

Barnsdale Bar Quarry Southern Extension

Norton

South Yorkshire

Archaeological Excavation

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The investigation has revealed a landscape representing two phases of activity. The earliest is represented by a number of disparate pits and a small group of cremations which appear to date, on the basis of the associated lithics and radiocarbon dates, to the Late Mesolithic/Early Neolithic period. The later phase is one of land division that seems to have come into existence in the late pre-Roman Iron Age and continued in use throughout the Roman period.

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1. Introduction

- 1.1 Archaeological Services WYAS was commissioned by Darrington Quarries Limited, to undertake an archaeological excavation in advance of the planned southern extension of Barnsdale Bar Quarry for stone extraction. The extension area (Planning Application 03/5340/P/MINA), approximately six hectares in size, was centred at NGR SE 511 139 (Figs 1 and 2). The area of excavation 1.6ha excavation area targeted archaeology identified during evaluation work carried out in May and June 2004 (ASWYAS Rep 1282). The work was undertaken in October and December of 2004.
- 1.2 The site lies within the parish of Campsall, approximately 3km to the west of the village, in the Doncaster District of South Yorkshire. The existing quarry lies immediately to the north of the expansion area with earth bunds providing screening. Long Lane and a farm track, parallel to the A1 motorway, delimit the site to the east and west, with earth bunds to the south.
- 1.3 The geology comprises Permian Magnesian Limestone bedrock overlain by thin soils of the Aberford Association (British Geological Survey 1969). Within the site boundaries the land exhibits c.3m variation in elevation from 61.66m OD in the north to 64.45m OD in the south.

2. Archaeological Background

- 2.1 The site lies close to a well documented Roman Road, the course of which closely follows that of the modern A1. It lies within a landscape of late prehistoric/Romano-British settlement enclosures, trackways and field systems, evidenced from aerial photographic mapping. Due to the continuing expansion of quarry workings, this landscape has undergone considerable archaeological investigations that have been extensively reviewed by Burgess (2001). The previous work, mainly to the north, has demonstrated that these remains survived in good condition. Pottery recovered from these investigations dates the settlement evidence to around the 2nd – 4th centuries AD.
- 2.2 A detailed gradiometer survey covering a total area of 3.7 hectares was commissioned to cover the present quarry extension (Webb 2003). Linear magnetic anomalies were identified and interpreted as infilled archaeological features of enclosure ditches, the continuation of which were previously excavated to the north during archaeological evaluations (Burgess 2001). The report concluded that the anomalies' fragmentary and discontinuous nature (Fig. 2) is due to modern deep ploughing and truncation rather than failure of detection.
- 2.3 A small flint bladelet recovered through field walking over the current excavation area indicated that there was potential for early prehistoric activity, in the area.
- 2.4 The extension area was subject to a trial trench evaluation in May and June 2004 (Gidman 2004), the results of which determined the need for the open-area detailed in this report.

3. Method

- 3.1 The works were carried out in accordance with a project design agreed with Roy Sykes of the South Yorkshire Archaeology Service (SYAS).
- 3.2 The aims of the archaeological investigations were to identify and establish the extent and nature of the archaeological remains within the proposed development area and to determine the condition, quality of survival, character, importance and date of these. Specifically the work aimed to investigate the field systems identified through geophysics and trial trenching and any evidence of settlement.
- 3.3 Following the removal of topsoil by a 360° mechanical excavator the resultant surface was inspected for archaeological remains and localised areas manually cleaned. The excavation limits and all features were then surveyed using a 600 series Geodimeter total station theodolite and were fixed in relation to nearby permanent stations and field boundaries.
- 3.4 All known and potential archaeological features were investigated by hand with 10% of each linear feature being excavated. Discrete features were half sectioned to determine and record their form. An appropriate drawn, written and photographic record was made of all the features and trenches in accordance with Archaeological Services WYAS standard method (Burgess 2003).
- 3.5 A soil-sampling strategy was undertaken for the recovery and identification of carbonised plant remains, vertebrate remains and molluscs. Soil samples of up to ten litres were taken from the primary fills of all archaeological features.
- 3.6 Following completion of the archaeological investigations, the site archive was prepared in accordance with the specification outlined in the Management of Archaeological Projects, Map 2 (English Heritage 1991). The site archive contains all the information collected during the fieldwork and the records have been checked and indexed as necessary. Inventories of the archive, contexts, artefacts and environmental samples are provided below (Appendices I-VI). The paper archive and artefacts are currently held by Archaeological Services WYAS in appropriate and stable environments. These will be deposited with Doncaster Museum within a timescale agreed between ASWYAS and the recipient museum.

4. Results

Summary

- 4.1 The open area excavation revealed a number of pits and post-holes within a system of sub-rectangular fields defined by ditched boundaries. The majority of the boundaries were continuous, although intermittent ditch and pit boundaries were found on the eastern side of the site. There were few discrete features overall, the majority of which were circular and contained charcoal-rich fills with some flint artefacts. Three of the discrete features contained cremated bone. Many of the ditches identified had been targeted during the trial trenching (Gidman 2004). The results have been combined below.

The Boundary Ditches (Figs 3 and 10)

- 4.2 Eight separate field boundary ditches of varying length and form were identified within the open-area excavation (Boundaries 1-8). The general trend was for shallow truncated ditches orientated north-west to south-east intersecting with ditches orientated north-east to south-west but also including segmented ditches and short pit alignments. The boundaries defined the areas of at least eight field units (Fields A-H; Figs 3 and 10).

Boundary 1 (Figs 3/10 and 4)

- 4.3 Boundary 1 formed the eastern boundary of Field A and the western boundary of Field B. The feature had been targeted in the trial trenching, however previous investigation (Trench 8) had been negative. Its exposed length was 27.48m and it measured 1.39m in width and 0.28m in depth. Orientated north-north-west by south-south-east. The fill of this feature was a sandy silt reddish orange/brown containing rare flecks of limestone and fire cracked pebbles (1193) (See Fig. 4 Section 132).

Boundary 2 (Figs 3/10, 4 and 5)

- 4.4 This feature formed the south-eastern side of Field B. From the west it was identified by geophysics and targeted by Trenches 11, 12 and 15 in 2004. These and the additional work carried out as part of the present mitigation works revealed the ditch to be orientated north-east south-west, Boundary 2 measured 61m in length comprising a ditch varying from 0.76m to 1.45m in width. The depth of the feature was between 0.2m and 0.4m, it being filled with a mid orange brown, (brown further north), silty sand with a friable compaction and occasional inclusions of fragmented limestone (Fig. 4 Sections 1(b) and 12(b)). The intersection of Boundaries 2 and 4 was investigated by Trench 15 which revealed that Boundary 2 was the later of the features (Fig. 4 Section 3(b)). However the re-cutting of Boundary 4 also appears to cut Boundary 2 suggesting that the features were in continuous use with episodes of cleaning being recorded in section (Fig.5 Section 126).

Boundary 3 (Figs 3/10 and 5)

- 4.5 This boundary, previously investigated by trenches 11 and 13 in 2004, divided Field B from Fields F and G. It proved to be 57m long and between 1.18m and 1.29m wide and 0.31m to 0.46m deep. Geophysics data appeared to show this boundary intersecting and terminating at the intersection of Boundary 2, however this relationship was targeted in Trench 11 and no relationship could

be established. The ditch of Boundary 3 was notable displaying evidence of re-cutting (Section 11(b), Fig. 5). The fill of the earlier ditch (124) was orangey brown silty sand with high percentage of limestone inclusions with occasional fire cracked pebbles. The later re-cut fill 122 had fewer inclusions and a darker soil matrix. A fragment of pottery was recovered from the later fill (1186) of the re-cut ditch (not illustrated). The feature continued southwards into the excavation baulk.

Boundary 4 (Figs 3/10 and 5)

- 4.6 This feature formed the division between Fields E and F. Truncation had removed the south-eastern 70m of Boundary 4. Such was its reduced state when encountered in Trench 17, that it was dismissed as being of non-archaeological origin. The ditch was investigated at seven new points along its length, twice to the north of the intersection with Boundary 2 and five to the south of it. Boundary 4 was intersected by Boundary 2 at right angles producing the corners of four separate fields (Fields B, C, E and F). The broadening of the ditch half way along its length suggests a redefinition of the boundary as seen in Trench 16 (Section 9(b), Fig. 5). The ditch's heavy truncation to the south and re-cut to the north results in a broad range, dimensions, varying in width from 3.54m in the north to 0.45m in the south and in depth from 0.3m to 0.05m. The fill was characterised as reddish brown silty sand with occasional small fragments of limestone and heavy bioturbation. The re-cut identified in Trench 16 showed no relationship, of the two fills the western most contained less stone fragments and was originally thought to be natural sub soil.

Boundary 5 (Figs 3/10 and 6)

- 4.7 Boundary 5, the common boundary between Fields D and E in the north-eastern extremity of the site, was a segmented ditch. Five segments were identified on a north-west to south-east alignment 1040, 1041, 1037, 132, 1024, 1026, 1018, 1028 and 1141, three of which 1028, 1026 and 1041 were re-cuts within two of the segments. One segment 132 had been evaluated by Trench 23 in 2004. The ditch segments varied between 2.27m and 7m in length and 0.45m and 0.93m in width. The depth of the segments varied from 0.16m to 0.32m. The interval between the segments was between 0.94m and 1.9m. The fills of the ditches were noted during excavation as being similar with dark reddish brown clay silt and frequent limestone fragments.
- 4.8 Clear evidence of a re-cut was observed in the form of 1028 cutting the fill of the earlier ditch 1018 (Fig. 6, Section 18) and in the northern most segment 1041 cutting the earlier ditch 1040 (Fig. 6, Section 34) The re-cuts within the ditches were filled with a similar soil matrix as the primary fills but contained less limestone. The most south-easterly section of ditch produced a fragment of Dales ware from the late 2nd-century AD from its primary fill (1017).

Boundary 6 (Figs 3/10 and 6)

- 4.9 Boundary 6, perhaps a sub-division of Field E and orientated on the same alignment as Boundaries 4 and 5, consists of a shallow continuous ditch of 23m in length with a dog-leg midway along its length. The width varied from 0.66m to 1.33m and the depth reached a maximum of 0.2m. The fill was light yellowy reddish brown silty sand with regular limestone flecking (Fig. 6,

Section 5). The ditch has a direct physical relationship with Boundary 7, but no stratigraphic relationship between their fills could be discerned. Thus it is supposed that the two features were contemporary. No artefacts were recovered from excavations along this ditch.

Boundary 7 (Figs 3/10 and 6)

- 4.10 Only 16m of Boundary 7 was revealed at the eastern edge of the excavation area. The ditch, which with Boundary 8 formed the southern limits of Fields E and F, varied in depth from 0.15m to 0.21m and in width from 0.8m to 0.88m. An interval, possibly an entrance, was revealed in Boundary 7 close to the excavation edge. The interval was only 0.86m wide and may well reflect a form of segmented boundary similar to Boundaries 5 and 8. The fill of the ditch was recorded as red brown silty sand with frequent limestone flecking, cattle teeth were also recovered from the fill 1019 (Fig. 6, Section 23).

Boundary 8 (Figs 3/10 and 7)

- 4.11 Boundary 8 continues on the projected line of Boundary 7, to the south-west of Boundary 4, in a segmented and interrupted fashion. However, this form is questionable in view of the substantial size of pit 1002 which, at a depth of 0.75m, is more than double the depth of the average ditch on site (Fig. 7, Section 1). The lengths of the features comprising Boundary 8 vary from pits measuring 0.8m to ditches measuring 11.05m. Their widths were between 0.43m and 1.18m and depths ranged from 0.07m to 0.44m (not including the substantial pit 1002). The intervals between features varied from 0.72m to a maximum of 4.6m. The fills were similar throughout with dark reddish brown clay silt containing regular fragments of limestone, with a greater amount and larger stones found in the largest pit 1002. No finds or dating evidence was recovered from this boundary to help inform upon the function of the segments (Fig. 7, Sections 9, 29 and 107).

Discrete Features (Figs 3 and 10)

- 4.12 A small number of discrete features were recorded in disparate parts of the site. Apart from four pits there was a distinct group of six charcoal-rich features, one of which at least was possibly a cremation burial. A concentration of pit/post-hole-like features were investigated and have been interpreted as being of natural origin.

The Pits (See inset Fig. 3/10 and 8)

- 4.13 The most easterly of the pits (1161) was steep sided and measured 1.33m in depth by 2.12m in width and contained several fills. The only finds recovered were animal bone fragments that included elements of duck, dog and sheep (See Fig. 8, Sections 117). The westernmost pit, 1162, was not as deep but had similarly steep sides measuring 0.78 m by 1.62 in width, but produced no finds (Fig. 8, Section 115). The function of these features is not clear from the infilling deposits, their initial function may have been for storage, although a ritual purpose cannot be dismissed.
- 4.14 To the south of Boundary 8, close to the site limits, pit 1030 was an isolated feature. Its fill was stony and similar to those seen in the Boundary 8 features. The pit measured 1.13m in width and 0.23m in depth and contained a pinkish brown orange sandy silt with frequent medium limestone fragments (1029). Its

profile was V-shaped, which is characteristically unusual on this site (Fig. 8 Section 25). No finds were recovered.

- 4.15 A large circular pit (1145) was also isolated from any boundaries or other features. It measured 2.28m in width and 0.39m in depth and was filled by a dark brown silty sand with large fragments of natural limestone (1146) the pit looks to have been deliberately backfilled (Fig. 8 Section 100). The similarly V-shaped profiles and stony fills of 1145 and 1030 may be indicative of them having a similar function and having been in-filled at the same time.

The Charcoal-rich Features (See inset Fig. 3/10 and 9)

- 4.16 A cluster of small charcoal rich features were encountered 16m west of the Boundary2/Boundary 4 intersection. As well as 4 pits cutting into subsoil there was a spread of material (1190) on the subsoil noted after machine stripping had taken place. The spread was approximately 0.5m by 0.5m and comprised mid brown silty sand and contained charcoal (See inset Fig. 3). The pits were all between 0.34m-1.1m in diameter and up to 0.41m in depth. Their fills were dark greyish brown silty sand with occasional charcoal fragments. Excavation revealed that pit 201 contained the partial remains of a human cremation. Some human remains were also found in pit 1147 and within the spread of material on the surface (1190). The other features in close proximity 1176, 1178 and 1200 revealed charcoal rich deposits with worked flint and hazel nutshells and a degraded sherd of pottery from pit 1200.
- 4.17 The pit 201 containing the cremation measured 0.3m in diameter and 0.12m in depth. The pit was sub-circular in plan and U-shaped in profile, the fill was described as dark greyish brown sandy silt containing cremated bone (Fig. 9, Section 111). Close to the cremation pit was a surface spread of mid brown silty sand that contained burnt bone (1190). This spread of material was probably derived from a feature disturbed during machining. To the south of cremation 200 a second pit (1147) was excavated in 3 splits that were dark orange brown silty sand and of which 1149 contained some burnt bone fragments (See Fig. 9, Section 102).
- 4.18 Three further pits 1176, 1178 and 1200 (See Fig. 9, Sections 119, 121 and 140) to the west of the cremations were excavated and also produced charcoal rich deposits. Pit 1176 was sub-circular in plan measuring 0.52m in length by 0.34m in width and to a depth of 0.21m. The pit was filled by 1177 mid brownish grey silty sand and 5% charred hazel nutshells mixed into the deposit. Pit 1178 measured 0.69m in diameter and 0.14 in depth and was filled by 1179 mid brownish grey silty sand that also yielded charred hazel nutshells.
- 4.19 The largest pit (1200) measured 1.1m in diameter and 0.41m in depth and was filled by two deposits, the upper (1203) was light yellowy brown sandy silt that was similar to the subsoil that it was cut through. The lower fill was dark brown silty sand with frequent charcoal and occasional limestone flecks (1201) this fill produced a sample of carbonised hazel nutshell that has provided a radiocarbon determination in the range 3710-3630 cal. BC. There was no evidence of burnt bone in these three pits despite the proximity of the cremations.
- 4.20 Some 14m to the south-east of the cluster of pits was an irregular and very shallow feature that was filled with mid grey silty sand with rare charcoal

fragments thought to be either heavily truncated pit or a result of root action possibly a tree bole (1191). No finds were recovered and the processing of the sample did not produce any identifiable charcoal.

- 4.21 Two features were located in the western part of the site, some 60m south-west of the cremation cluster. Similar in size and cutting the red subsoil, these two pits 1189 and 1199 were characterised by their charcoal-rich deposits that contained hazelnut shells and flint (See Figs 9, Sections 135 and 137) Pit 1189 was sub-circular in shape and measured 0.88m in diameter. Containing two fills, the pit was 0.3m in depth with the primary fill 1188 being a dark black silty sand that contained small limestone fragments, charcoal, burnt pebbles, worked flint and, within the charcoal, hazel nutshells. The hazel nutshells provided a radiocarbon determination in the range 3680-3620 cal. BC. The upper fill (1202) contained no burnt material and has been interpreted as a sealing deposit it contained little in the way of inclusions and was dark yellow brown silty sand with some root disturbance. The second pit (1199) was sub-circular in plan, measured 0.82m in diameter and contained two fills. The upper fill was a layer of burnt material (1197) which was dark grey black silty sand with limestone fragments, but no evidence of hazel nutshells. These two pits may represent similar events. Pits 1189 and 1199 would appear to represent rubbish pits containing the remains of cooking events. There was no direct evidence of *in situ* burning. The features are somewhat isolated in the landscape and could suggest a temporary activity, possibly a camp rather than a long term occupation. No physical relationship between the charcoal-rich features to the north-east can be established with certainty but there is a strong likelihood that they are of a similar phase.

The Natural Features (Figs 3 and 10)

- 4.22 A group of discrete post-hole-like features in the vicinity of pits 1161 and 1162 in the eastern part of the site were planned and sampled. Their distribution had no coherent form in plan and the fills of those investigated were homogeneous and without inclusions. The features are consistent with those formed by water accumulating in natural faults and dissolving the limestone around it (Dr. Stephen Carter of Headland Archaeology Limited pers. comm.).

5. Artefact Record

5.1 Introduction

5.1.1 The excavations have produced a modest but significant assemblage of diagnostic artefacts. The largest category is a group of 34 flint artefacts dating to the early prehistoric period, whilst ceramic evidence takes the form of a mere handful of pottery sherds from prehistoric and Roman vessels. The processing of the environmental samples, predominantly from the pits, has yielded a significant collection of wood charcoal and hazelnut shells. Little can be made of the 24 fragments of animal bone recovered during the work. The remains of three human cremations have also been recovered. Samples from pits 201, 1189 and 1200 were submitted for radiocarbon dating.

5.2 Flint by S.I. Toase

5.2.1 The assemblage consisted of 34 lithic artefacts recovered through excavation and sample processing. These were recovered primarily from a series of pits in the western part of the excavation area, with the exception of flint blade which was recovered from the top soil in the vicinity of cremation pit 201.

Raw materials and geology

5.2.2 There is no flint available locally from primary sources although it may be present in glacial river borne material. The character of the raw material represented within the assemblage is varied, with an emphasis on translucent flint (23 pieces or 70% of the assemblage). However it should be remembered that 21 of these are small chunks, 14 of which are from the same context (1179) and may originally have derived from the same piece of raw material. Five pieces (15%) are of a type of material that can be categorised as Wolds flint and is grey and white in colour. A further five items are of flint but of a more varied character, four of which were recovered from the same context (1177).

Chronology

5.2.3 The lack of diagnostic tools makes it hard to determine a dominant chronology for the assemblage. Only three diagnostic artefacts and one core were identified. Item 7, recovered from the topsoil during the initial stages of site investigation, would seem to be derived from a blade technology characteristic of the early Neolithic. A second unstratified tool (Item 12), recovered during fieldwalking, is a small blade of indeterminate function. There is evidence on the dorsal side for previous blade removals which would be consistent with a Late Mesolithic/ Early Neolithic style of working. This can clearly be seen in the dimensions of the artefact itself with a length: breadth ratio of 1.9:1, as well as the form of previous removals on the dorsal side. A transverse arrowhead (Item 4) represents a derivative of the Tardenoisian (Mesolithic) 'petite tranchet' form of arrowhead. The form represents a development of Clark's (1934) Type D arrowhead. The precise date of the form is unclear and Radley (1964, 206) notes that the 'Mesolithic Survival' can range in date from the Mesolithic to the Late Neolithic (Dodds pers. comm.). A small exhausted pebble core (Item 10) was recovered from context 1177. While the outer side

has seen evidence of removals the cortex is still present on part of the flint. There is evidence of platform preparation, however it seems as if faults within the flint have prevented it being worked in a more even manner. Two unipolar removals are evident. Of interest is the fact that even though there is evidence of fresh breaks along the distal end of the core the ridges between the two removals look very rounded and abraded. As this was found from a secure context 1177 it may suggest that the core was old when it was deposited. We can compare the condition of this piece with other artefacts recovered from the same context such as lithic Item 4, the transverse arrowhead, which is still in good condition and shows little evidence of abrasion. From the adjacent feature, fill (1179), a heavily worn chunk of flint was recovered (Item 11). Measuring 22mm in length and 10mm in width this piece of flint is almost identical in colour and cortication to the core recovered from (1177). This may suggest that the pits from which they were recovered may be contemporary. Although only tentative, due to the small amount of material within the assemblage, it would seem to suggest a Late Mesolithic/Early Neolithic date for the assemblage recovered from the pits associated with the three cremations. The lithics from fill 1188 (Items 1-3) may show a contrast in date. The complete flint flake appears to be derived from a flake technology, in contrast to the blade technology associated with the other features, which would suggest a Late Neolithic date for the pit. The remaining 21 pieces appear to be small fragments of working debitage (mainly under 10mm) and are not dateable.

Provenance

- 5.2.4** All of the lithic material examined was recovered from charcoal-rich contexts, yet only one piece (Item 1) showed any evidence of being heat affected. This would suggest that the material had been placed in the pits rather than been present while burning had occurred, possibly suggesting that the pits are for disposal of material rather than the location of the actual burning.

Reduction sequence

- 5.2.5** There is a clear pattern within the assemblage regarding the stages of lithic working. Only one artefact could be classified as representing primary working (Item 2) with the majority showing evidence of being the product of tertiary working. The assemblage is dominated by a series of small chunks and spalls with the highest concentration from context (1179). It may be possible, if these were found close to the surface, that they represented plough damage. However, in this case this seems unlikely due to the secure nature of their recovery. None show obvious evidence of frost shattering; instead they seem to be consistent with a series of small regular removals (see Edmonds, Evans and Gibson 1999, 52). It is interesting to note that in (1179) all the small chunks are derived from a similar material. To support the argument that these were derived from working rather than natural processes no larger artefact from which they could have been produced through natural processes, such as frost shattering, was recovered from the context.

Conclusion

- 5.2.6** Although the assemblage is small certain conclusions can be drawn. The assemblage seems to be broadly Late Mesolithic/Early Neolithic in character.

There is evidence of flint working on site, especially in the fine debitage found during the processing of environmental samples. This would seem to suggest that rather than the tool production occurring on site we are seeing small-scale patterns of maintenance. Of the material examined 81% was recovered from a series of three adjacent pits, possibly suggesting either a short-lived occupation event or a series of returns to the same location over a period of time possibly tied into seasonal movement. This is supported by the fact that two of the pits contained flint of a distinct mottled appearance with considerable abrasion and very similar cortication that would suggest that they were from the same piece of raw material. A second focus of lithic material was recovered from the burnt material within pits 1189 and 1199, but the only diagnostic artefact from this concentration (Item 3) would suggest a Late Neolithic date.

5.2.7 Catalogue

1. A heavily heat affected proximal flake of creamy white flint. The flake has been exposed to high temperatures and is heat fractured across all faces. *L. 7.6mm; w. 13.5mm; th. 5mm; 1188; Sample 63*
2. A flint spall of dark grey flint with partial creamy white cortication. *L. 8.7mm; w. 12mm; th. 4mm; 1188*
3. A whole tertiary flint flake of light grey flint. No secondary working or use of the flake is clearly evident. *L. 24mm; w. 18mm; th. 4.8mm; 1188*
4. A transverse arrowhead, which represents a derivative of the Tardenoisian (Mesolithic) 'petite tranchet' form of arrowhead. The form represents a development of Clark's (1934) Type D arrowhead. The precise date of the form is unclear and Radley (1964, 206) notes that 'Mesolithic Survival' can range in date from the Mesolithic to the Late Neolithic. The chisel-shaped edge of the flake has small semi-abrupt parallel retouch removals and the right margin of the flake has removals of a similar type. Finer retouch removals are visible on the left margin of the flake. The bulb of the artefact has, as with similar types, been removed in order to facilitate hafting. The precise use of this form is unclear although Radley (1964, 205) suggests the form may have been used for fishing activities or as a missile to kill certain types of animal such as birds. *L. 24.8mm; w. 30.5mm; th. 3.2mm; 1177*
5. A whole proximal flake of semi-translucent brown flint. Previous core removals are clearly evident on the dorsal face of the flake. *L. 21.6mm; w. 11.3mm; th. 2.5mm; 1177*
6. A whole flake of semi-translucent dark grey flint. *L. 11.2mm; w. 15.5mm; th. 3.3mm; 1177*
7. A flint knife of likely Neolithic date made on a patinated creamy white flint blade. The blade, which possesses a double dorsal ridge, has heavily worn sub-parallel retouch removals on the left margin. Patches of what appear to be either worn retouch or if not edge damage is also present on the right side of the blade. *L. 37mm; w. 19.4mm; th. 4.5mm; U/S*

8. A partial secondary flake of mottled grey Wolds flint showing two previous removals on the dorsal side, which possibly indicate bipolar working. *L 15mm; w.20.9mm; th. 4.3mm; 1201*
9. A small broken distal end of a flint flake produced from semi translucent light brown flint. The dorsal side appears to show evidence of trimming. *L 6.4mm; w.11.8mm; th. 3.3mm; 1201*
10. A small exhausted and abraded, dark brown mottled flint pebble core with evidence of platform preparation. It is unclear whether the abrasion evident is due to post depositional damage such as ploughing. However due to the secure nature of the context, and the condition of the other lithic items from the same fill, it seems more likely that this core had its worn appearance when it was deposited. *L 12mm; w. 25mm; th. 6.3mm; 1177*
11. A small heavily abraded dark brown, mottled chunk of flint with evidence of removals on one side. This may be a core fragment and it is noted that in colour, level of wear and abrasion and cortication it is almost identical to Item 10 (above). *L 22mm; w. 10mm; th. 5.8mm; 1179*
12. Small blade in light grey mottled wolds flint showing evidence of parallel removals on the dorsal side. It appears to have been broken at the distal end post deposition. No evidence of retouch. *L 13.3mm; w. 8.2mm; th 1.5mm; U/S (NGR SE 45104139)*

In addition to the artefacts recovered above a total of 24 small chunks and chips were recovered during sample processing and these are summarized by context below.

- 1177 A total of 4 chips and chunks were recovered, all of translucent flint and varying in colour from light to dark brown. At least one showed evidence of previous flakes being removed. They are similar in character to Item 5, and are consistent with lithic working.
- 1179 A total of 16 chunks or chips were recovered, with 14 of translucent flint varying in colour from light to dark brown. No other artefact was recovered from this context from which these small pieces could have been derived. It is suggested, therefore that they are the by-product of working rather than the result of taphonomic processes.
- 1192 Two small chunks of flint were recovered, one translucent light brown with the second light grey. Both show evidence of possible previous removals.
- 1197 Two small pieces of light brown translucent flint were recovered, one showing clearly a ridge on its dorsal side where there have been two previous deliberate and controlled removals.

5.3 Prehistoric Pottery by C.G. Cumberpatch

- 5.3.1 The sherd of pottery from pit 1201, which is broken into six smaller fragments (16g), is a yellowish-buff colour and has a soft and crumbly texture with a

muddy appearance. The internal and external surfaces are pitted and cracked. The sherd is yellowish buff colour throughout, unlike the majority of later prehistoric pottery from the area which varies from a dull brown to dark grey or black in colour. The sherd appears to contain a relatively small quantity of poorly sorted inclusions which include white non-crystalline rock fragments and darker reddish non-crystalline rock fragments. Quartz was also present but in small quantities.

- 5.3.2 There is nothing in the intrinsic nature of the sherd to suggest its date and the suggestion that it is late prehistoric is based largely upon negative evidence; it is not Roman or obviously earlier prehistoric in date and seems unlikely to be post-Roman. The highly variable nature of later prehistoric pottery from the region is well known and while this sherd may be of local manufacture, it could equally represent a vessel brought in from further a field.

5.4 Roman Pottery by R.S. Leary

- 5.4.1 The pottery has been recorded according to the Study Group for Roman Pottery Guidelines (Darling 1994). Quantification is by sherd count and weight, and minimum vessel count.
- 5.4.2 Three sherds of Romano-British pottery (55g.) from a minimum of 2 vessels were recovered from contexts 1186 (from ditch 1187 Boundary 3) and 1017 (the primary fill of ditch segment 1018 in Boundary 5).

Chronology

- 5.4.3 The Romano-British vessels represented are both traded wares, Dales ware from Lincolnshire and Humberside and BB1 from Dorset. Neither was diagnostic with regards to its vessel type (a jar and bowl/dish of unknown forms) but the arrival of these particular traded wares in this region has been dated with some precision. BB1 appears in the North of England after c.AD120. As it was made at Rossington Bridge during the Antonine period there was a possibility that the bowl or dish was obtained from the potteries at Doncaster during the 2nd century. The fabric, however, included visible shale-like inclusions and white inclusions which reacted to hydrochloric acid. These features are absent in Rossington Bridge BB1 and diagnostic feature of Dorset BB1. BB1 was common at the nearby fort of Castleford during the 3rd century and vessels of this date must be a product of the Dorset industries since the South Yorkshire kilns were no longer producing BB1 wares. This particular bowl or dish, therefore, is more likely to date to the 3rd century since earlier material would almost certainly be from Rossington Bridge.
- 5.4.4 The Dales ware jar is most likely to have arrived in the early 4th century. Rush noted that the late 3rd century contexts at Castleford were dominated by BB1 but the early 4th century saw a shift in trading patterns with Dales ware becoming the dominant type. Evans takes this as evidence of early 4th century date for the arrival of Dales ware in this part of Yorkshire. At Rossington Bridge Pumping Station Buckland notes Dales ware associated with a coin of Septimius Severus and in 3rd century levels which were given a *terminus post quem* in the first half of the 3rd century (Buckland 2001, 80 and 11) and at Doncaster Dales ware jars appear in small quantities in contexts dating to the 3rd century (Buckland and Magilton 1986; Leary unpublished) so an earlier

date remains a possibility. In Lincoln Dales ware usually occurs in layers dating to the mid 3rd century (Darling 1999, 131) and in recently excavated groups in Nottinghamshire it occurs at Brough in association with a large group of pottery dating to the mid 3rd century AD (Leary unpublished a). Elsewhere Dales ware is generally thought to date to the 3rd-4th centuries (Evans 2002 373 type J12.2). Swan dates its introduction to the second decade of the 3rd century (Swan 1992, 8-9, 1996, 577). The position of the site between Doncaster and Castleford and the small numbers occurring at Doncaster in the 3rd century deposits suggests that although this vessel could be as early as the 3rd century it is more likely to date to the early 4th century when these jars were plentiful.

- 5.4.5 Sherds of pottery such as this occurring singly or in small groups is not unusual in field system ditches such as these and reflects the generally careful disposal of ceramic debris practised by their owners (Leary unpublished b). It does not necessarily imply an absence of domestic dwellings in the vicinity.

6. Environmental Record

6.1 Flots, Charcoal and Nutshells by Diane Alldritt

- 6.1.1 A total of twenty five flots were assessed for carbonised plant macrofossils. Five retents from these samples had also produced carbonised remains, mostly hazel nutshell fragments, with a little charcoal.

Methodology

- 6.1.2 Bulk environmental samples were processed by ASWYAS using an Ankara style water flotation system (French 1971). The resultant flots and retents varied in size from <5ml to up to 15ml of charred fragments, modern roots and dust Sample 71 (200) is discussed separately below. Flots were sorted with the aid of a low powered binocular microscope at magnifications of x4-45. Carbonised cereals suitable for dating were tubed individually. Hazel nutshells were also similarly examined, total counted, and three good fragments selected and tubed from each retent.
- 6.1.3 All charcoal suitable for identification was examined using a high powered Vickers M10 metallurgical microscope. Identified charcoal was subsequently tubed separately by species. The reference photographs of Schweingruber (1990) were consulted for charcoal identification. Plant nomenclature utilised in the text follows Stace (1997) for all vascular plants apart from cereals which follow Zohary and Hopf (2000). All results are presented in Appendix VII and discussed briefly below.

Discussion

- 6.1.4 Overall the flots produced very little in the way of carbonised material, with some samples containing <5ml of charred fragments, but the majority containing nothing. Small non-marine mollusc shells were highly prevalent throughout the samples. Modern seeds were also common in the flots, mostly *Chenopodium album* (fat hen), a fairly ubiquitous background seed in the modern soil seed bank.

- 6.1.5 Two samples produced carbonised cereal grain. These were sample 62 (1179) which contained the only identifiable cereal grain from the site, i.e. barley, and also sample 63 (1188) which contained three indeterminate cereal grains. Two carbonised seeds, possibly crop weeds, but more likely rough or grassland species were also present in sample 62.
- 6.1.6 Woodland resources in the form of oak and hazel charcoal and hazel nutshells were recovered from all five retents. The presence of hazel suggested a light open woodland covering, or woodland edge environment. Oak may have been growing as small stands or formed part of a larger woodland cover. Charcoal from sample 50 (1149) was not identifiable. Samples 61 (1177), 62 (1179), 63 (1188), 66 (1197) and 67 (1201) all produced abundant quantities of hazel nutshell. In addition, samples 66 and 67 also produced oak charcoal, whilst only sample 61 produced hazel charcoal. The flot from sample 71 (200) also contained a large number of oak fragments, but no short-lived species.

Summary and Conclusions

- 6.1.7 The majority of samples from Barnsdale Bar were lacking in any carbonised plant remains. Carbonised hazel nutshells and charcoal were concentrated in five samples, 61 (1177), 62 (1179), 63 (1188), 66 (1197) and 67 (1201), with all producing sufficient material for dating purposes if required. Carbonised cereal grain was confined to two samples only, 62 (1179) and 63 (1188). Identification of the plant remains has provided tentative evidence for the cultivation of barley crops, together with more substantial indication for the presence and use of woodland edge resources, including both hazel wood and nutshells, probably for fuel / construction purposes, and food respectively. Oak was also probably locally present as either woodland or as single large trees, and would have been a highly valued fuel resource.
- 6.1.8 Sample 71 (200) consisted of approximately 20ml of charcoal fragments. All of this material was examined under a low powered microscope in the search for short-lived charcoal types. Every piece apart from a single fragment, was found to be *Quercus* (oak). The only short-lived, and therefore potentially datable, fragment was identified as *Corylus* (hazel) using a high powered microscope. This piece was bagged separately for dating. This charcoal sample was interesting in that it was associated with a cremation feature and therefore can provide some indication of the types of combustible material being used as fuel for the cremation pyre. Oak would have been a favoured fuel for both cremations and industrial activities as it burns at a higher temperature for a longer period of time. Hazel, probably in the form of small branches, was most likely used as kindling to assist the lighting of a large pyre. Charcoal analysis from numerous sites in Central Scotland and Southern England has suggested that oak was the most commonly used fuel on Bronze Age and later cremation sites, usually accompanied by some type of kindling fuel such as hazel, alder or birch.

6.2 Animal bones by Jane Richardson

- 6.2.1 Only 24 animal bone fragments were recovered during the investigations and these are detailed in Table 1 below. No conclusions, however, can be drawn from so few bones.

Table 1. Animal bone fragments by context

Context	Species	Element
1013	Cattle	10 tooth fragments
1019	? Cattle	11 tooth fragments
1171	Sheep/goat	1 radius barrel-juvenile
1171	Dog	1 second phalanx
1171	? Bird	1 long bone fragment

6.3 Osteological Analysis of Cremated Human Remains by Malin Holst

- 6.3.1 Three cremated bone assemblages were recovered during archaeological work at Barnsdale Bar. Two of the burials (200 and 1149) were interred in simple pits, while the third assemblage (1190) found was a surface scatter, thought to originate from machine disturbance of Burial 200. This scatter contained charcoal, which may represent a deliberate inclusion, or may have been accidentally raked up from the pyre together with the human remains. No artefacts or animal bones were found with the bone.
- 6.3.2 Notably, the largest burial (200) contained only 134.6g of cremated bone, which is 8.2% of the expected mean quantity of bone from a modern cremation burial. Burial 1149 only contained 0.5g of cremated bone, while the surface scatter produced 2.4g. This suggests that the majority of bone from the burials was lost, probably as a result of truncation. This hypothesis is supported by the small fragmentation of the majority of bone recovered, as well as the considerable erosion observed on the bone fragments from Burial 200.
- 6.3.3 The bone recovered from the burials was well calcined, suggesting that the cremation temperature and length had been adequate to thoroughly cremate the bodies. Age could be determined in one case (Burial 200), which was an adult. No evidence for disease was noted in any of the burials.
- 6.3.4 The osteological evidence suggests that the four individuals were cremated thoroughly, followed by the selection of some of the bone from the pyre for burial. Although it was assumed that the bone in surface scatter 1190 derived from Burial 200, osteological evidence suggested otherwise. The bone from Burial 200 was very fragmented and eroded, while the small quantity of bone from the surface scatter showed no evidence for erosion. Additionally, the surface scatter contained charcoal, whereas the cremation material 200 was lacking any evidence for pyre material. It is possible that what appeared as a surface scatter (1190) upon excavation had been a cremation burial in a

shallow scoop, which, together with the other burials, had suffered from severe truncation, perhaps as a result of recent deep ploughing.

6.4 Radiocarbon Dating

- 6.4.1 Three samples of cremated bone and organic material were submitted to Beta Analytic for radiocarbon dating. Samples for dating were obtained from samples of 200 (the fill of cremation pit 201), 1188 (the primary fill of pit 1189) and 1201 (the primary fill of pit 1200). The results generally confirm the evidence of the artefacts in reflecting activity in the Late Mesolithic/Early Neolithic period. Collagen was not successfully extracted from the sample of bone (200) and could not be dated. The dating evidence is summarised in Table 2 below.

Table 2. Results of radiocarbon dating

Lab. Code	Context	Material	Radiocarbon Age BP	Calibrated Age $\delta 1$	Calibrated Age $\delta 2$	Delta ^{13}C rel. PDB‰
Beta-203146	1188	Carbonised Hazel nutshell	4840 \pm 40	3660-3640 BC	3680-3620 BC	-24.7
Beta-203147	1201	Carbonised Hazel nutshell	4870 \pm 40	3670-3640 BC	3710-3630 BC	-23.5

7. Discussion

- 7.1 The evidence available is suggestive of two broad phases of activity. The earliest activity, as dated by the lithic assemblage and the two radiocarbon dates, would appear to have taken place in the Late Mesolithic/Early Neolithic. The later activity occurred in the later Iron Age and Romano-British and there is no evidence for any continuity on the site between these two phases.
- 7.2 The Late Mesolithic/Early Neolithic is a period for which there is very little archaeological evidence in the region, due partly to the difficulty in locating it by standard evaluation methods. Whilst there is some evidence for Mesolithic activity at Sutton Common, c.4km to the south-east (Parker Person and Sydes 1997, 233-4), there are few comparable sites in the area. The radiocarbon dates achieved are earlier than any determined for the ritual monuments around Ferrybridge Henge, 10km to the north (Roberts 2005, 191).
- 7.3 Earlier field walking at Barnsdale Bar did locate significant flint scatters some 100m to the north of this site, but subsequent test pitting failed to identify any tangible archaeological remains (Burgess 2001). The discovery now of pits containing flint, hazelnut shells and pottery, along with three cremation deposits is a rare survival of evidence of settlement and/or ritual activity from this early period. Whether the activity represents long-term occupation over a wide area or seasonal or sporadic revisiting is unknown.
- 7.4 The ditched land divisions that form the field system are very typical for the area. Many are known from cropmarks mapped from air photographs, though in this particular site and to the south at Scorcher Hills (Webb and Rose 2004) the land divisions have mainly been detected by geophysical survey. The geophysical data indicated more complete regime of land divisions than was ultimately found after topsoil stripping. It is possible that features may have

survived invisibly in the subsoil that was removed. Other less regular ditches were not interpreted by geophysics as they lacked clear linear trends.

- 7.5 Based upon the date of the few pieces of pottery from the ditches the field system would be viewed as a Romano-British entity of the 2nd –4th centuries AD.
- 7.6 The precise function of the enclosures remains unknown. There is no evidence for an associated settlement or industrial activity in this area, although a number of potential settlement enclosures are known from cropmark evidence close by. The fields are part of a wider system of agricultural enclosures probably employed for both crop production and livestock at different times.

8. Conclusions

- 8.1 The investigation has revealed a landscape with two phases of activity represented. The earliest is represented by a number of disparate pits and a small group of cremations that appear to date, on the basis of the associated lithics and radiocarbon dates, to the Late Mesolithic/Early Neolithic period. The later phase is one of land division which seems to have come into existence in the late pre-Roman Iron Age.
- 8.2 The earlier phase may represent short-term (possibly seasonal) occupation of the area, although there are also clear ritual connotations. The small nature of the assemblage means only tentative conclusions can be drawn. The later field system provides further evidence of the extent of land division of this period, similar to extensive examples recorded elsewhere in South and West Yorkshire.

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Dr D. Alldritt (Environmental)

Dr C.G. Cumberpatch (Prehistoric pottery)

R. Leary (Roman pottery)

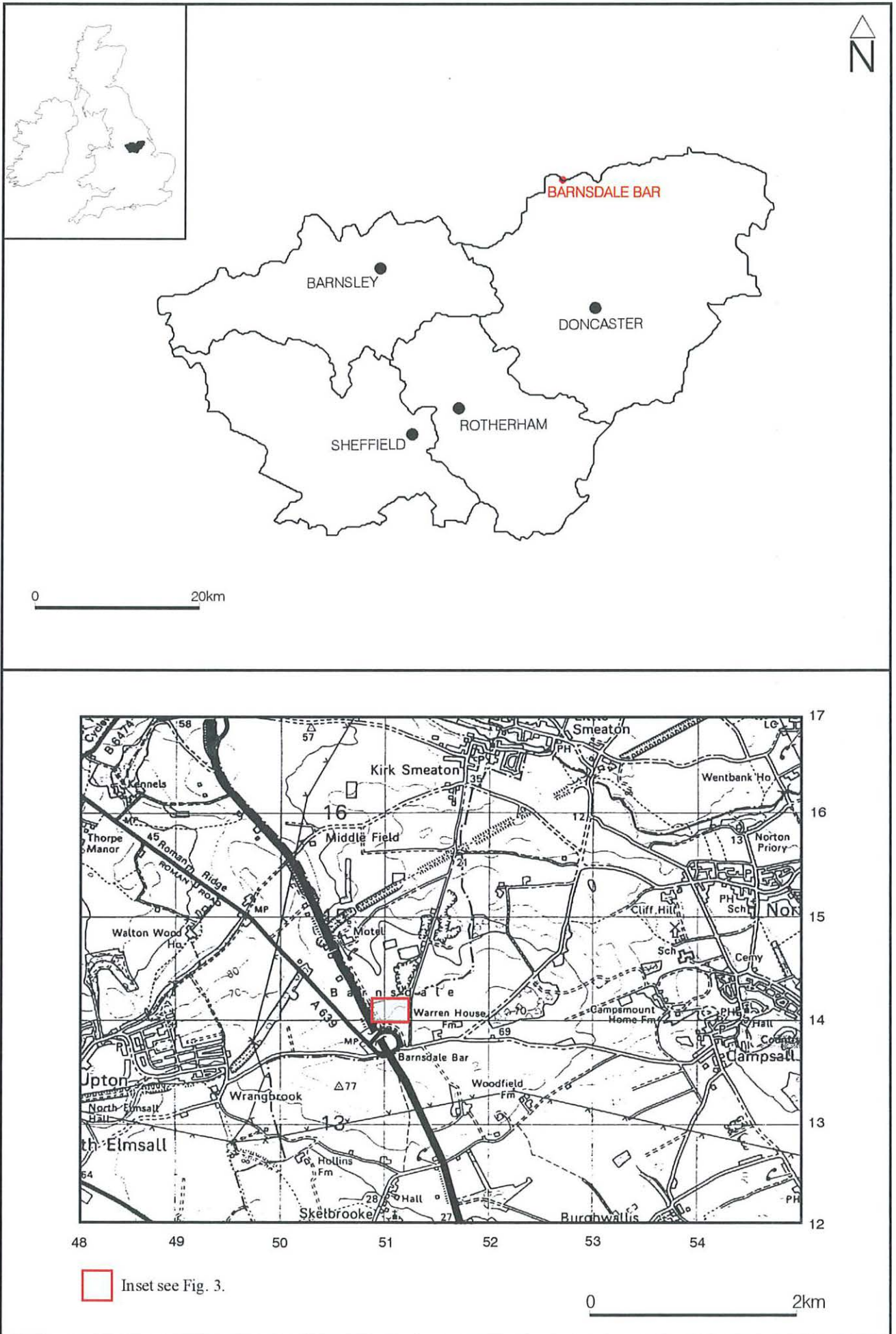
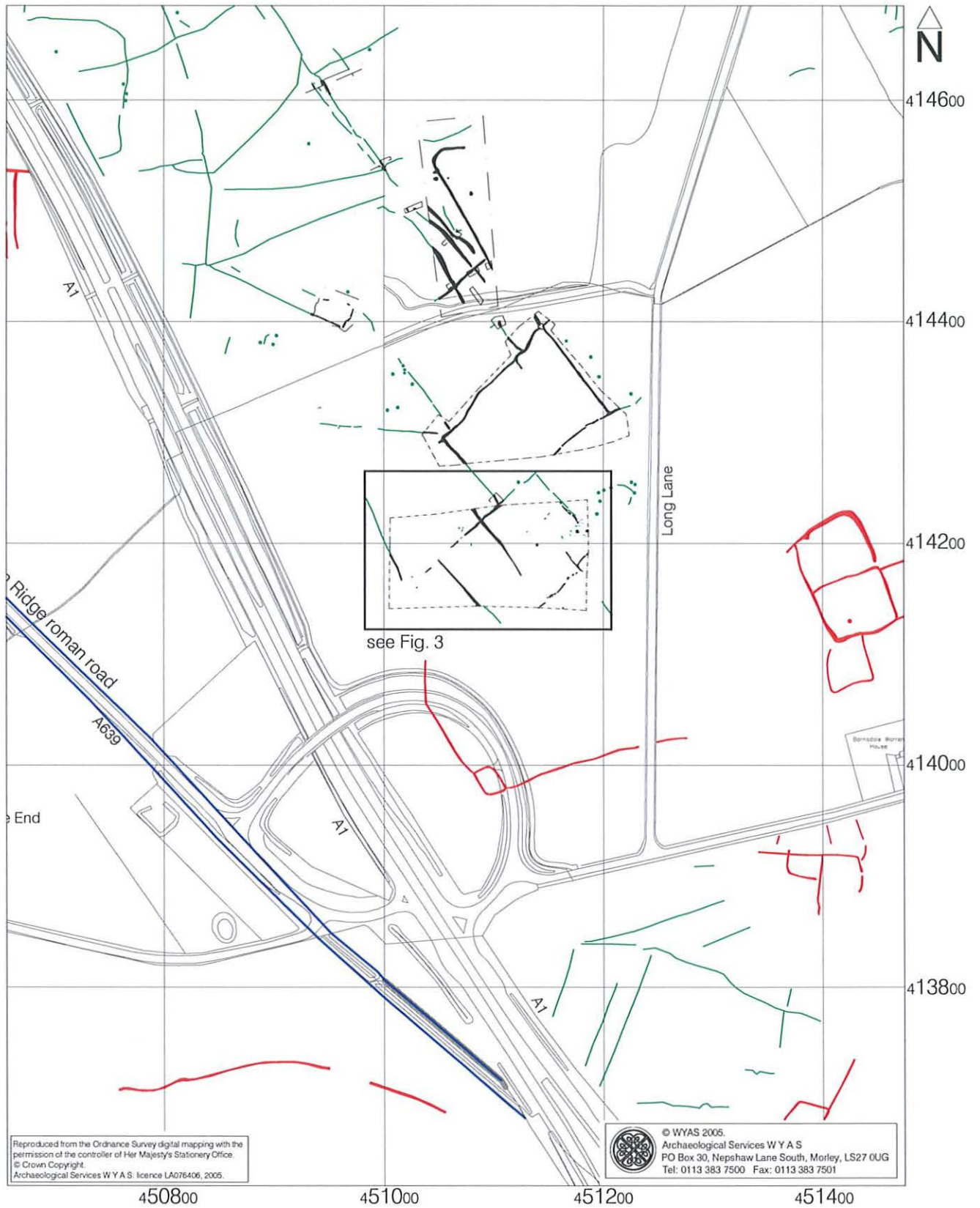


Fig. 1. Site location



	Excavated features
	Limit of excavation
	Crop mark
	Geophysical anomalies
	Line of Roman road

Fig. 2. Present area of investigation in the context of known archaeological sites

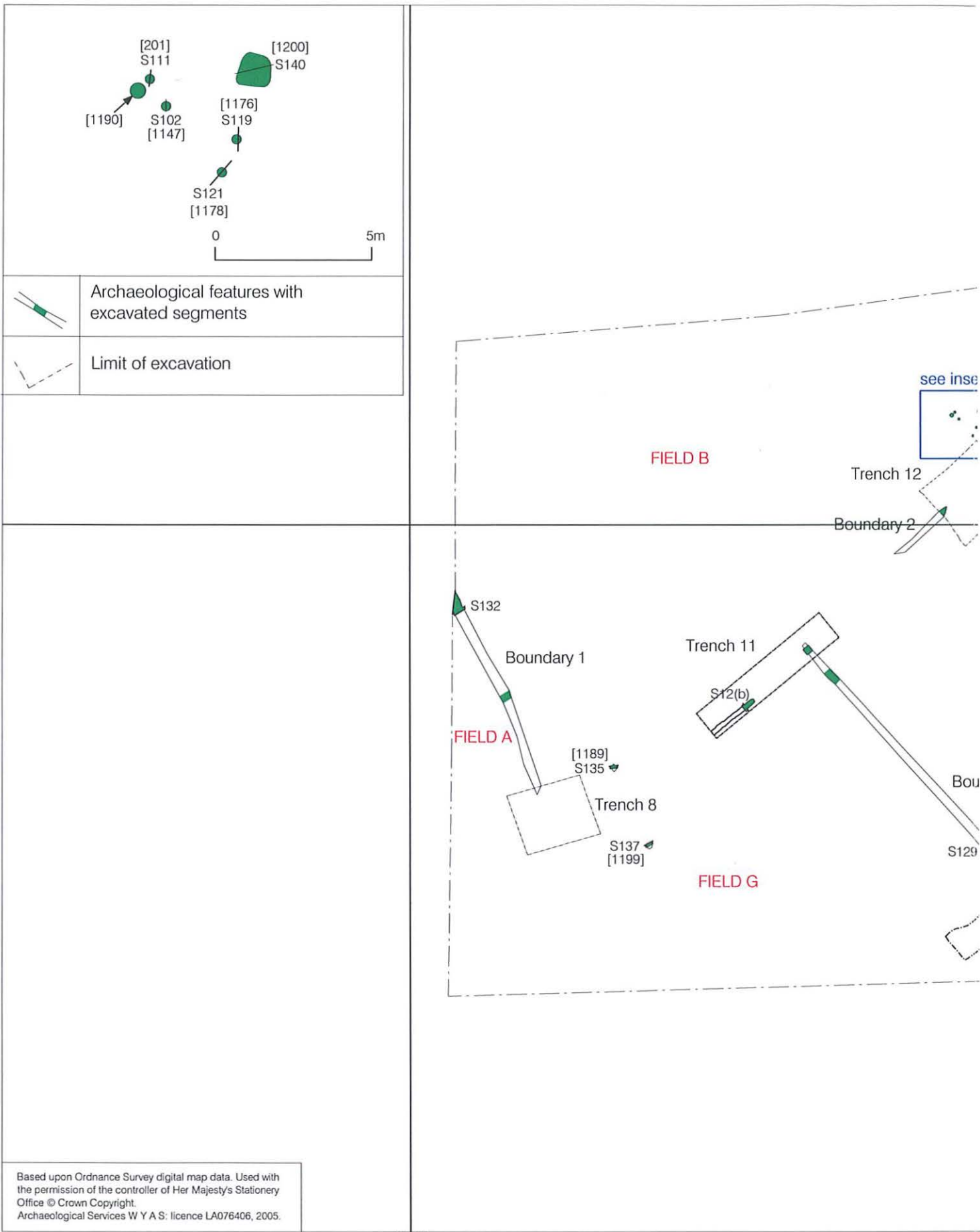
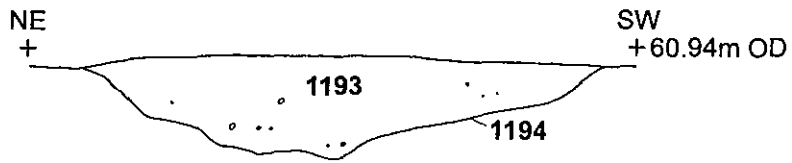
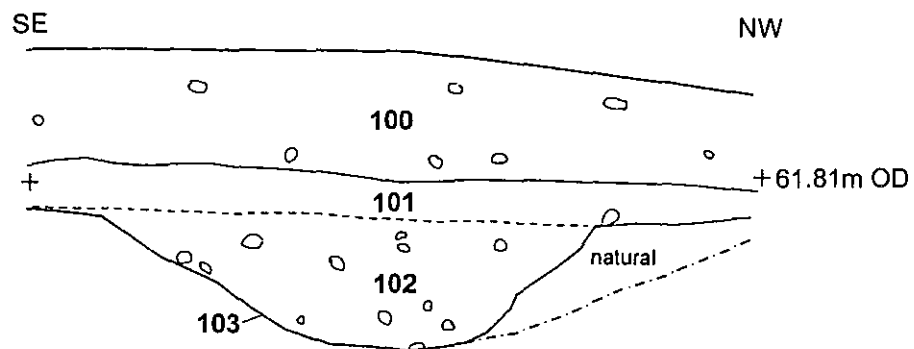


Fig. 3. Plan of excavated area with inset showing pit cluster

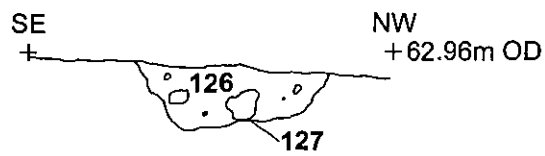
S.132



S.1b



S.12b



S.3b

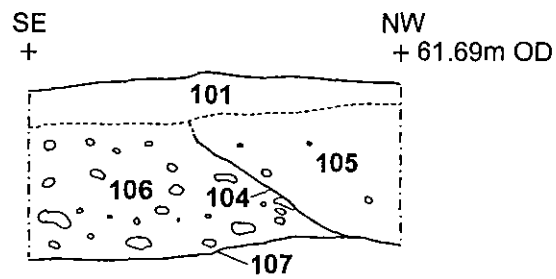
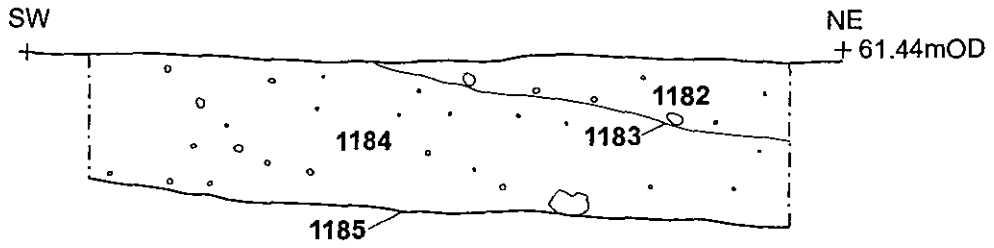
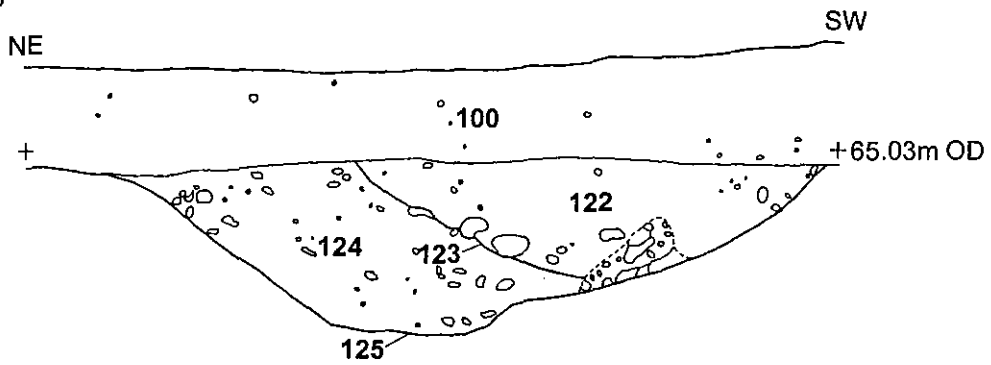


Fig. 4. Sections 132, 1b, 12b & 3b

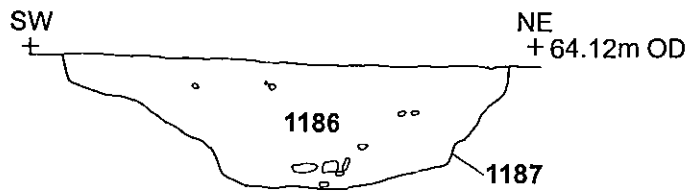
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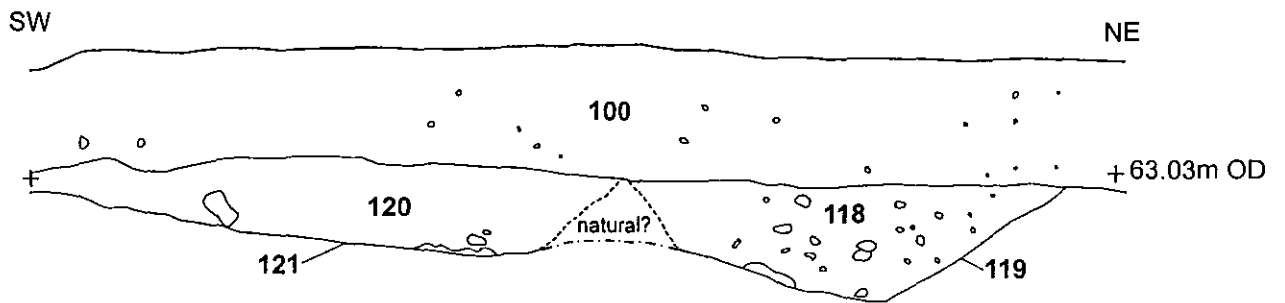
S.11b



S.129



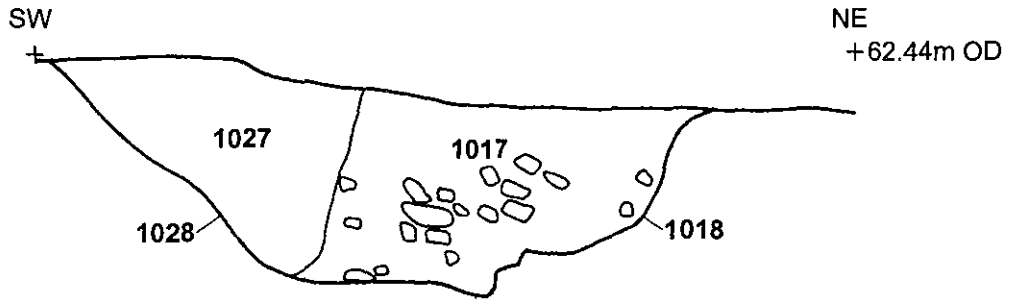
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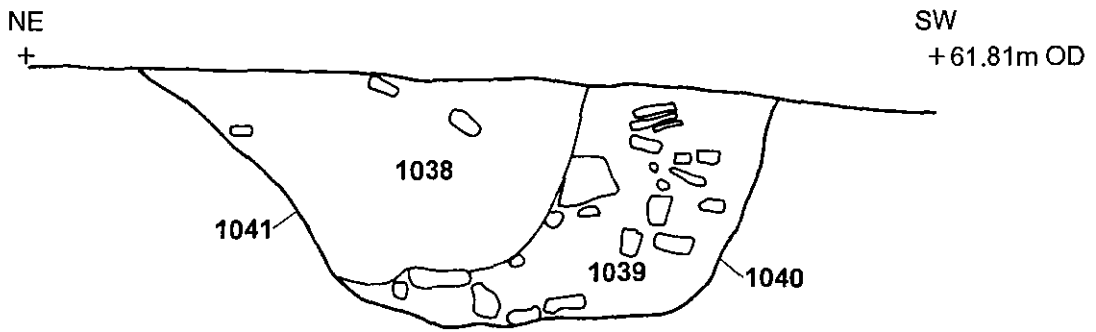
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Fig. 5. Sections 126, 11b, 129 & 9b

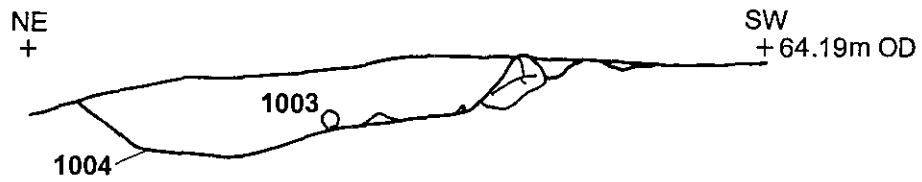
S.18



S.34



S.5



S.23

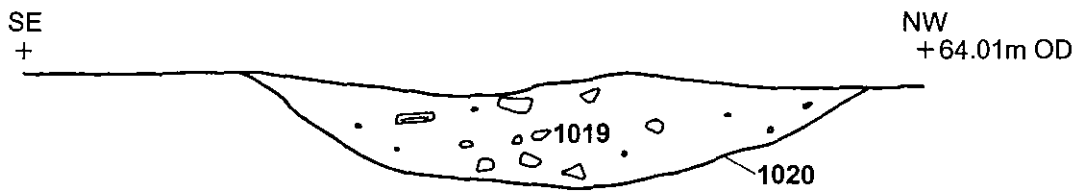
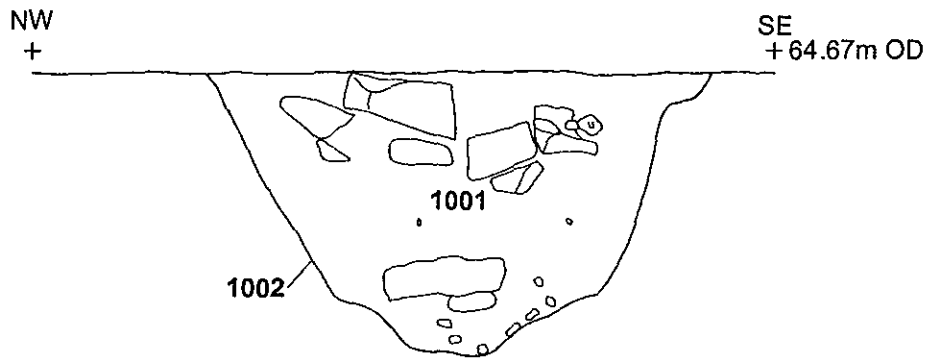


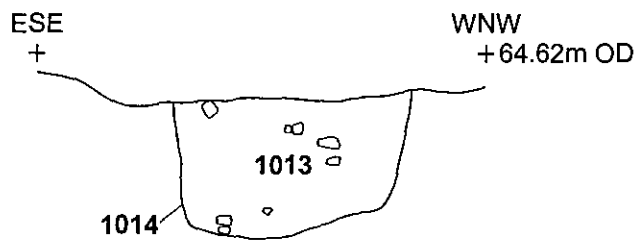
Fig. 6. Sections 18, 34, 5 & 23



S.1

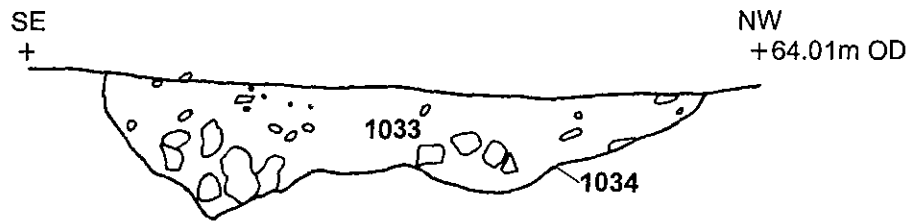


S.9

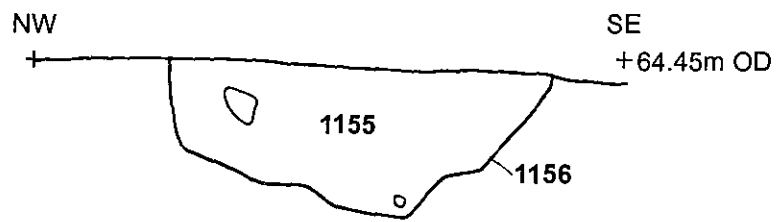


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S.29



S.107

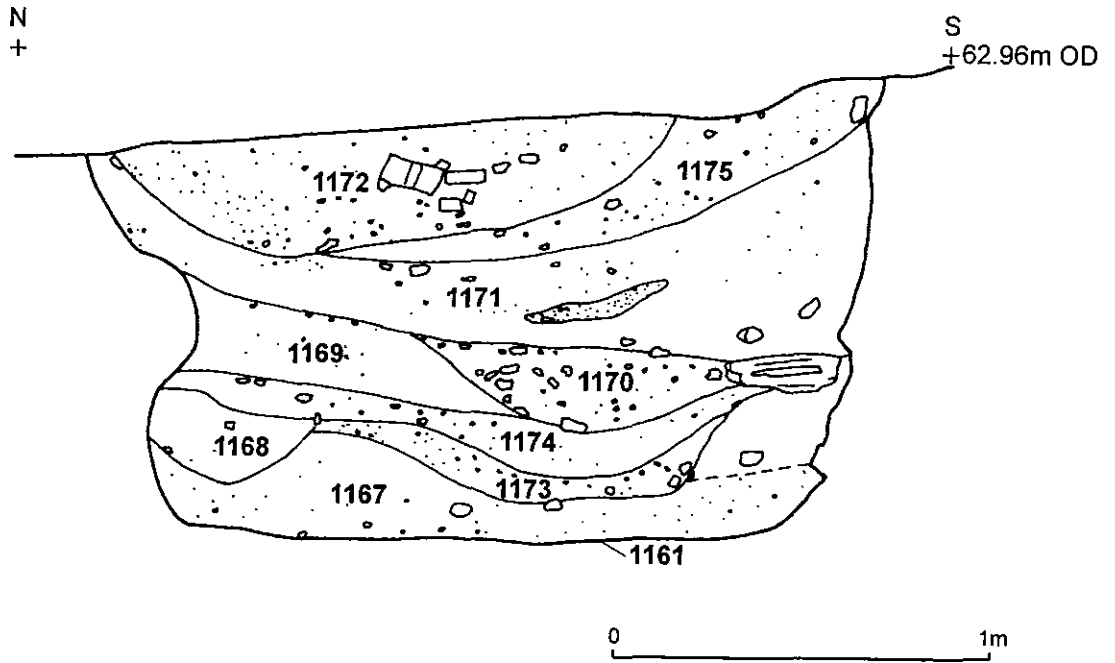


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Fig. 7. Sections 1, 9, 29 & 107

S.117

S.115



S.25

NW
+

SE
+65.73m OD

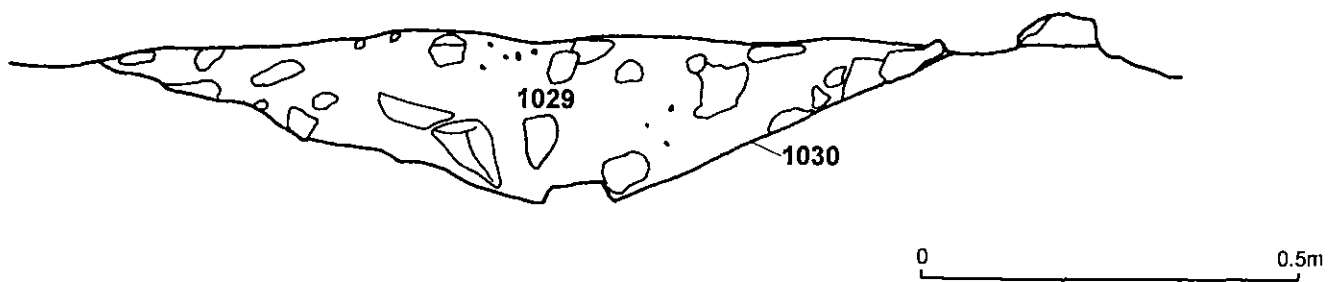
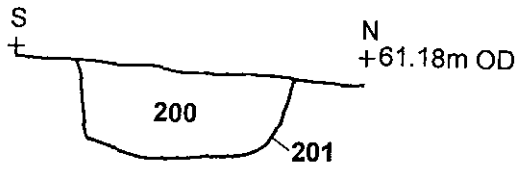
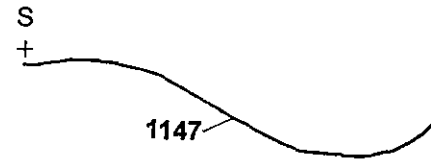


Fig. 8. Sections 117, 115, 25 & 100

S.111



S.102



S.121



S.135

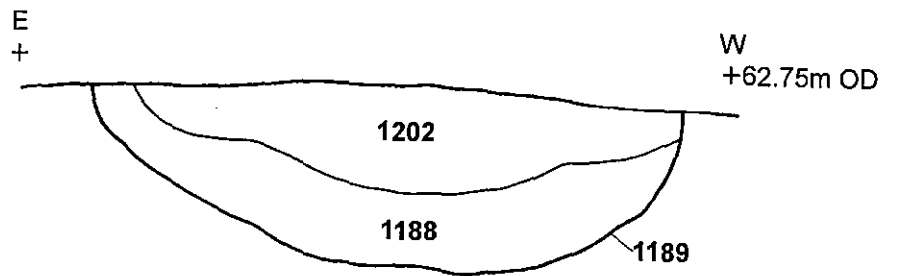
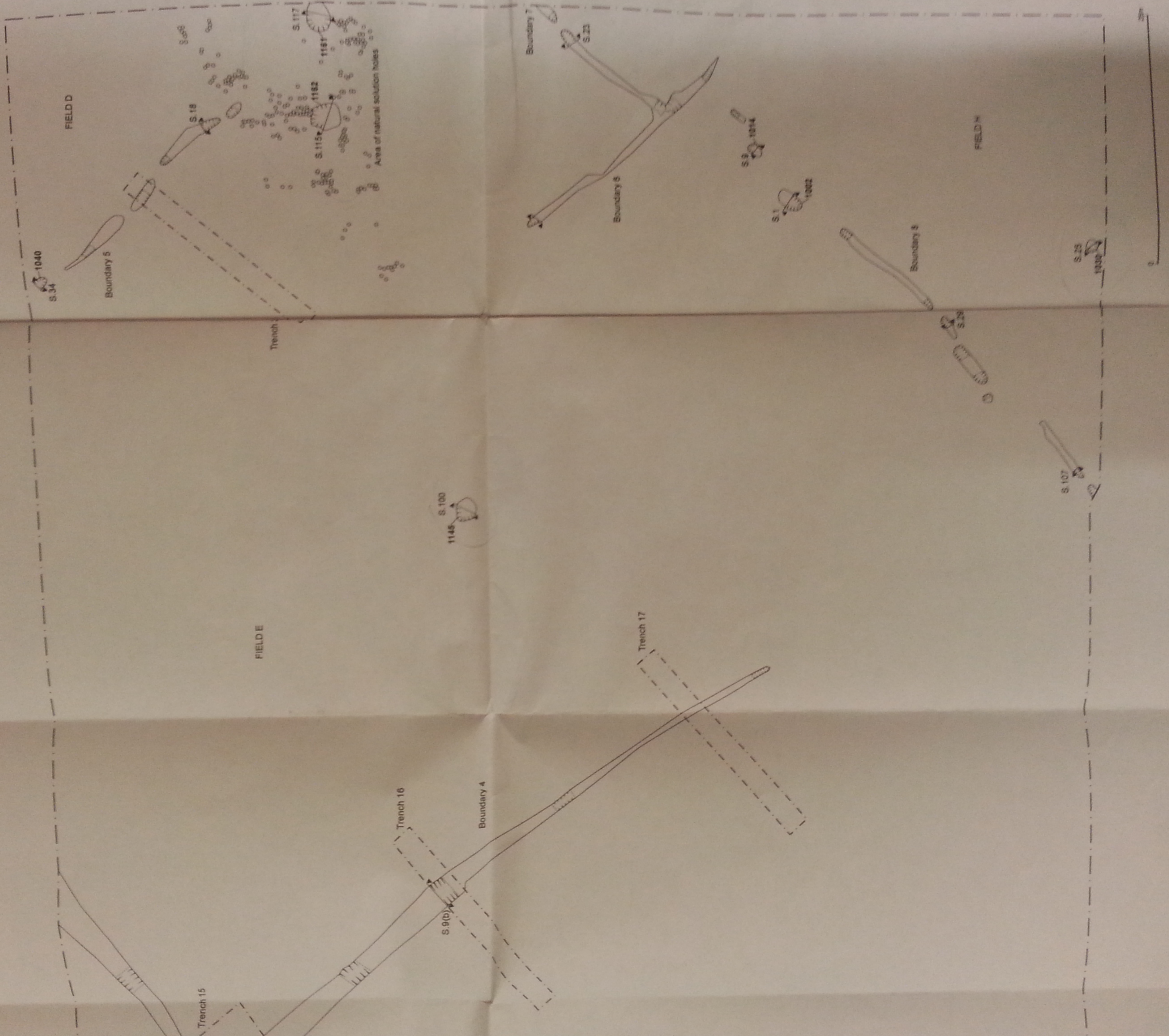
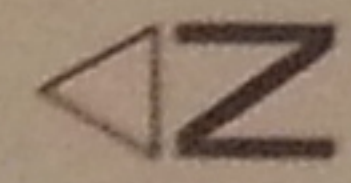


Fig. 9. Sections 111, 102, 119, 121, 140, 135 & 137





Barsdale Bar Quarry, southern extension

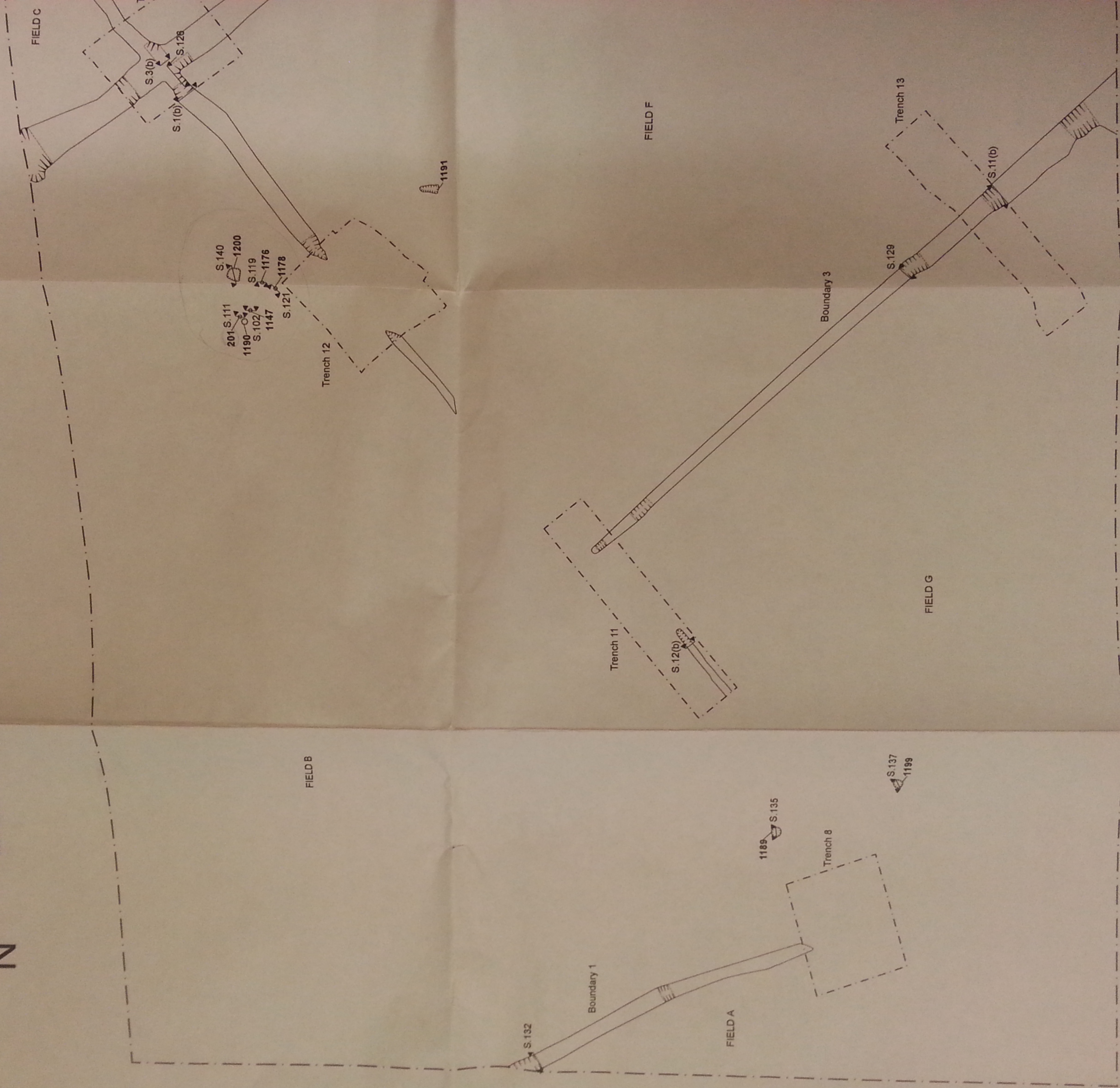


Fig. 10. Plan of excavated area

Appendix I
Inventory of primary archive

File no.	Description	Quantity
1	Context register	10
1	Context cards	200
2	Environmental samples register	6
2	Environmental sample forms	25
2	Finds and Samples Record	9
2	Flots, Charcoal and Nutshells, Assessment Report	5
2	Pottery Report	5
2	Osteological Report	9
2	Daily Site Recording Form	8
2	Survey Level Sheets	13
3	Drawing register	7
3	Drawings	32
3	Photographic Record Sheet	6
3	Negatives	6

Appendix II***Inventory of Context from the Trial Trenching Phase***

Context	Trench	Description	Boundary
100	-	Topsoil	-
101	-	Subsoil	-
102	15	Fill of ditch [103]	2
103	15	Cut of ditch	2
104	15	Fill of [105] same as (102)	2
105	15	Cut if ditch. Same as [103]	2
106	15	Fill of ditch [107]	1
107	15	Cut of ditch	1
108	15	Cut of ditch	1
109	15	Fill of ditch [108]	1
110	15	Fill of posthole [111]	-
111	15	Cut of posthole	-
112	12	Fill of ditch [113]	3
113	12	Cut of ditch	3
114	12	Fill of possible ditch [115]	2
115	12	Cut of possible ditch	2
116	12	Fill of posthole [117]	-
117	12	Cut of posthole	-
118	16	Fill of ditch [119]	1
119	16	Cut of ditch	1
120	16	Fill of possible ditch [121]	1
121	16	Cut of possible ditch	1
122	13	Fill of re-cut [123]	4
123	13	Re-cut of ditch	4
124	13	Fill of ditch [125]	4
125	13	Cut of ditch	4
126	11	Fill of gully [127]	-
127	11	Cut of gully	-
128	3	Fill of gully [129]	-
129	3	Cut of gully	-
130	23	Secondary of ditch [132]	-
131	23	Primary fill of ditch [132]	-
132	23	Cut of ditch	-
133	26	Fill of ditch [134]	-
134	26	Cut of ditch/furrow	-

Appendix III

Inventory of Contexts from the Excavation

Context	Description	Boundary
200	Cremation	-
201	Cut of shallow pit containing cremation	-
1000	Subsoil	-
1001	Fill of 1002	8
1002	Pit cut	8
1003	Fill of 1004	6
1004	Ditch cut	6
1005	Fill of 1006	6
1006	Ditch cut	6
1007	Fill of 1008	6
1008	Ditch cut	6
1009	Fill of 1010	8
1010	Ditch cut	8
1011	Fill of 1012	7
1012	Ditch cut	7
1013	Fill of 1014	8
1014	Cut of pit	8
1015	Fill of 1016	8
1016	Cut of pit	8
1017	Fill of 1018	5
1018	Cut of ditch terminal	5
1019	Fill of 1020	7
1020	Cut of ditch terminal	7
1021	Fill of 1022	7
1022	Cut of ditch terminal	7
1023	Fill of 1022	5
1024	Cut of ditch terminal	5
1025	Fill of 1026	5
1026	Cut of gully	5
1027	Fill of 1028	5
1028	Cut of gully	5
1029	Fill of 1030	-
1030	Cut of pit	-
1031	Fill of 1032	8
1032	Cut of ditch	8
1033	Fill of 1034	8
1034	Cut of ditch	8
1035	Fill of 1037	5
1036	Fill of 1037	5
1037	Ditch cut	5
1038	Fill of 1041	5
1039	Fill of 1040	5

Context	Description	Boundary
1040	Ditch cut	5
1041	Cut of ditch	5
1042	Probable natural feature	-
1043	Probable natural feature	-
1044	Probable natural feature	-
1045	Probable natural feature	-
1046	Probable natural feature	-
1047	Probable natural feature	-
1048	Probable natural feature	-
1049	Probable natural feature	-
1050	Probable natural feature	-
1051	Probable natural feature	-
1052	Probable natural feature	-
1053	Probable natural feature	-
1054	Probable natural feature	-
1055	Probable natural feature	-
1056	Probable natural feature	-
1057	Probable natural feature	-
1058	Probable natural feature	-
1059	Probable natural feature	-
1060	Probable natural feature	-
1061	Probable natural feature	-
1062	Probable natural feature	-
1063	Probable natural feature	-
1064	Probable natural feature	-
1065	Probable natural feature	-
1066	Probable natural feature	-
1067	Probable natural feature	-
1068	Probable natural feature	-
1069	Probable natural feature	-
1070	Probable natural feature	-
1071	Probable natural feature	-
1072	Probable natural feature	-
1073	Probable natural feature	-
1074	Probable natural feature	-
1075	Probable natural feature	-
1076	Probable natural feature	-
1077	Probable natural feature	-
1078	Probable natural feature	-
1079	Probable natural feature	-
1080	Probable natural feature	-
1081	Probable natural feature	-
1082	Probable natural feature	-
1083	Probable natural feature	-
1084	Probable natural feature	-
1085	Probable natural feature	-
1086	Probable natural feature	-

Context	Description	Boundary
1087	Probable natural feature	-
1088	Probable natural feature	-
1089	Probable natural feature	-
1090	Probable natural feature	-
1091	Probable natural feature	-
1092	Probable natural feature	-
1093	Probable natural feature	-
1094	Probable natural feature	-
1095	Probable natural feature	-
1096	Probable natural feature	-
1097	Probable natural feature	-
1098	Probable natural feature	-
1099	Probable natural feature	-
1100	Probable natural feature	-
1101	Probable natural feature	-
1102	Probable natural feature	-
1103	Probable natural feature	-
1104	Probable natural feature	-
1105	Probable natural feature	-
1106	Probable natural feature	-
1107	Probable natural feature	-
1108	Probable natural feature	-
1109	Probable natural feature	-
1110	Probable natural feature	-
1111	Probable natural feature	-
1112	Probable natural feature	-
1113	Probable natural feature	-
1114	Probable natural feature	-
1115	Probable natural feature	-
1116	Probable natural feature	-
1117	Probable natural feature	-
1118	Probable natural feature	-
1119	Probable natural feature	-
1120	Probable natural feature	-
1121	Probable natural feature	-
1122	Probable natural feature	-
1123	Probable natural feature	-
1124	Probable natural feature	-
1125	Probable natural feature	-
1126	Probable natural feature	-
1127	Probable natural feature	-
1128	Probable natural feature	-
1129	Probable natural feature	-
1130	Probable natural feature	-
1131	Probable natural feature	-
1132	Probable natural feature	-
1133	Probable natural feature	-

Context	Description	Boundary
1134	Probable natural feature	-
1135	Probable natural feature	-
1136	Probable natural feature	-
1137	Probable natural feature	-
1138	Probable natural feature	-
1139	Probable natural feature	-
1140	Probable natural feature	-
1141	Pit cut	5
1142	Fill of 1141	5
1143	Probable natural feature	-
1144	Probable natural feature	-
1145	Pit cut	-
1146	Fill of 1145	-
1147	Cut of cremation pit	-
1148	Fill of cremation	-
1149	Fill of cremation	-
1150	Fill of cremation	-
1151	Cut of ditch	8
1152	Fill of 1151	8
1153	Cut of ditch	8
1154	Fill of 1153	8
1155	Fill of 1156	8
1156	Cut of gully	8
1157	Fill of pit	8
1158	Cut of pit	8
1159	Cut of ditch	4
1160	Fill of ditch	4
1161	Cut of pit	-
1162	Cut of pit	-
1163	Fill of 1162	-
1164	Fill of 1162	-
1165	Fill of 1162	-
1166	Fill of 1162	-
1167	Fill of 1161	-
1168	Fill of 1161	-
1169	Fill of 1161	-
1170	Fill of 1161	-
1171	Fill of 1161	-
1172	Fill of 1161	-
1173	Fill of 1161	-
1174	Fill of 1161	-
1175	Fill of 1161	-
1176	Pit cut	-
1177	Fill of 1176	-
1178	Pit cut	-
1179	Fill of 1178	-
1180	Fill of 1181	2

Context	Description	Boundary
1181	Ditch cut	2
1182	Fill of 1183	2
1183	Cut of ditch	2
1184	Fill of ditch	4
1185	Cut of ditch	4
1186	Fill of 1187	3
1187	Cut of ditch	3
1188	Fill of 1189	-
1189	Cut of pit	-
1190	Scatter of bone and charcoal	-
1191	Cut of pit	-
1192	Fill of 1191	-
1193	Fill of 1194	1
1194	Ditch cut	1
1195	Fill of 1196	1
1196	Cut of ditch	1
1197	Fill of 1199	-
1198	Fill of 1199	-
1199	Pit cut	-
1200	Pit cut	-
1201	Fill of 1200	-
1202	Fill of 1189	-
1203	Fill of 1200	-

Appendix IV

Inventory of artefacts

Fabric	Context	Quantity	Details
Pottery	1186	2	Basal sherd of Bowl or dish, Black Burnished ware
	1017	1	Base and body sherds of jar, Dales ware
	1201	5	Undiagnostic
	100	1	Clay Pipe fragment from field walking
	Total	9	
Animal bone	1013	10	Cattle tooth fragments
	1019	11	? Cattle tooth fragments
	1171	1	Sheep/goat radius barrel- juvenile
	1171	1	Dog second phalanx
	1174	1	? Bird long bone fragment
	Total	24	
Human bone	200	Multiple fragments	Cremation
	1149	Multiple fragments	Cremation
	1190	Multiple fragments	Cremation
Total	-		
Flint	1177	8	
	1179	17	
	1188	3	
	1197	2	
	1201	2	
	100	1	Bladelet from field walking
Total	32		

Appendix V***Inventory of Samples from the Trial Trenching***

Sample	Context	Trench	Type	Description
1	102	15	GBA	Single fill of ditch [103]
2	109	15	GBA	Single fill of ditch [108]
3	110	15	GBA	Fill of posthole [111]
4	112	12	GBA	Fill of ditch [113]
5	114	12	GBA	Fill of possible ditch [115]
6	116	12	GBA	Fill of posthole [117]
7	118	16	GBA	Fill of ditch [119]
8	120	16	GBA	Fill of possible ditch [121]
9	122	13	GBA	Fill of re-cut ditch [123]
10	124	13	GBA	Fill of ditch [125]
11	126	11	GBA	Fill of gully [127]
12	128	3	GBA	Fill of gully [129]
13	131	23	GBA	Primary fill of ditch [132]
14	133	26	GBA	Fill of ditch [134]
15	106	15	GBA	Fill of ditch [107]

Appendix VI**Inventory of Samples from the Excavation**

Sample	Context	Type	Description
1	1001	GBA	Pit fill
2	1009	GBA	Ditch fill
3	1013	GBA	Pit fill
4	1015	GBA	Pit fill
5	1007	GBA	Ditch fill
6	1011	GBA	Ditch fill
7	1017	GBA	Ditch fill
8	1023	GBA	Ditch fill
9	1021	GBA	Ditch fill
10	1025	GBA	Fill of re-cut Ditch
11	1029	GBA	Pit fill
12	1031	GBA	Ditch fill
13	1033	GBA	Ditch fill
14	1046	GBA	Post-hole
15	1044	GBA	Probable natural feature
16	1048	GBA	Probable natural feature
17	1050	GBA	Probable natural feature
18	1090	GBA	Probable natural feature
19	1092	GBA	Probable natural feature
20	1094	GBA	Probable natural feature
21	1096	GBA	Probable natural feature
22	1098	GBA	Probable natural feature
23	1100	GBA	Probable natural feature
24	1102	GBA	Probable natural feature
25	1104	GBA	Probable natural feature
26	1106	GBA	Probable natural feature
27	1108	GBA	Probable natural feature
28	1110	GBA	Probable natural feature
29	1112	GBA	Probable natural feature
30	1114	GBA	Probable natural feature
31	1116	GBA	Probable natural feature
32	1118	GBA	Probable natural feature
33	1072	GBA	Probable natural feature
34	1130	GBA	Probable natural feature
35	1132	GBA	Probable natural feature
36	1134	GBA	Probable natural feature
37	1136	GBA	Probable natural feature
38	1138	GBA	Probable natural feature
39	1120	GBA	Probable natural feature
40	1122	GBA	Probable natural feature
41	1124	GBA	Probable natural feature

Sample	Context	Type	Description
42	1126	GBA	Probable natural feature
43	1128	GBA	Post-hole
44	1146	GBA	Pit fill
45	1039	GBA	Ditch fill
48	1036	GBA	Ditch fill
49	1148	GBA	Cremation spit
50	1149	GBA	Cremation spit
51	1150	GBA	Cremation spit
52	1152	GBA	Ditch fill
53	1154	GBA	Ditch fill
54	1155	GBA	Ditch fill
55	1157	GBA	Pit fill
56	1164	GBA	Pit fill
57	1165	GBA	Pit fill
58	1166	GBA	Pit fill
59	1167	GBA	Pit fill
60	1166	Spot	Pit fill
61	1177	GBA	Pit fill
62	1179	GBA	Pit fill
63	1188	GBA	Pit fill
64	1192	GBA	Pit fill
65	1190	GBA	Cremation
66	1197	GBA	Pit fill
67	1201	GBA	Pit fill
68	1193	GBA	Ditch fill
69	1186	GBA	Ditch fill
70	1180	GBA	Ditch fill
71	200	GBA	Cremation

Appendix VII

Written Scheme of Investigation for an archaeological Strip and Record Operation

Barnsdale Bar Southern Extension, Norton, South Yorkshire

Written Scheme of Investigation for a Strip and Record Operation

1. Introduction

- 1.1 Following archaeological evaluation by trial trenching, further archaeological mitigation works are required as part of the southern extension of Darrington Quarries' Magnesian Limestone extraction site at Barnsdale Bar (Planning Application 03/5340/P/MINA). The 6 hectare site lies immediately to the east of the A1 motorway near Norton South Yorkshire (SE 511 139). The trial trenching has confirmed the presence of ditches relating to a former field systems and possible settlement of probable late prehistoric/Romano-British date.
- 1.2 This document details the required methodology for the further investigation of the site through a strip and record operation and has been prepared for SLR Consulting, acting for the Waste Recycling Group, following consultation with Roy Sykes of the South Yorkshire Archaeology Service.
- 1.3 The aim of the strip and record operation is to establish extent and nature of archaeological features/deposits within the proposed extraction area and to try and further elucidate their date and function.

2. Archaeological Background

- 2.1 The site lies within a landscape of late prehistoric/Romano-British settlement enclosures, trackways and field systems, evidenced from aerial photographic mapping. Due to the continuing expansion of quarry workings, this landscape has undergone considerable archaeological investigations that have been comprehensively reviewed by Burgess (2001). The previous work, mainly to the north, has demonstrated that these remains survived in good condition. Pottery recovered from these investigations dates the settlement evidence to around the 2nd – 4th centuries AD (Fig. 1).
- 2.2 More recently archaeological investigations have continued in the vicinity of the quarry. A detailed gradiometer survey covering a total area of 3.7 hectares was commissioned to cover the present quarry extension (Webb 2003). Linear magnetic anomalies were identified and interpreted as in-filled archaeological features of enclosure ditches, the continuation of which were previously excavated to the north during archaeological evaluations. Romano-British presence was not exclusively agricultural as domestic, industrial and funerary activities were also identified (Burgess 2001).
- 2.3 The recent evaluation, involving geophysical survey and some 25 trial trenches, investigating almost 4% of the site (Fig. 2), confirmed the continuation of the known archaeological field system to the north into the area of the proposed southern extension (Webb 2003; Gidman 2004). However, the evaluation revealed variable preservation of the archaeology across the site, with

preservation being greatest (i.e. the area of least truncation) in the central northern part of the proposed extension area.

3. Aims and Objectives

- 3.1 An area of *c.*1.4 hectares has been identified in the central northern area of the site to be the subject of an archaeological Strip and Record Operation. The aims and objectives of this further archaeological work will be:
- to strip and record in plan (pre-excavation) a 185m by 75m area in the central northern part of the extension area;
 - to establish the extent and nature of the well preserved archaeological features within the defined area; to date them and, if possible establish their function by sample excavation.

4. Proposed Method

- 4.1 The work will involve the controlled stripping of plough soil within the defined 1.4hectare area (Fig. 3) to the archaeologically required level. This shall be carried out under archaeological supervision. The mechanical excavator used will be equipped with a toothless ditching bucket. Stripping will take place in level spits to the top of the first archaeological horizon or undisturbed natural. The resulting surface is to be inspected for archaeological remains. Where archaeological remains require clarification, the relevant area will be cleaned by hand. Under no circumstances should the machine be used to cut arbitrary trenches down to natural deposits.
- 4.2 The Archaeological Contractor will first plan and then hand excavate all archaeological features in an archaeologically controlled and stratigraphic manner in order to meet the aims and objectives outlined above. The features will be investigated employing the following sampling strategies:
- Linear features (e.g. ditches): A minimum of 10% along their length, or a minimum of a 1m sample section if the feature is less than 10m long. Where possible one section will be located and recorded adjacent to the trench edge.
 - Intersections of linear features: The deposits at the junctions of or interruptions in linear features will be totally removed over a sufficient length to determine the nature of the relationship between the components. Excavation of an 'L'-shaped section will be undertaken in the first instance to demonstrate and record relationships and then expanded to the full widths, planned and recorded.
 - Discrete features: Pits, post-holes and other isolated features will normally be half-sectioned to determine and record their form with a minimum sample of 50% of discrete features in each area. The complete excavation of such features may be appropriate, but only following consultation with the South Yorkshire Archaeology Service.
- 4.3 The Archaeological Contractor shall make a full written, drawn and photographic record of all material revealed during the course of the work. The excavation limits will be surveyed using electronic survey equipment with larger scale hand

drawn plans of features at 1:20 or 1:50, as appropriate. Sections of linear and discrete features will be drawn at 1:10. All sections, plans and elevations will include spot-heights related to Ordnance Datum in metres as correct to two decimal places and survey tie-in information will be undertaken during the course of the evaluation and will be fixed in relation to nearby permanent structures and roads and to the National Grid (located on the 1:2500 map of the area).

- 4.4 All artefacts recovered will be retained and removed from the site for assessment and analysis, and where it is appropriate finds shall be recorded three dimensionally. Non-modern artefacts will be collected from the excavated topsoil and subsoil. Finds material will be stored in controlled environments, where appropriate. All artefacts recovered will be retained, cleaned, labelled and stored as detailed in the guidelines laid out in the IFA Guidelines for Finds Work. Conservation, if required, will be undertaken by approved conservators. UKIC guidelines will apply.
- 4.5 The Archaeological Contractor shall fully record all excavated archaeological contexts by detailed written records giving details of location, composition, shape, dimensions, relationships, finds, samples, and cross-references to other elements of the record and other relevant contexts, in accordance with best industry practice and in accordance with methods previously approved by the South Yorkshire Archaeology Service. All contexts, and any small finds and samples from them will be given unique numbers. Bulk finds will be collected by context. Colour transparency and monochrome negative photographs will be taken at a minimum format of 35mm. Provision should be made by the archaeological contractor for the assembly of a photographic tower on site to record enclosures, structures or other features, to be determined in consultation with the South Yorkshire Archaeology Service at the outset of the project.
- 4.6 The Archaeological Contractor shall undertake a soil-sampling programme during the course of the evaluation for the identification and recovery of carbonised and waterlogged remains, vertebrate remains, molluscs and small artefactual material. Environmental and soil specialists will be consulted during the course of the excavation with regard to the implementation of this sampling programme. At least one site visit will be made by at least one of the aforementioned specialists to view each of the open areas, with regard to the implementation of the sampling programme. Provision should be made by the Archaeological Contractor for the removal of soil samples of between 10 and 30 litres (where appropriate), from deposits with clear potential, and larger samples from any rich carbonised deposits. Particular attention will be paid to the sampling of primary ditch fills and any surviving buried soils beneath banks or other positive features. Environmental material removed from site will be stored in appropriate controlled environments. The collection and processing of environmental samples will be undertaken in accordance with guidelines set out in the Association for Environmental Archaeology's (1995) Working Paper No. 2, "*Environmental Archaeology and Archaeological Evaluations - Recommendations concerning the environmental archaeology component of archaeological evaluations in England*". In addition, the processing of environmental samples will only take place within facilities approved for such purposes by the Regional Science Advisor, Ian Panter.

- 4.7 In the event of human remains being discovered during the excavation these will be left *in situ* by the Archaeological Contractor, covered and protected, in the first instance. The removal of human remains will only take place under appropriate Home Office and environmental health regulations, and in compliance with the Burial Act 1857. If human remains are identified, the Archaeological Contractor will inform the SMR and Coroner immediately. A Home Office licence will be obtained prior to the removal of the remains and contingency provision will be made for the specialist reports on the remains by a recognised osteo-archaeologist.
- 4.8 The Archaeological Contractor will make provision for the recovery of samples suitable for scientific dating. Provision will be made for thermoluminescent dating, radiometric/AMS dating, archaeomagnetic and dendrochronological dating. If required these provisions will be utilised in consultation with the South Yorkshire Archaeology Service.
- 4.9 All finds of gold and silver and associated objects shall be reported to HM Coroner according to the procedures relating to the Treasure Act 1997, after discussion with the Client and the South Yorkshire SMR.

5. Archive preparation and deposition

- 5.1 The site archive will contain all the data collected during the exploratory work, including records, finds and environmental samples. It will be quantified, ordered, indexed and internally consistent. Adequate resources will be provided during fieldwork to ensure that all records are checked and internally consistent. Archive consolidation will be undertaken immediately following the conclusion of fieldwork:
- the site record will be checked, cross-referenced and indexed as necessary;
 - all retained finds will be cleaned, conserved, marked and packaged in accordance with the requirements of the recipient museum;
 - all retained finds will be assessed and recorded using pro forma recording sheets, by suitably qualified and experienced staff. Initial artefact dating will be integrated with the site matrix;
 - all retained environmental samples will be processed by suitably experienced and qualified staff and recorded using pro forma recording sheets, to identify at this stage presence or absence of environmental remains.
- 5.2 The archive will be assembled in accordance with the specification set out in English Heritage's "*Management of Archaeological Projects 2*" (English Heritage, 1991; Appendix 3). In addition to the site records, artefacts, ecofacts and other sample residues, the archive shall contain:
- site matrices where appropriate;
 - a summary report synthesising the context record;
 - a summary of the artefact record;
 - a summary of the environment record.

- 5.3 The integrity of the primary field record will be preserved. Security copies will be maintained where appropriate.
- 5.4 Provision will be made for the deposition of the archive, artefacts and environmental material, subject to the permission of the relevant landowner (and if no further archaeological work is to be initiated), in the appropriate recipient museum, in this case Doncaster Museum. The museum curator, Peter Robinson (01302 734 290), will be advised of the timetable of the proposed investigation prior to evaluation commencing and the Archaeological Contractor will adhere to any reasonable requirements the museum may have regarding conservation and storage of the excavated material and the resulting archive. The archive will be prepared in accordance with the guidelines published in "*Guidelines for the preparation of Excavation Archives for long-term storage*" (United Kingdom Institute for Conservation, 1990) and "*Standards in the Museum care of archaeological collections*" (Museums and Galleries Commission, 1994). Provision will be made for the stable storage of paper records and their long-term storage on a suitable medium, such as microfilm.
- 5.5 Archive deposition will be arranged in consultation with the recipient museum and the South Yorkshire SMR and will take into account all requirements of the recipient museum and of the relevant guidelines outlined above. The timetable for deposition will be agreed on completion of the site archive and narrative.

6. Report preparation, contents and distribution

- 6.1 Upon completion of the excavations, the artefacts, ecofacts and stratigraphic information shall be assessed as to their potential and significance for further analysis. This will include the archive from the evaluation stage of the investigations.
- 6.2 A technical report will be prepared on completion of on-site archaeological investigations, notwithstanding the completion of post-excavation analyses (e.g. radiometric dating) and will include the following:
- a non-technical summary of the results of the work;
 - a summary of the project's background;
 - the site location;
 - an account of the method;
 - the results of the excavation, including phasing and interpretation of the site sequence and the assessment of artefacts and ecofacts, if recovered, and
 - an appendix catalogue of the archaeological material recovered during the excavation.
- 6.3 The assessment report will be supported by an overall plan of the site, accurately identifying the location of trenches on Ordnance Survey Landline data; individual trench plans as excavated, indicating the location of archaeological features with supporting section drawings where appropriate; and photographs.
- 6.4 Finally, the post-excavation assessment report will outline the archaeological significance of the deposits identified, and provide an interpretation of the results

in relation to other sites in the region. In particular, the results of the excavations will make reference to other known archaeological sites in the close vicinity of the development.

- 6.5 The Archaeological Contractor will submit copies of the assessment report to the Waste Recycling Group who will be responsible for depositing copies with the Local Planning Authority, and the South Yorkshire Sites and Monuments Record within an agreed timetable.
- 6.6 The Archaeological Contractor will supply copies of electronic files containing the report to the Sites and Monuments Record in the following formats
 - 1 copy in Word for Windows or compatible format (NOT WordStar)
 - 1 copy in text ASCII format
- 6.7 SYAS will require discussion and agreement of any recommendations made for further analyses.
- 6.8 A full post-excavation report will be produced.

7. Publication and Dissemination

- 7.1 The information contained within the assessment report will enable decisions to be taken regarding the future treatment of the archaeology at the site and any material recovered during the evaluation.
- 7.2 Allowance will be made for the preparation and publication of the work in the appropriate issue of *Archaeology in South Yorkshire*, and, if of regional or national significance, within an appropriate journal.
- 7.3 An online OASIS form will be completed by Archaeological Services WYAS on completion of the archaeological evaluation, in consultation with the South Yorkshire Archaeology Service.
- 7.4 It is understood that the results of the excavation may be of interest to the wider public and as such may be disseminated by means of occasional talks.

8. Copyright, Confidentiality and Publicity

- 8.1 All aspects of copyright, publicity and confidentiality will be agreed between the Archaeological Contractor and the client at the outset of the project. The Archaeological Contractor will make the results of archaeological work known to the wider archaeological community within a reasonable time. Copies of the report should be submitted to the client who will ensure a copy is deposited in the South Yorkshire Sites and Monuments Record.

9. Health and Safety

- 9.1 Archaeological Services WYAS have their own Health and Safety policies compiled using national guidelines and which will conform to all relevant Health and Safety legislation. Their staff will however, abide by any additional the Health and Safety arrangements imposed by Darrington Quarries Ltd.
- 9.2 Archaeological Services WYAS will undertake a 'Risk Assessment' to the client, which sets project specific Health and Safety requirements to which all members of staff are made aware of, prior to on-site work commencing.

- 9.3 The Archaeological Contractor will ensure that Health and safety will take priority over archaeological matters. Necessary precautions will be taken over underground services and overhead lines at the outset of the project.

10. Insurance

- 10.1 Archaeological Services WYAS has effected appropriate insurance cover with Zurich Municipal Insurance, Park House, 57-59 Well Street, Bradford, via Wakefield Metropolitan District Council. Any further enquiries should be directed to The Chief Financial Officer, Insurance Section, Wakefield MDC, PO Box 55, Newton Bar, Wakefield, WF1 2TT.

11. Monitoring

- 11.1 The work will be monitored by the Sites and Monuments Record office of the South Yorkshire Archaeology Service, who will be consulted before the commencement of any site works and afforded the opportunity to inspect the site and the records during any stage of the work.

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