: C= context, SC= sample code, R?= any remaining residues ?, AMS?= suitable for radiocarbon data?, EWC= earthworm capsules (quantities)

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APPENDIX I

PHASE 4 PALAEOBOTANICAL AND CHARCOAL ASSESSMENT

Lynne F Gardiner

INTRODUCTION

Eleven bulk environmental samples were taken during the course of a series of archaeological interventions at Wensley Quarry, Redmire, North Yorkshire in 2015 (centred on NGR SE 06662 92130). These were submitted for assessment along with some hand-collected animal bone.

The preliminary results of the interventions are presented above. This report presents the results of the assessment of the palaeoenvironmental remains in accordance with Campbell *et al.* (2011) and Historic England (2008; 2014).

METHODOLOGY

The bulk environmental samples were processed at NAA. The colour, lithology, weight and volume of each sample were recorded using standard NAA pro forma recording sheets. cf. Table I1. The samples were processed with 500 micron retention and flotation meshes using the Siraf method of flotation (Williams 1973). Once dried, the residues from the retention mesh were sieved to 4mm and the artefacts and ecofacts removed from the larger fraction were forwarded to the relevant specialists. The smaller fractions were scanned with a magnet in order to recover any microslags and then were examined (sorted) for further artefactual/ecofactual material. Once sorted the residues were discarded.

The flots (from the flotation mesh) and charcoal were retained and scanned using a stereo microscope (up to x45 magnification). Once sorted the flots were discarded with the recovered material being retained. Any non-palaeobotanical finds were noted on the pro forma. Whereby there were numerous (>25) fragments of charcoal only a small percentage was examined so identification to species could be attempted. The charcoal fragments were identified to species as far as possible, using Hather (2000), Schweingruber (1982), Schoch *et al.* (2004) and the NAA reference collection. Nomenclature for plant taxa followed Stace (2010).

The animal bone was washed then air-dried. These were identified using Hillson (2003), Schmid (1972) and Yalden and Albarella (2009).

RESULTS

A total of 211kg (191 litres) of sediment from eleven samples were processed. The flots consisted mostly of roots.

Charcoal

Only three samples yielded any charcoal. The sample from the fill of a large circular feature (1012 AA) from Area 1 yielded 0.62g of twig-like charcoal. The majority of the fragments identified could be attributed to heather (*Calluna vulgaris*). The two other charcoal yielding samples were from Area 2. A single, very small fragment of oak (*Quercus sp.*) charcoal was observed in the sample from the fill of linear 2012 (2013 AA). The greatest weight of charcoal recovered from a sample was from the charcoal fill of posthole/pit 2020 (2021 AA) where a total of 41.85g was observed and identified fragments comprised oak and *Alnus*-type (either hazel- *Corylus avellana* or alder- *Alnus glutinosa*).

Animal bone

Two fragments of bird bone (*Aves*) were hand-collected from the topsoil (400) in Trench 4 whilst a near-complete rabbit (*Oryctolagus cuniculus* (L.) 1758) skeleton was collected from the fill of a tree bole (1028) in Area 1. The preservation of all the bone was good and no cut or butchery marks were observed.

DISCUSSION

Charcoal

There was limited scope (due to fragment quantity and size) for further discourse on the charcoal assemblage.

Animal bone

All the animal bone fragments were hand-collected from stratigraphically modern contexts. They offer little, if any, archaeological value.

STATEMENT OF POTENTIAL AND RECOMMENDATIONS

The charcoal from two samples (heather from 1012 AA and *Alnus*-type from 2021 AA) provided material suitable for radiocarbon dating (AMS).

The charcoal and animal bone can be discarded once all, if any, radiocarbon dating has been successful.

The paucity of palaeoenvironmental remains from this intervention should not influence further recovery strategies for sampling. Charred plant remains were recovered from previous interventions in the area (Gardiner this volume) and charred plant remains and charcoal will survive in numerous different soil and sediment conditions so their chance for recovery, if present, is greater than other palaeoenvironmental material.

Table I1: Sample data

C	SC	CP	TP	MP	PW	PV	CS	TS	Components (sorting)	A	SA	SR	R	SW	SV	>SW	>SV	<4?
104	AA	Dark reddish brown	Loose	Sandy silt	20	18	Mid-brown	Loose	Stone>1cm 30%: stone<1cm 30%: sand 40%	-	-	√	-	6651	4500	4605	2700	yes
203	AA	Dark reddish brown	Sticky	Silty clay	18	16	Dark brownish grey	Loose	Stone>1cm 20%: stone<1cm 70%: sand 10%	√	-	-	-	2804	2200	1687	1300	yes
301	AA	Dark blackish brown	Loose	Sandy silt	17	16	Very dark brown	Loose	Stone>1cm 60%: stone<1cm 10%: sand 30%	√	-	-	-	4927	3100	4022	2200	yes
403	AA	Dark blackish brown	Loose	Sandy clay	32	26	Dark grey	Loose	Stone>1cm 75%: stone<1cm 15%: sand 10%	√	-	-	-	22994	16100	21454	14700	yes
1012	AA	Dark brownish black	Sticky	Silty clay	25	24	Dark blackish brown	Loose	Stone>1cm 40%: stone<1cm 40%: sand 20%	-	-	-	√	4420	3200	2903	2000	yes
1022	AA	Dark brownish black	Soft	Silty clay	14	16	Black	Loose	Stone>1cm 10%: stone<1cm 10%: sand 80%	-	-	-	√	4633	4200	1474	1500	yes
1026	AA	Dark reddish brown	Soft	Silty clay	18	17	Dark greyish brown	Loose	Stone>1cm 10%: stone<1cm 20%: sand 70%	-	-	√	-	3147	2800	1470	1200	yes
2007	AA	Dark black	Soft	Silty clay	23	20	Dark greyish brown	Loose	Stone>1cm 20%: stone<1cm 40%: sand 40%	-	-	√	-	3114	2500	1733	1200	yes
2010	AA	Dark brownish black	Crumbly	Sandy silt	20	16	Mid-brown	Loose	Stone>1cm 75%: stone<1cm 15%: sand 10%	√	-	-	-	4558	3300	3824	2800	yes
2013	AA	Black	Soft	Silty clay	22	20	Dark brown	Loose	Stone>1cm 30%: stone<1cm 20%: sand 50%	-	-	-	√	5218	3700	3565	2000	yes
2021	AA	Black	Loose	Sandy silt	2	2	Black	Loose	Stone<1cm 5%: sand 95%	-	-	-	√	592	800	451	200	yes

Key: **C**= context, **SC**= sample code, **CP**= colour of pre-processed sediment, **TP**= colour of pre-processed sediment, **MP**= matrix of pre-processed sediment, **PW**= weight (kg) of sediment, **PV**= volume (l) of sediment, **CS**= colour of dried residues, **TS**= texture of dried residues, **A**= stone: angular, **SA**= stone: sub-angular, **SR**= stone: sub-rounded, **R**= stone: rounded, **SW**= weight (g) of dried residues, **SV**= volume (ml) of dried residues, >**SW**= weight (g) of >4mm residues, >**SV**= volume (ml) of >4mm residues, <4?= less than 4mm fraction sorted

Table I2: Flot data

C	SC	Context description	T/A	WF	CPR	AMS?	CW	Components	EWC	FD?
104	AA	Trapped subsoil beneath 101	T1	4.9	no	no	-	Very fine rootlets 100%	-	yes
203	AA	Light brown clay beneath 202	T3	8.6	no	no	-	Very fine rootles 100%	2	yes
301	AA	Subsoil	T3	14.5	no	no	-	Very fine rootlets 100%	-	yes
403	AA	Burnt mound	T4	90.8	no	no	-	Very fine rootlets 100%	-	yes

C	SC	Context description	T/A	WF	CPR	AMS?	CW	Components	EWC	FD?
1012	AA	Fill of large circular feature	A1	10.7	no	yes	0.64g	Very fine rootlets 95%: comminuted charcoal 5%	-	yes
1022	AA	Fill of tree bole	A1	38.1	no	no	-	Very fine rootlets 70%: sediment 30%	-	yes
1026	AA	Fill of tree bole	A1	40.3	no	no	-	Very fine rootlets 100%	-	yes
2007	AA	Fill of linear 2006	A2A	14.7	no	no	-	Very fine rootlets 100%	-	yes
2010	AA	Fill of linear 2009	A2A	8	no	no	-	Very fine rootlets 100%	-	yes
2013	AA	Fill of linear 2012	A2A	12.6	no	no	<0.01g	Very fine rootlets 100%	-	yes
2021	AA	Charcoal fill of posthole/pit 2020	A2A	58.8	no	yes	40.83g	Charcoal 100%	-	yes

Key: **C**= context, **SC**= sample code, **T/A**= trench or area, **WF**= weight (g) of flot, **CPR**= charred plant remains, **AMS**?= material suitable for radiocarbon dating, **CW**= charcoal weight (g), **EWC**= earthworm capsules, **FD**?= flot discarded after sort?

Table I3: Charcoal data (actual quantities)

C	SC	W (g)	% ID	F ID	AMS*	*Quercus sp.*	*Calluna vulgaris*	*Alnus*-type	indeterminate	Comments
1012	AA	0.62	25	6	Yes		5*		1	Further identification may be possible
2013	AA	<0.01	100	1	No	1				
2021	AA	41.85	5	12	Yes	4		8*		Further identification may be possible

Key: **C**= context, **SC**= sample code, **W** (g)= weight (g), %**ID**= percentage of charcoal fragments identified, **F ID**= quantity of fragments identified, **AMS***= suitable for AMS radiocarbon dating, * indicated species suitable for AMS

Table I4: Animal bone data

C	CD	T/A	P	Colour	W (g)	Species	Element	Description
400	Topsoil	T4	Good	dark yellowish brown	1.96	Bird (*Aves*)	tibia	fractured in antiquity, no cut marks
400			Good	pale yellowish brown	1.07	Bird (*Aves*)	metatarsal	fractured in antiquity, no butchery marks
1028	Fill of tree bole	A1	Good	pale yellowish brown	15	Rabbit (*Oryctolagus cuniculus Linnaeus* 1758)	near complete skeleton	No butchery or cut marks

Key: **C**= context, **CD**= context description, **T/A**= trench/area, **P**= preservation, **W** (g)= weight (g)

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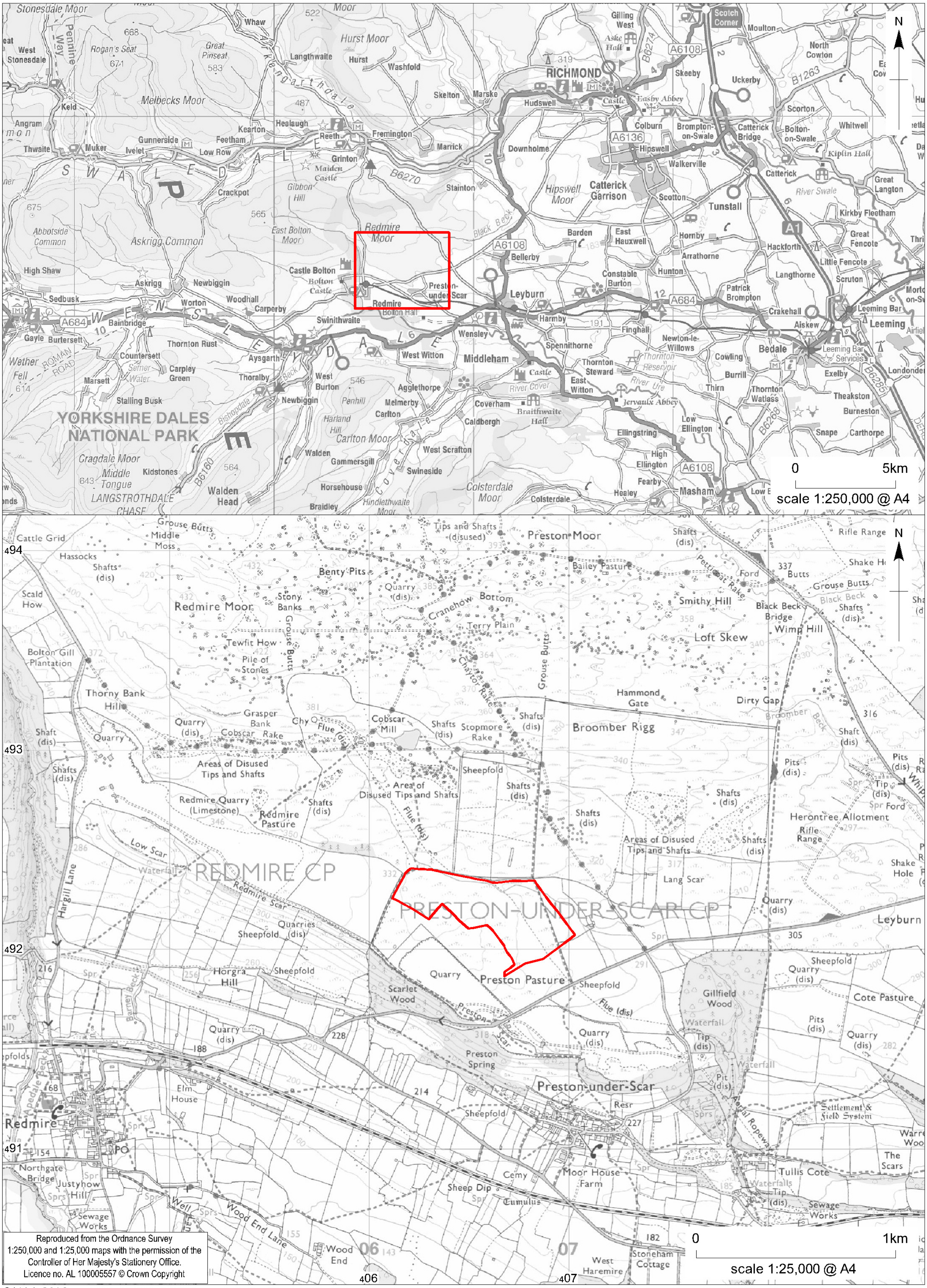
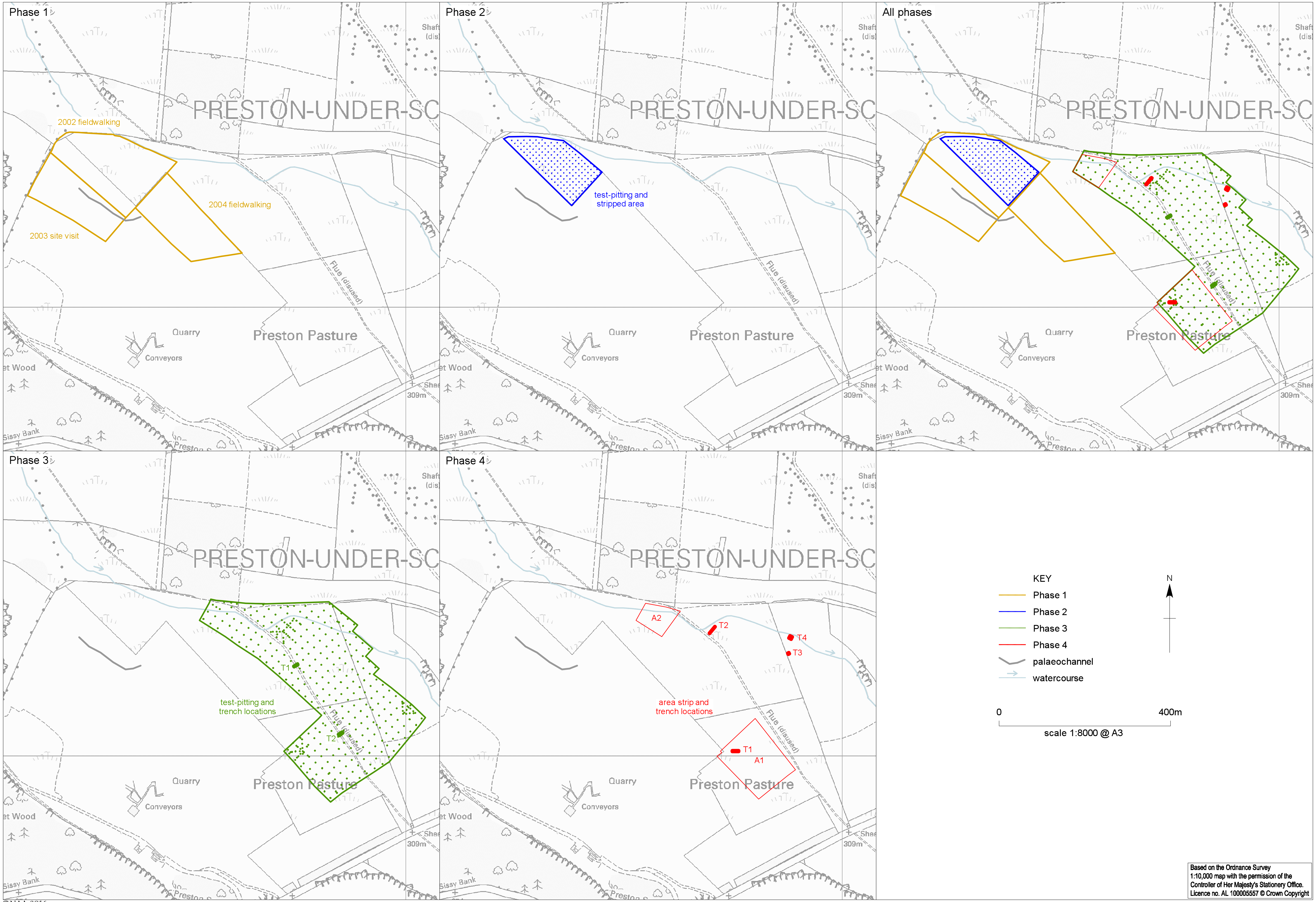
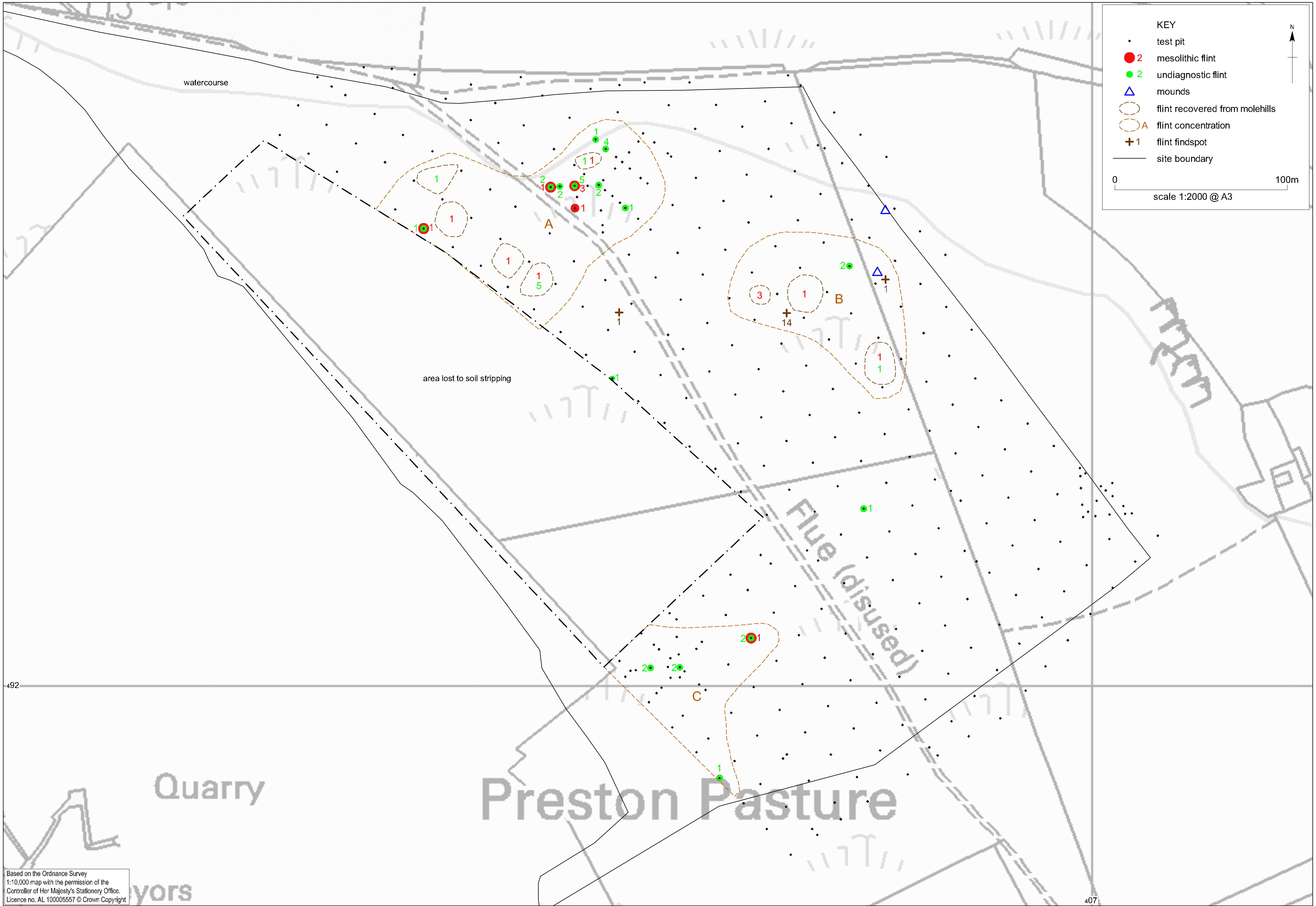


Wensley Quarry: site location *Figure 1*



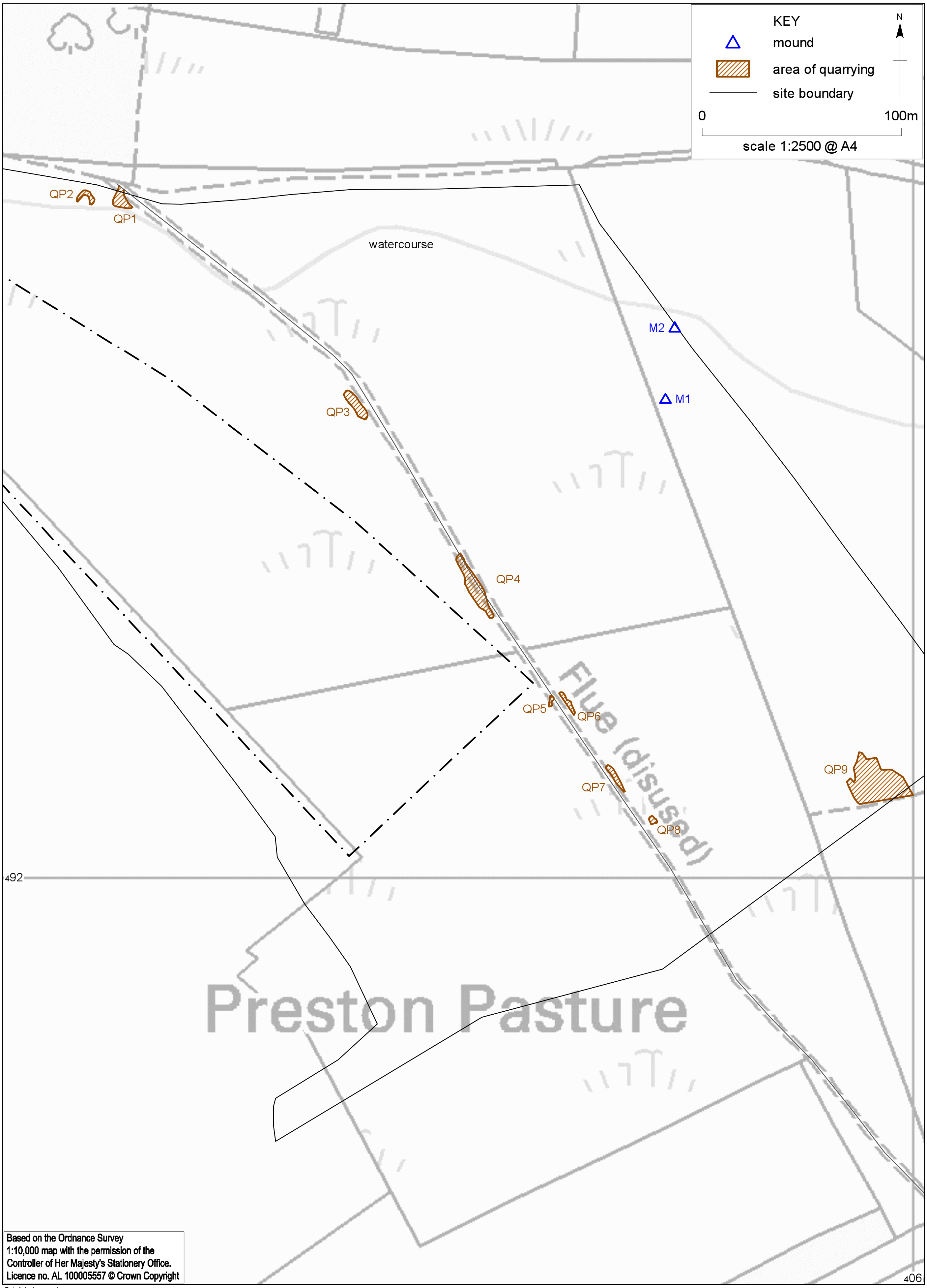
Wensley Quarry: phases of work

Figure 2

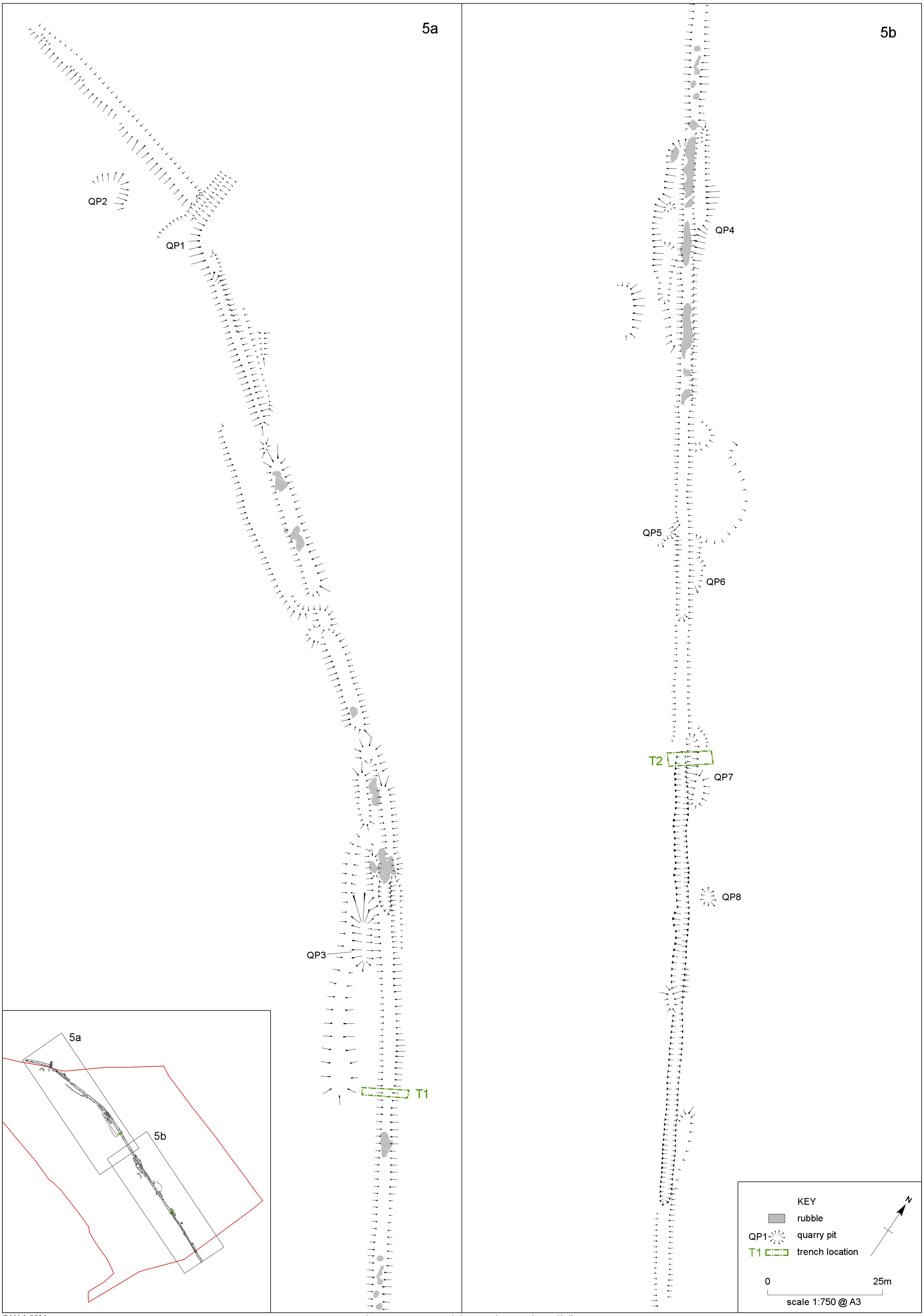


Wensley Quarry: Phase 3 test-pit results

Figure 3



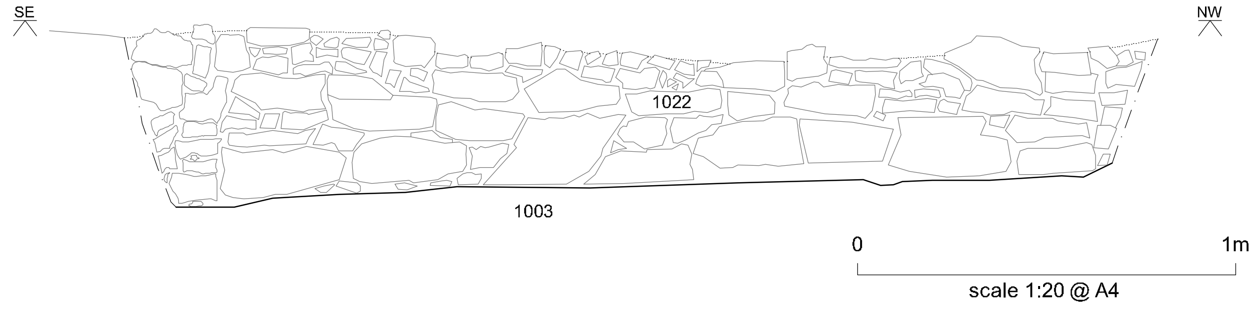
Wensley Quarry: Phase 3 topographical survey results *Figure 4*



Wensley Quarry: Keld Heads Smelt Mill flue

Figure 5

Section A



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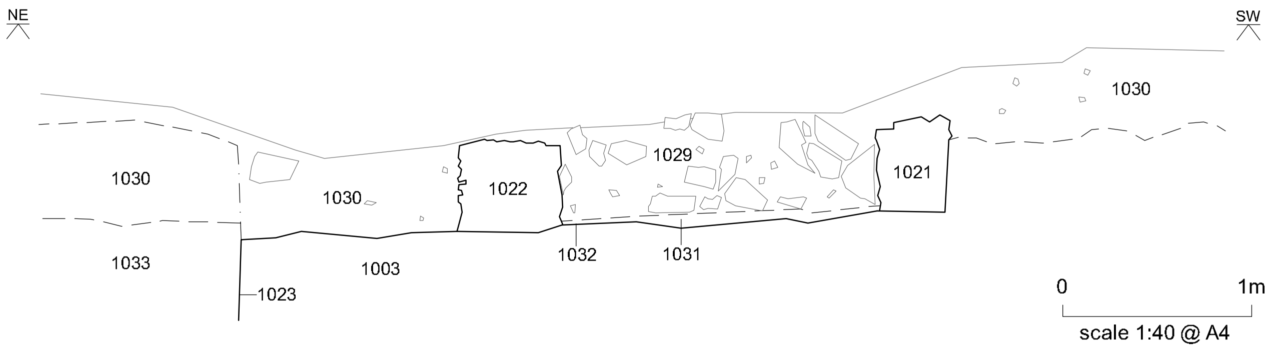
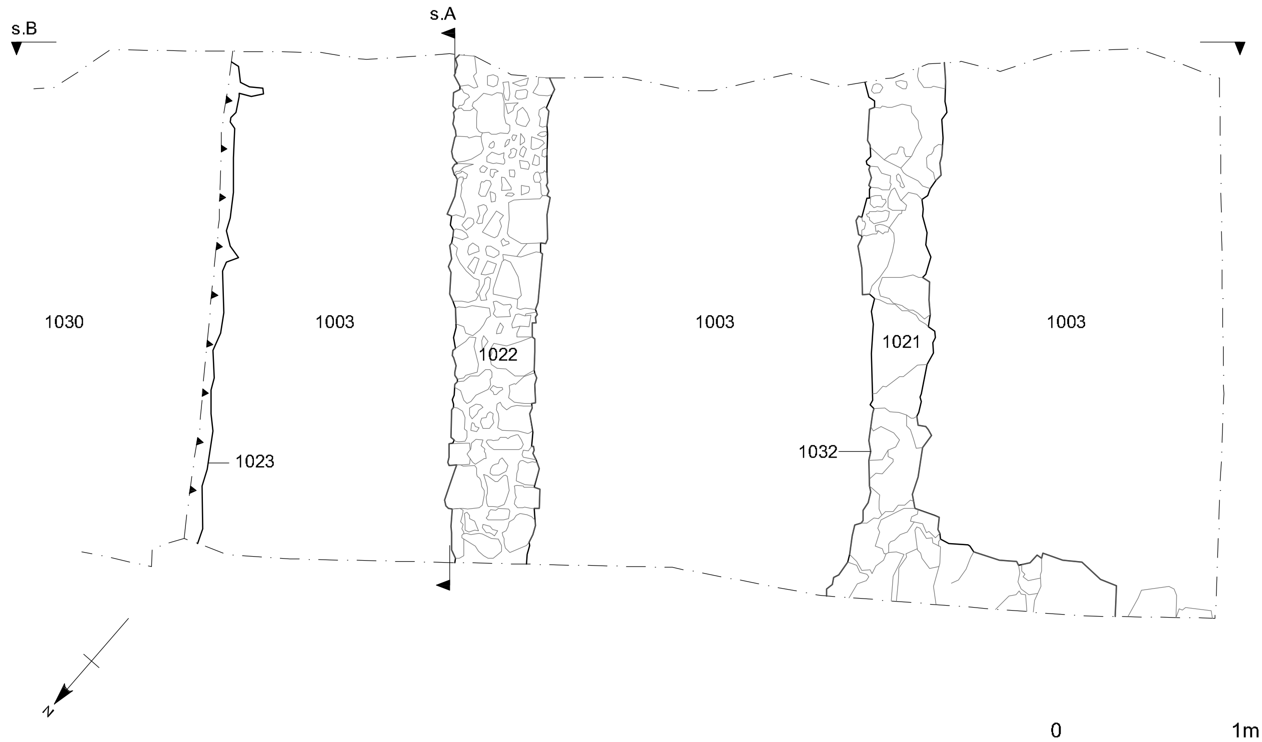
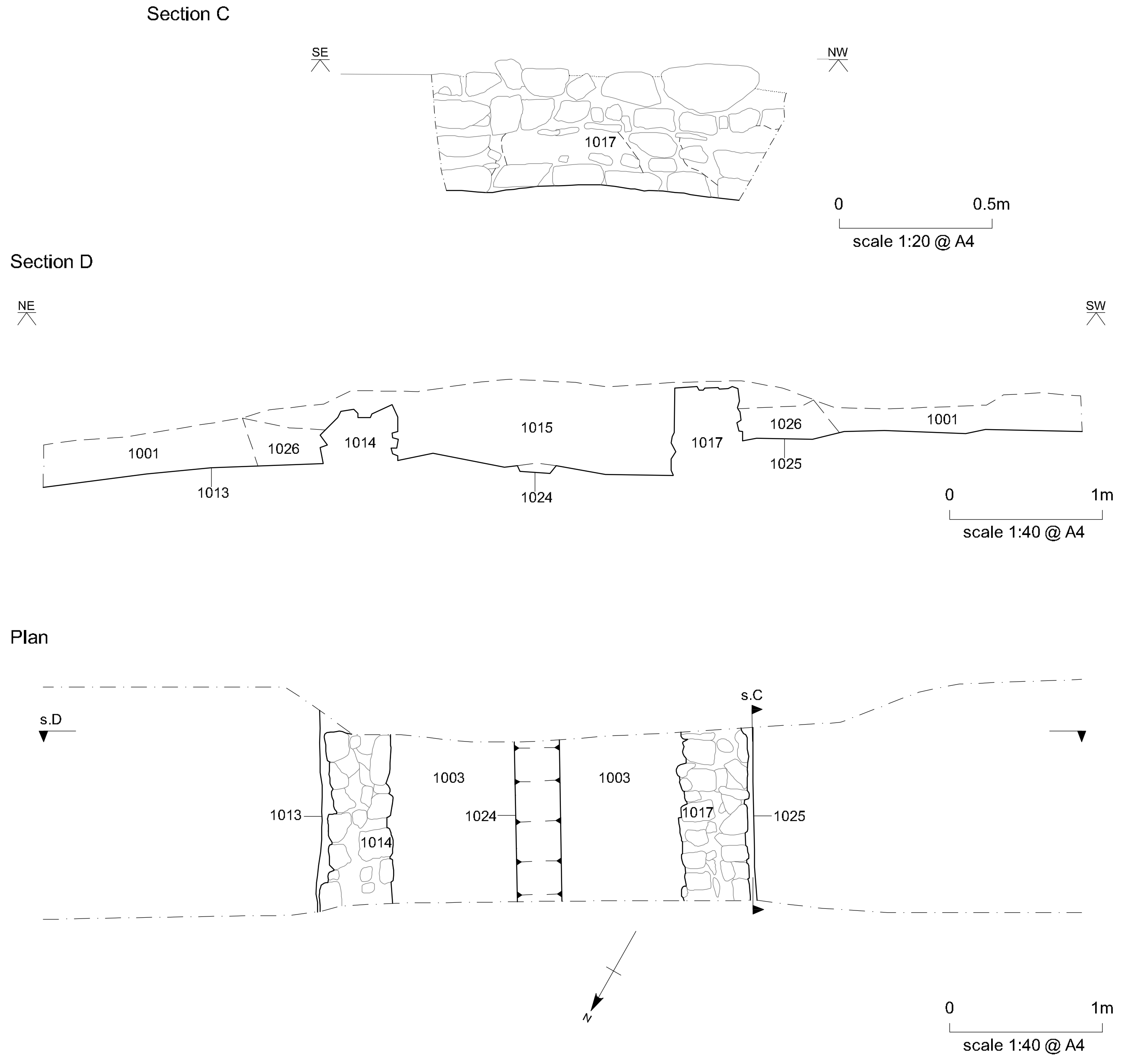


Plan



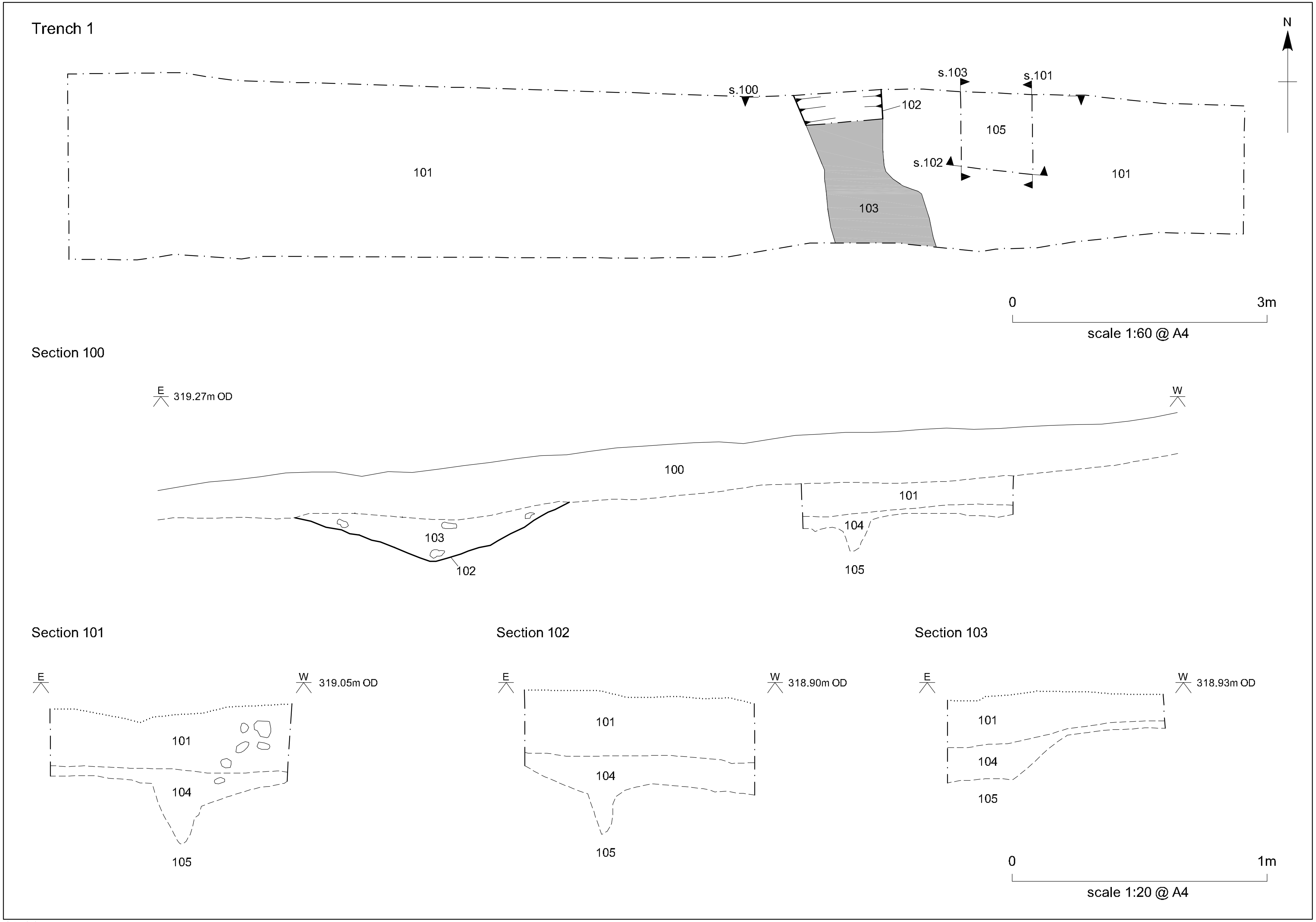
Wensley Quarry: Phase 3 Trench 1 plan and sections

Figure 6



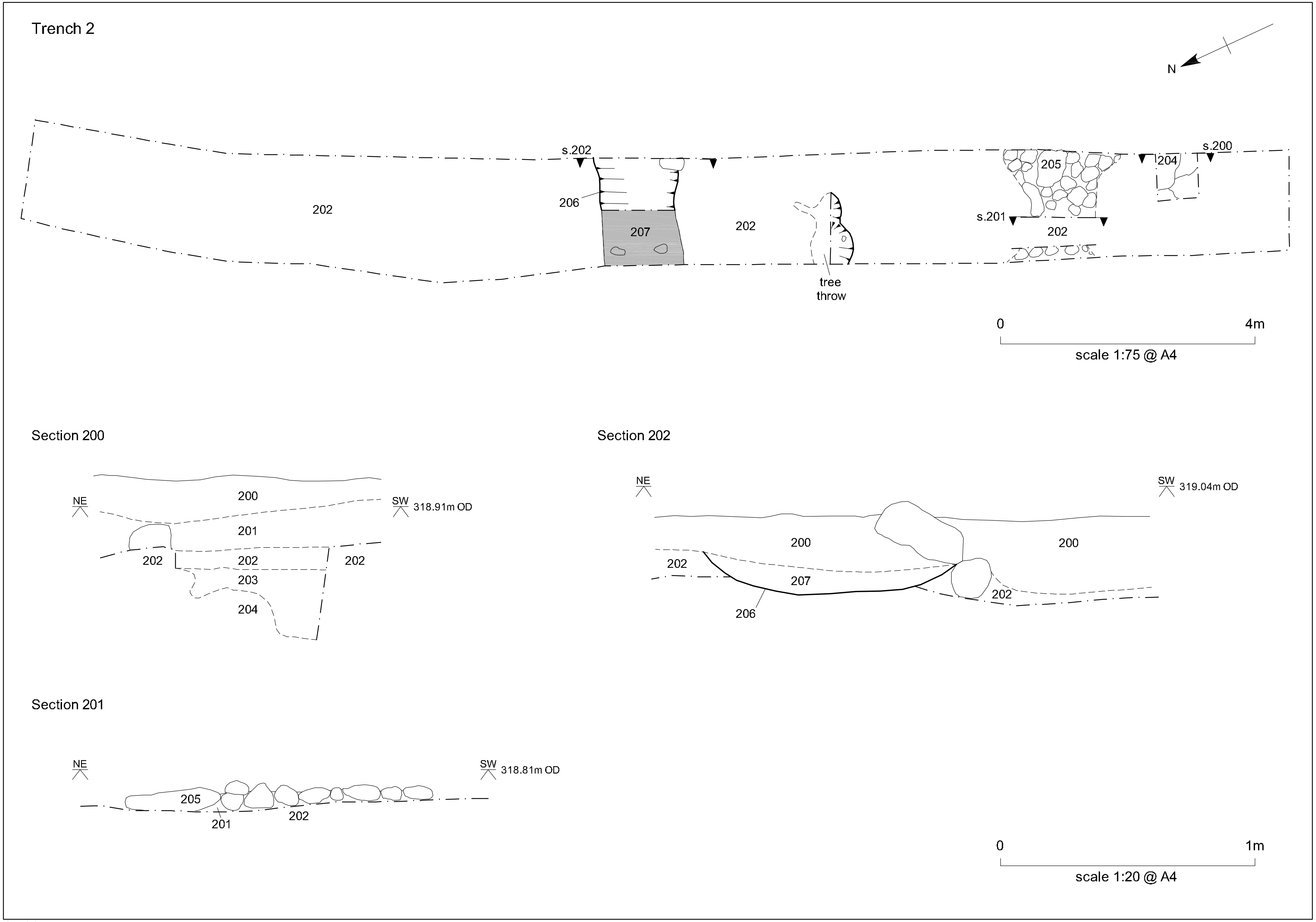
Wensley Quarry: Phase 3 Trench 2 plan and sections

Figure 7



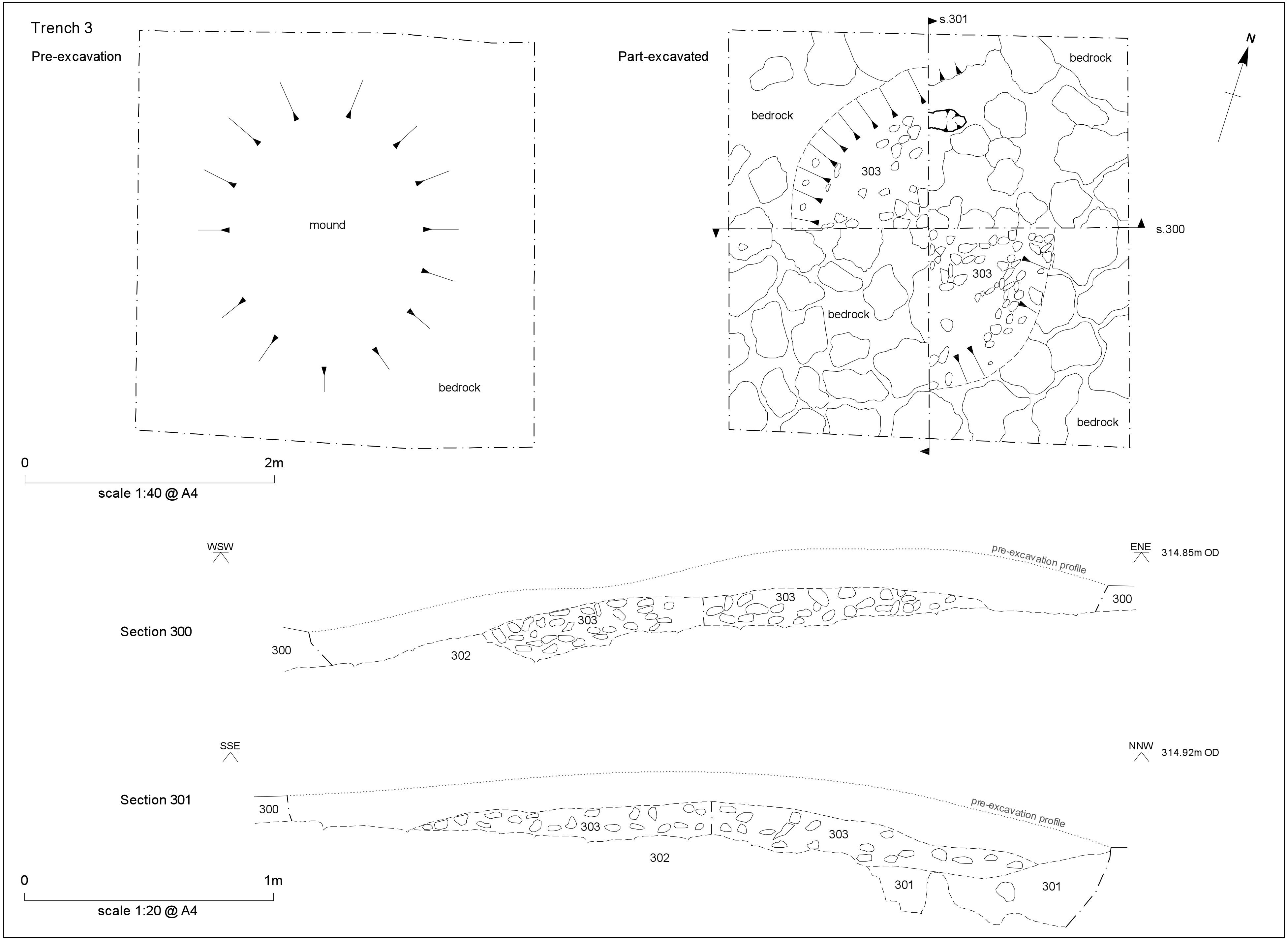
Wensley Quarry: Phase 4 Trench 1 plan and sections

Figure 8



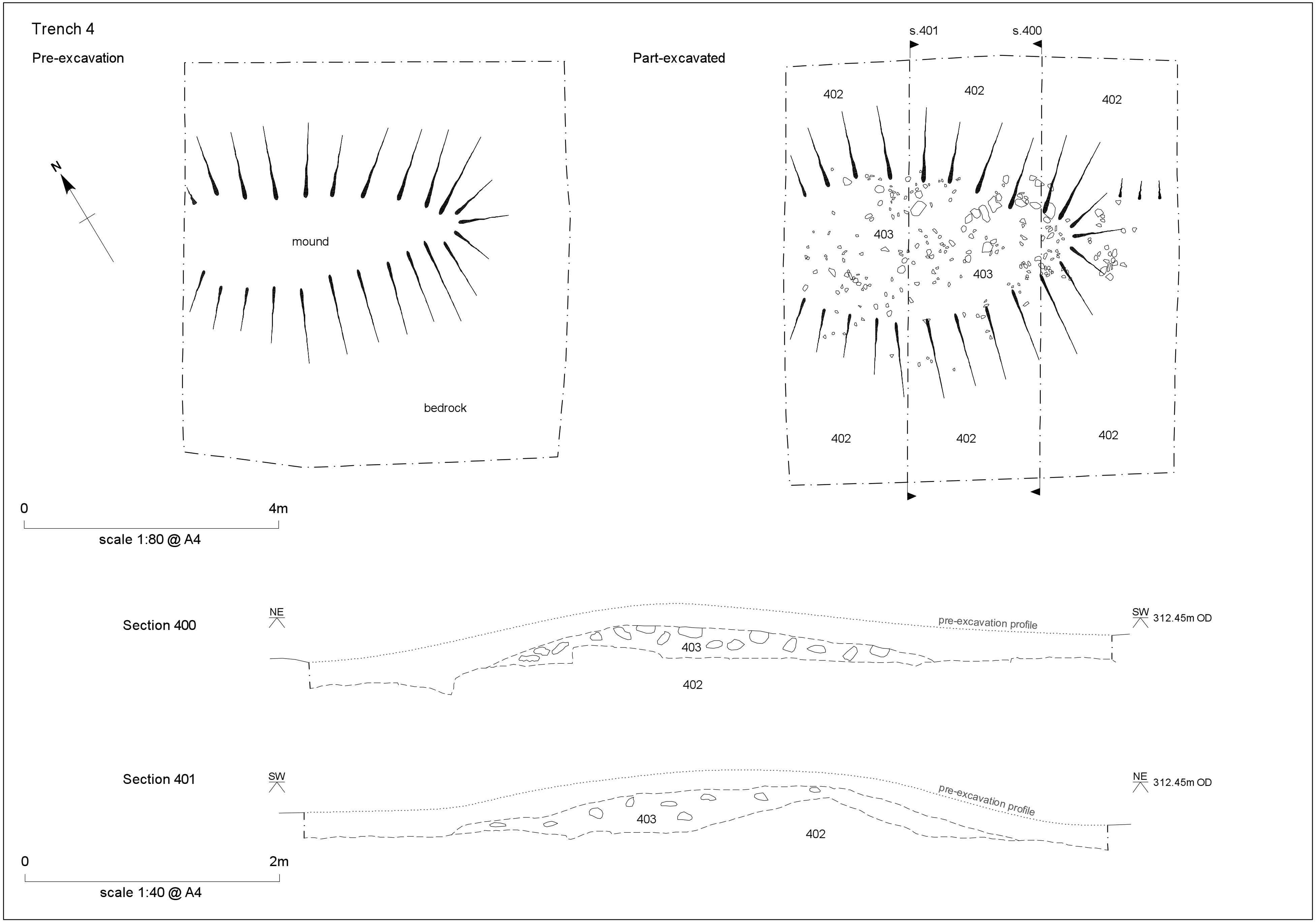
Wensley Quarry: Phase 4 Trench 2 plan and sections

Figure 9



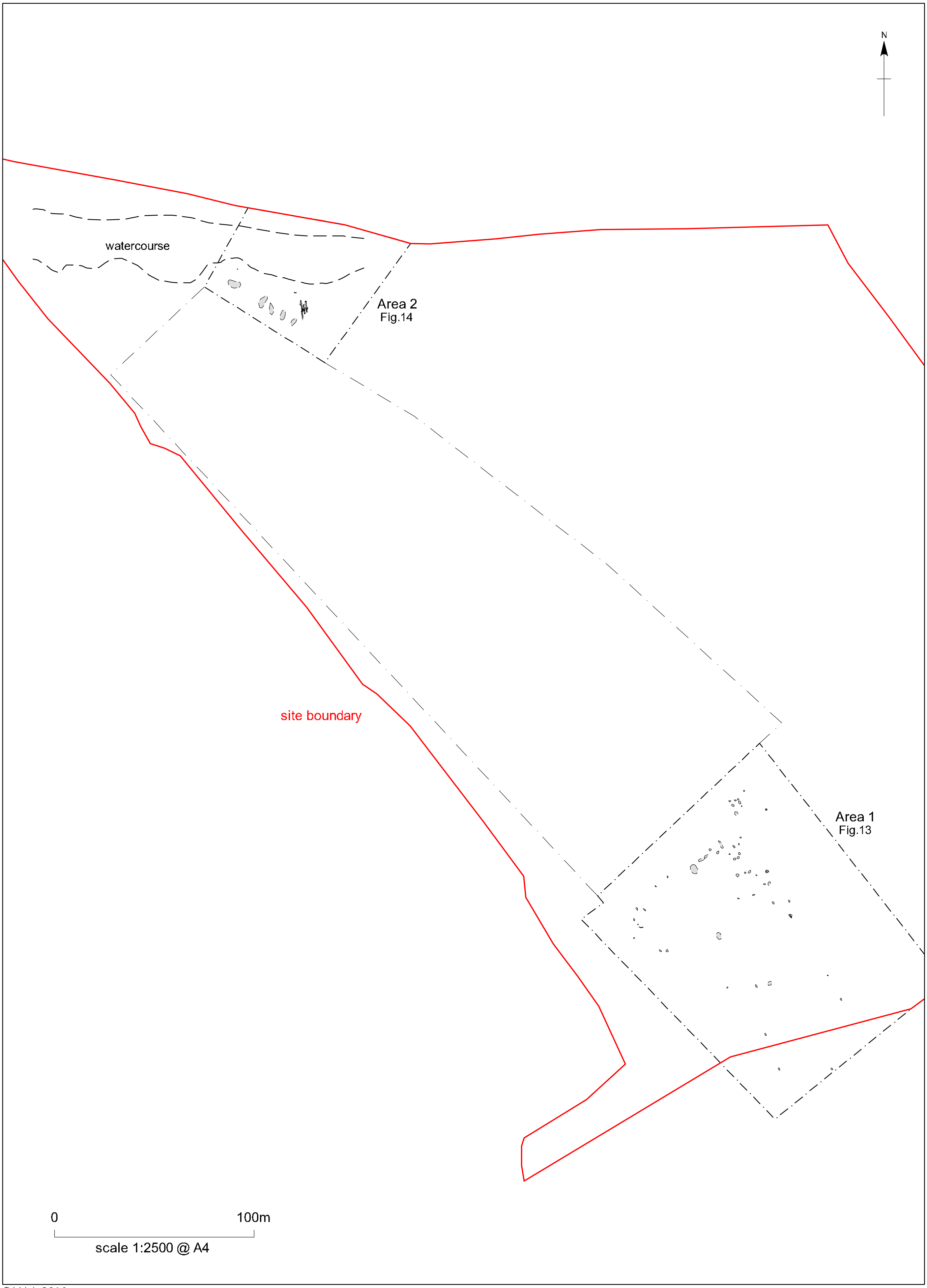
Wensley Quarry: Phase 4 Trench 3 plans and sections

Figure 10



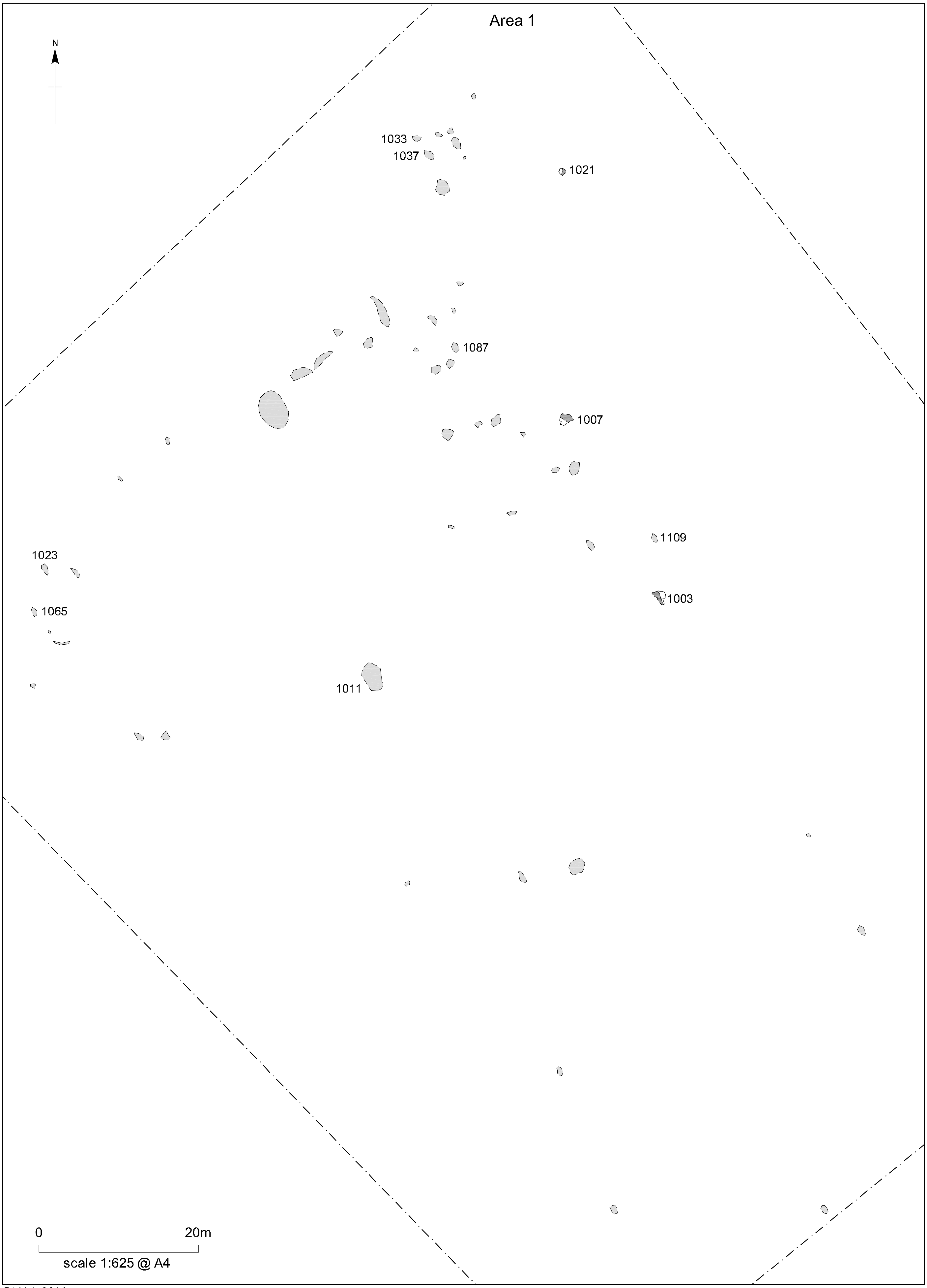
Wensley Quarry: Phase 4 Trench 4 plans and sections

Figure 11

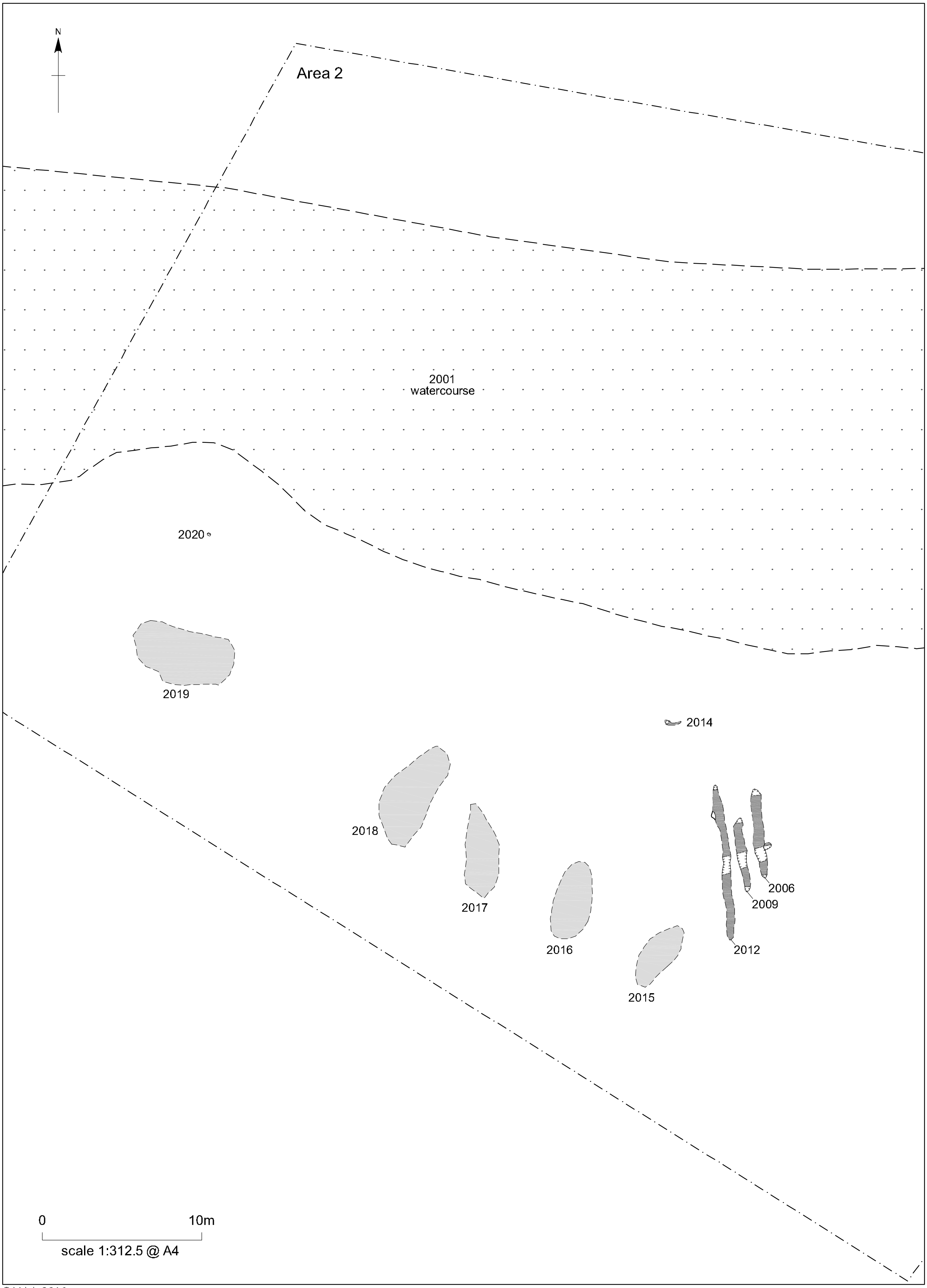


Wensley Quarry: Phase 4 areas monitored

Figure 12



Wensley Quarry: Phase 4 Area 1 plan *Figure 13*



Wensley Quarry: Phase 4 Area 2 plan *Figure 14*