ARCHAEOLOGICAL SERVICES WYAS

Carr Gate Police Headquarters, Wakefield, West Yorkshire

Archaeological Excavation

Report no. 2454

March 2013

Client: Interserve

REGISTERED ORGANISATION IA

Carr Gate Police Headquarters, Wakefield, West Yorkshire

Archaeological Excavation

Summary

A scheme of targeted archaeological investigations at the site of the Carr Gate Police Headquarters, Wakefield, West Yorkshire, focused upon a series of features previously identified by geophysical survey of the site and trial trenching. In one instance a series of ditched features and associated pit and post-holes were found to collectively define an enclosure system dating to the Romano-British period in the 1st and 2nd centuries AD. No conclusive evidence could be related to the function of the enclosure yet the absence of concerted settlement activity would suggest an agricultural purpose, perhaps as a series of coral's for livestock. Elsewhere, a series of parallel pits and gullies defined a large linear feature of post-medieval origin. These probably represent a horse drawn railway that potentially linked a number of industrial production sites with wider canal and riverine transportation systems in the late 18th or early 19th centuries.

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Report Information

Client:	Interserve PLC
Address:	Interserve House, 21 Melborne Street, Morley, Leeds,
Report Type:	Archaeological Excavation
Location:	Wakefield
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Acknowledgements

Archaeological Services WYAS (ASWYAS) would like to thank Interserve PLC for both commissioning the project and providing on site help and assistance throughout the project. The project was managed by Ian Roberts and the excavation was supervised by Adam Tinsley assisted by; Marina Rose, Alexandra Grassam, Kieran Power and Jane Wheeler.

Jason Dodds from West Yorkshire Archaeology Advisory Service monitored the project.

The post-excavation finds and environmental processing was co-ordinated by Jane Richardson and Zoe Horn. In addition to the named specialists the report was prepared by Adam Tinsley and edited by Ian Roberts.

1 Introduction

Archaeological Services WYAS (ASWYAS) was commissioned by Interserve PLC to conduct a scheme of targeted archaeological excavation on the site of Carr Gate Police Headquarters, Wakefield, West Yorkshire. These excavations were required as part of the archaeological mitigation of the site to satisfy planning conditions attached to the development (Planning reference 12/00196/FUL), as set out in the Specification provided by the West Yorkshire Archaeological Advisory Service (WYAAS; see Appendix 3). The work involved the excavation of three open area trenches of variable size, targeting the archaeological features detected during geophysical survey of the site (Harrison 2012) and the subsequent phase of archaeological evaluation by trial trenching (Tinsley 2012). Excavations began on 4th September 2012 and were concluded on the 19th October 2012.

Site location and topography

The site is located 3km to the north-west of Wakefield city centre (NGR SE 3097 2425). It is bounded to the north the M1 motorway, to the east by the A650 and to the south and west by fields and open land (Fig. 1). It incorporates the current Police Operations Centre and is bisected from east to west by an access road. The site slopes generally from a height of *c.*90m aOD in the north-east to *c.*80m aOD in the south-west.

Soils, geology and land-use

The underlying bedrock comprises Pennine Middle Coal Measures (Mudstone, Siltstone, and Sandstone), no superficial deposits are recorded (BGS 2012). The soils in this area are classified in the Dale association, characterised as slowly permeable clays and fine loams (Soil Survey of England and Wales 1980).

2 Archaeological and Historical Background

Prior to the geophysical survey there were no known archaeological sites within the proposed development site, but it was regarded as an area of archaeological potential, based upon a number of cropmark sites in the vicinity. One such cropmark has been detected in the area of the proposed firearms training block, to the south of the access road. Such cropmarks are typically found elsewhere to be of Late Iron Age or Roman date. The geophysical survey results in this area detected linear anomalies consistent with such a small enclosure complex (Harrison 2012) and the results of the evaluation by trial trenching confirmed the presence and archaeological validity of these features, although they did not recover any dating evidence that could corroborate the anticipated Iron Age or Romano-British date (Tinsley 2012).

Another notable linear geophysical survey anomaly, which corresponded with the course of a track identified on the first edition Ordnance Survey map of 1854 (see Fig. 2), was detected running north-south and to the west of the proposed site of the new Public Order Building

(Harrison 2012). While it was also anticipated that this anomaly would be of an Iron Age or Roman date, and correspond to the presence of a trackway defined by flanking ditches, as are typical of the period elsewhere, the results of the evaluation did not corroborate such assumptions. Instead the linear feature was shown to consist of a series of east west aligned parallel rectangular pits, probably representing a system of sleeper beds, as well as ancillary features, which were collectively in filled by a relatively homogenous deposit of coal dust mixed with clinker, slag and other industrial residues. The presence of this material, as well as the recovery of pottery and clay pipe fragments from the feature fills indicates that the linear anomaly potentially represents a previously unknown railed transportation route probably laid down during the Industrial Revolution, in the 18th or 19th century, to service one or more of the nearby pit heads (Tinsley 2012).

The present Police Operations Centre occupies the site of the former Isolation Hospital, portrayed on the second edition Ordnance Survey map of 1931-2, whilst a 20th-century building complex had, until relatively recently, occupied the eastern edge of the site, just north of the access road.

3 Aims and Objectives

The project aimed to fully record, analyse and report all archaeological remains within the areas of interest in order to allow their 'preservation by record' prior to their destruction during the development of the site, and to place the results of this work in the public domain by depositing it with the WY Historic Environment Record (Registry of Deeds, Newstead Road, Wakefield WF1 2DE).

The principal objective of the open-area excavation in Area B of the probable Iron Age/Romano British enclosure complex was to more precisely date the period (or periods) of its use. In addition, the work was to try and better define the function of the enclosure, which could then be related to the wider historical landscape of its period of use.

For the later post-medieval transport feature the objective of the excavation in Areas A and C was to date and determine its precise nature, form and function through recording and the recovery of artefactual evidence that would more precisely date its use. Area C was opened as a contingency requirement after consultation with and instruction by Jason Dodds and David Hunter of WYAAS. This area was excavated in order to try and better understand the series of features comprising the linear industrial anomaly and their relationship to a known field boundary and trackway identified on first edition OS mapping to the north of Area A. It was hoped that a cursory examination of this area would better situate the potential trackway chronologically in relation to such other documented features.

4 Methodology

The excavation was carried out in accordance with the WYAAS specification (Appendix 3), and with accepted professional standards and guidelines (IfA 2008), as well as the ASWYAS site recording manual (ASWYAS 2010).

Two excavation areas were initially laid out using a GPS total station in order to investigate the Industrial period trackway (Area A) and the potential Iron Age/Romano-British enclosure (Area B; see Fig. 2 for location of areas). Each area was scanned using a CAT scanner to check for any live services prior to excavations commencing. Excavations were conducted using a hydraulically powered 360˚ mechanical excavator equipped with a toothless ditching bucket. Topsoil and subsoil were separated and removed to the side or to allocated bunds using a Moxy dumper truck. All deposits were carefully removed in 0.2m spits down to the natural clay or the highest archaeological horizon. This stripping was carried out under constant archaeological supervision according to in house quality control guidelines (ASWYAS 2010) and industry best practice (IfA 2008).

Areas around potential archaeological features were manually cleaned and checked before they were planned at an appropriate scale (either 1:20 or 1:50). To allow this, a planning grid was established across Area B using a 20m grid system while a single line of planning points were established in Area A, and subsequently in Area C. These planning points and grids were later located and geo-referenced using a GPS total station system.

Within Area A the specification required the excavation of 50% of each primary feature in a manner that, where possible, provided a longitudinal section to be developed across the entire range of features associated with every other sleeper cut, and a width section alternating between east and west facing through the remaining sleepers. Cross-sections were recorded at appropriate scales of 1:10 or 1:20, and a photographic record in both monochrome and colour was made.

In Area B linear features were subject to an initial 20% excavation sample, whereas discrete features were 100% sampled after initial half-sectioning and recording. Cross-sections through features and their fills were recorded at an appropriate scale of 1:10 or 1:20. A photographic record in both monochrome and colour was made.

Samples of up to 40 litres (subject to size of feature), were taken from primary fills of the identified archaeological features. These have been processed for the recovery of artefactual and environmental material.

Following completion of the initial sampling strategy in Area B, no conclusive dating evidence had been recovered and under the instruction of Jason Dodds, the acting Senior Archaeologist for WYAAS, the contingency clause requiring 100% excavation of the linear features was invoked. In this case, where sufficient depth of deposits allowed, the top 0.2-0.3m of the linear features were removed using a JCB excavator equipped with a toothless

ditching bucket. The remaining primary fills were then entirely removed by hand in an attempt to recover any conclusive dating evidence.

Area C was opened, as part of the site contingency, in an identical manner to the other excavation areas. However, no further excavations were conducted after initial exposure of the features in this area and a plan only was generated at a scale of 1:50.

5 Results

Area A and Trenches 1-4

Area A was located in the north-western of the development area, to the west of the site of the proposed Public Order Building. It measured approximately 16m by 14m, taking in an area of approximately 205m² and orientated north-south (Fig. 2). It was excavated over a section of the linear geophysical anomaly identified by the geophysical survey (Harrison 2012) and examined during trial trenching within Trenches 1, 3 and 4 (Tinsley 2012). It extended on average to a depth of 0.5m below the existing ground level, through topsoil and a shallow subsoil deposit, attaining a depth of between 85.56m and 85.15m aOD, at which point a similar array of features as those recorded in the trial trenches were revealed, cut into the underlying natural clay deposits.

These features consisted of a central alignment of twelve complete and two partially exposed large sub-rectangular pits each set on an east-west alignment, running parallel to one another spaced approximately 0.2-0.3m apart, and collectively extending north south (Fig. 3; Plate 1). The pits were on average up to 3.5m long, 1m wide and up to 0.45m deep with a predominantly U-shaped profile (Fig. 3, S.9 and S.78), with vertical sides and a relatively flat base, although at times the base of individual features undulated to varying degrees. Each pit was filled with a virtually identical sandy clay matrix mixed with an abundance of clinker and coal dust, with occasional fragments of red brick, sandstone and slag. Collectively they produced a small quantity of clay pipe stems and pottery ranging in date from the 15th to the 18th century (see specialist report below).

In a number of cases, for example, cuts 1003, 1034 and 1211, the pits possessed a narrow and often intermittent lip along the upper edges of the cut, extending to an approximate depth of 0.1m and a similar width (Plate 2). In a limited number of instances, such as cut 1024 and 1177, this lip expanded to form a distinct shallow shelf across the western end of the individual pit (Plate 3). In addition to such features several of the pit cuts, for example 1175, 1177 and 1207, possessed detail relating to individual shovel cuts made during the original excavation of the pit which presented as a series of scallop-shaped marks along the pit edge and internal lip.

This central pit alignment was immediately flanked by several linear gullies extending north-south; one located immediately to the west and two spaced approximately 0.2m apart to the east. Excavation of sections across these features revealed a profile up to 0.64m wide with

shallow but steeply angled or vertical sides up to 0.15m deep and a relatively flat base (Fig. 3, S.4, S.11 and S.79; Plate 4). The gullies were also filled by the same generic clinker and coal rich fill, recorded in relation to the central and other pit features, but also incorporating limited lenses of re-deposited clay. In one instance, within the western gully, aspects of re-deposited clay (015) appeared to form a packing material for a shallow post-pipe (1014 and 1016; Fig. 3, S.4; Plate 5), although no other structural features could be conclusively identified elsewhere within the gullies. On the whole the gullies were identical to those recorded in Trench 1 but were inconsistently represented in Trenches 3 and 4 where the easterly gullies were less clearly defined and only partially represented.

In addition to the central range of features, a second series of eleven smaller sub-rectangular and square pits were arranged along the eastern margin of the group (Fig. 3; Plate 1). In plan these features were between 1-1.2m long and 1-1.1m wide and in section up to 0.16m deep, with angled (although often irregular) sides and an uneven base (Fig. 3, S 7 and 11; Plate 6). They contained the same generic clinker and coal rich fill encountered elsewhere in the area. While this pit sequence followed the same general north-south axis as the central group, individual pits did not align with corresponding features in the central pit sequence. In addition, this secondary pit sequence was not consistently identified in any of the trial trenches with only a single example occurring within Trench 1 and none recorded in either of Trenches 3 or 4.

Area B

Area B was excavated in a central area south of the former access road servicing the current police headquarters (Fig. 2). It measured approximately 75m by 60m, equating to 4350m², orientated east-west and centred upon the presumed enclosure identified during geophysical assessment (Harrison 2012), and examined during trial trenching in Trenches 24, 26 and 27 (not illustrated). Excavations extended through topsoil and a shallow and intermittent subsoil deposit to a depth of approximately 0.5m below existing ground levels, producing a height between 82.84m aOD and 80.58m aOD, at which point the archaeological features were revealed cut into the underlying natural clay deposits. These features primarily consisted of a series of linear ditches and gullies, collectively defining a small enclosure complex of at least four enclosures, with outlying ditches, segmented ditches and gullies as well as a small number of possible pits and post-holes, predominantly arranged to the north, east and south (Fig. 4). By contrast, no traces of archaeological features were identified to the west of the enclosure complex, although this area did represent the highest point of ground within archaeological site and may consequently have been subject to the greatest levels of truncation. The linear features were assigned group context numbers and shall be discussed accordingly while the discrete features and segmented ditch alignments will be divided and discussed according to their location either to the north or south of the principal enclosure (Enclosure 1).

Context Groups 1, 2 and 3: Enclosure 2

Context Group 1 consisted of a single length of ditch extending north-south for approximately 10.8m and was up to 0.75m wide (Plate 7). It formed the western boundary of the enclosure complex and was examined as 103 within Trench 24. Here it was found to posses a U-shaped profile up to 0.25m deep and contained a single homogenous fill of light orange grey silty clay (102). The ditch was examined via three further slots, the central one of which confirmed the findings of the evaluation phase (1039; Fig. 5, S.13). However, the two remaining slots, excavated at either terminal of the ditch, revealed a far shallower and wider profile extending to only 0.06m deep although this contained the same fill as elsewhere.

Context Group 2 extended east-west and consisted of two ditch sections, a larger arcing segment up to 11.6m long and 1.3m wide, examined at its eastern terminal as cut 137 within Trench 26 during the evaluation phase, and a much shorter segment (1046) up to 3.4m long and 0.85m wide, located approximately 2.75m further to the west. The original slot relating to the eastern terminal of the larger ditch section revealed a fairly substantial V-shaped cut, (137) with steeply angled sides and a flat narrow base, up to 0.41m deep and containing at least two fills, a primary deposit (139) of medium grey sandy clay and a secondary fill (138) of medium grey brown sandy clay (Fig. 5, S. 21E). However, excavation of two further sections across this ditch segment demonstrated a progressively shallower and more rounded profile moving from east to west, where it was less than 0.15m deep and contained a single fill only (Fig. 5, S.18; Plate 8). The second smaller ditch section continued the trend established by its larger counterpart and became progressively shallower further to the west, where it reached a maximum depth of 0.1m and possessed an entirely rounded profile containing the same fill as identified elsewhere (Fig. 5, S.16; Plate 9). A single heavily abraded sherd of Roman greyware pottery was recovered from 1043 which filled the western slot across the main ditch section.

By comparison the southern boundary ditch, Context Group 3, presented a relatively consistent feature up to 10m long, 0.9m wide and up to 0.33m deep, extending east to west from a point approximately 3m west of the juncture between Context Group 4 and 5 and terminating approximately 4.25m short of the southern terminal of Context Group 1 (Fig. 4). At its eastern terminal (1050) the ditch was rounded in plan and possessed a U-shaped profile with steeply angled, well defined sides and a flat base (Fig. 5 S. 20; Plate 10). At this point the feature contained two fills, a primary deposit (1051) of medium grey brown silty clay containing elements of charcoal and a secondary fill of medium brown silty clay (1052). The presence of charcoal in the primary fill was noted by the excavator as potentially denoting activity in the immediate vicinity of the ditch terminus, although this could as easily have been produced by the flow of ground water within the ditch, following the general slope from north-west to south-east. Elsewhere the primary fill of the eastern terminal was absent. At the western terminal (1055) the feature became slightly wider, extending to 1m over a length of 1.36m, and took on a marked sub-rectangular appearance but a more rounded profile (Fig. 5, S.22; Plate 11). It also contained a slightly different fill (1056) of medium yellow brown silty

clay with frequent angular sandstone inclusions. This change in the character of the cut was taken to indicate the presence of a separate probable pit which was confirmed by a second slot across the feature, although further examination could not establish the chronological sequence between its creation and that of the ditch proper.

Collectively, Context Groups 1, 2 and 3 formed a trapezoidal enclosure (Enclosure 2), taking in an area approximately 250m² or more, that had been appended to the western side of Enclosure 1. The terminals of both the northern and southern ditches stopped short of Context Group 5, which defines the eastern side of Enclosure 1. Here the depth of the respective ditch sections were relatively deep and it is likely that the gaps were therefore deliberate and either functioned as access points or as breaks respecting an external bank of Enclosure 1. In addition the western circuit contained a number of other breaks in its perimeter, in the south-west and north-west corner and along the northern line. It is unclear if such gaps were intentional and designed to provide further access to the interior, although given the shallow depths of the ditch sections towards the west it is probable that they result rather from truncation of the feature.

Context Group 4

Context Group 4 represents a north-south aligned ditch extending over 17.7m from the south-western corner of the ditch defining the eastern half of Enclosure 1 (Context Group 5; Fig. 4; Plate 12). The profile of the ditch was U-shaped, composed of steeply angled sides rounding to a concave base (Fig. 6, S.37 and S.42). It was found consistently to be between 0.5m and 0.57m wide and up to 0.18m deep, with a single relatively homogenous fill of medium grey brown silty clay. Where it intercepted the southern corner of Context Group 5, no clear stratigraphic relationship between the two ditches could be discerned in section or plan (Fig. 6, S. 40; Plate 13). Whilst it cannot be proven that this ditch was appended to Enclosure 1, spatially this seems likely. Context Group 4 provided the eastern limit of Enclosure 3, formed with Context Group 3 (see above) and gully 105.

Gully 105 was recorded during the excavation of Trench 27. It measured approximately 9m long and 0.41m wide and extended east west from a point 1m further to the east of the Context Group 4 ditch. In profile (not illustrated) it was found to be concave in shape with shallow but steeply angled sides no more than 0.11m deep. It contained a single homogenous fill (104) of medium grey yellow brown silty clay containing rare mudstone inclusions. The gully corresponds with a geophysical anomaly that appeared to turn north at its western extent. No trace of this change in alignment was identified and the feature appeared instead to simply peter out.

Context Groups 5 and 6: Enclosure 1

Context Group 5 represented a single continuous circuit of ditch which defined a 250m^2 enclosure (Enclosure 1) that had been appended to the western side of an earlier ditch (Context Group 6). It extended over a total of 42.75m, with a southern, east-west aligned section equating to approximately 15.5m, a northern counterpart extending to approximately

11m and a western return extending between the two approximately 16.25m long (Fig. 4). The western return had been partially recorded within Trench 26, where it was examined by two slots, one near the middle of the ditch section (127), and one across the north-western corner (129). A further section was excavated across this length of the ditch (1099), confirming the U-shaped profile, up to 0.76m wide and 0.26m deep (Fig. 6, S.41), and the single medium yellow grey silty clay fill encountered during the evaluation (Plate 14).

The northern and southern return of the ditch were each examined at a further three points, where they were found to posses a similar U-shaped profile, which was on average 0.83m wide and extended to a slightly greater depth of up to 0.32m compared to the western length. At the terminal of the southern section (1116, Fig. 7, S.47), two distinct fills were recorded; a medium grey brown silty clay primary fill (1118), overlain by a medium yellow grey silty clay identical to that found elsewhere (1117; Plate 15).

Within the terminus of the northern ditch (1123) a more complicated sequence of fills and up to three potential re-cuts were recorded (Fig.7, S.57; Plate 16). The primary cut (1129) within this sequence was only discernable extending down the northern edge of the section where it contained a single fill (1130) of mottled orange and grey silty sand, up to 0.38m wide and 0.2m deep. It was unclear from this section, or in plan, if the cut represented the original line of the ditch or otherwise a pit subsequently truncated by it, similar to that described at the western terminus of Context Group 2 above. The main cut of the ditch (1123) clearly truncated the earlier deposit, extending to a depth of 0.53m with a V-shaped profile up to 1.06m wide. It was filled by a sequence of three distinct layers, the upper of which (1126) contained charred material across its base which unfortunately was not viable as a radiocarbon dating sample. A third possible cut (1127) was also identified along the southern edge of the ditch, extending through deposit 1126 only, to a depth of 0.16m, and was concave in profile. It contained a fill of mixed yellow and orange silty clay (1128) similar to the predominant fill of the ditch elsewhere. A further section across the northern return (1108) revealed a sequence of two fills (1119 and 1120), and a further possible recut (1133). However, while the terminus of the southern return (1116) contained a sequence of two fills (1118 and 1117; Fig. 7, S. 47), elsewhere the ditch contained a single homogenous fill with no other evidence of a recut.

The termini of both the southern and northern returns of Context Group 5 were located in a similar fashion to those of Context Groups 2 and 3, falling approximately 1.5m short of Context Group 6, again suggesting a possible bank along the western side of that ditch. In plan the ditch of Context Group 6 extended for approximately 52m but was quite sinuous and varied in width and profile across its entire length (Fig. 4; Fig. 7, S.64, S.70, S.72 and S.73; Plates 17 and 18). For much of this length it contained a single, relatively homogenous, and often very stiff, medium grey silty clay from which a single find of a whet stone was recovered. In the vicinity of the southern terminus of Context Group 5 (1116), a number of large sandstone blocks had been incorporated into the fill of the ditch. This relationship is probably entirely fortuitous and the deposit may simply relate to the convenient clearance of

boulders from a plough area or otherwise possibly an attempt to consolidate boggy ground once the ditch had nearly fully silted.

Further to the south, the ditch was crossed by two intermittent linear features extending on a roughly north-east to south-west axis. Excavations at the points of intersection with these features revealed that they were very shallow, with a depth of less than 0.05m (1164; Fig. 7, S. 72). Given their depth and ephemeral nature these features probably represent the vestiges of ridge and furrow. Beyond this point the ditch became quite difficult to discern, partly because the feature appeared to spread out, while in addition a considerable amount of standing water had collected in the south eastern corner of the site, depositing a layer of sludge that masked underlying deposits. The ditch did however appear to extend further south and beyond the limit of excavation. Conversely, to the north, the ditch became progressively more ephemeral, finally petering out before reaching the ditch represented by Context Group 8 and the limit of excavation.

Context Group 7

Context Group 7 consisted of a single 13.25m long length of ditch located approximately 16m north of Enclosure 1 and extending on a roughly east-west alignment (Fig. 4). Together with discrete features 133 and 150 it could form another enclosure (Enclosure 4) appended to the Group 6 ditch and the northern side of Enclosure 1. The ditch was examined by three sections, one each excavated at its terminals and one at its centre. It was up to 0.83m wide and 0.19m deep, with shallow but steeply angled sides rounding into a concave base (1138; S.62 and 1135; Plate 19), although at its western end the profile proved less regular (1133; Fig. 7, S. 60). It contained a single fill of medium grey brown silty clay that produced a small assemblage of heavily abraded Roman pottery sherds deriving from a flagon (see specialist report). At its western end the ditch terminated in line with a pair of ditch segments extending north-south, while to the east it finished 1m before reaching the ephemeral line of Context Group 6.

In plan a further linear feature appeared to extend south-west from the main body of the ditch, however, examination established that it was very shallow, at no more than 0.05m. Given its depth and identical alignment to similar features noted as intersecting the ditch of Context Group 6, to the east, it probably represents a section of a further furrow.

Context Group 8

Context Group 8 represented a single length of ditch, roughly 14m long on an east north alignment within the north-eastern corner of Area B (Fig. 4). At either end it extended beyond the limit of excavation. Examined in three sections, the profile proved very consistent, with a width of up to 1m and a depth of up to 0.26m, with steeply angled sides and a flat base (Fig. 6, S. 33; Plate 20). It contained a single fill of medium grey brown sandy clay that produced no finds. The ditch can not be related stratigraphically to any other feature in Area B, although it may have articulated with the Group 6 ditch and it shares a similar alignment to Context Group 7 located approximately 10m further to the south.

Discrete features to the north of Enclosure 2

A spread of ten discrete features were recorded in the area immediately to the north of Enclosure 2. The majority of these features represent probable pits or post-holes, although four may best be described as short segments of ditch (Fig. 4). Two of the ditch segments (133 and 150) were spaced 3m apart and arranged on the same north-south axis as the western side of Enclosure 1 and probably represent the remnants of the western side of the putative Enclosure 4. These measured between 2.5m and 3.25m in length and were between 0.31m and 0.83m wide (Fig. 5, S.19E and S.26E). They were found to possess a concave and relatively shallow profile up to 0.23m deep and to contained a single relatively homogenous fill of medium grey brown sandy clay (deposits 134/141 and 149/151 respectively), which in one instance contained a thin lens of charcoal (Fig. 5, S. 26E). A shallow and highly restricted secondary deposit of medium orange silty clay (152) was also identified in one section across the northern terminal of segment 150, just above the lens of charcoal. Feature 142, is on a similar alignment, but is interpreted as a probable pit. Feature 1083 was potentially part of 142 and had a similar alignment. A section excavated across its northern terminal confirmed a U-shaped profile up to 0.2m deep containing two fills, a primary deposit of light grey silty clay (1085) and a secondary deposit of medium greyish brown silty clay (1084) (Fig. 6, S. 36; Plate 21).

A third probable ditch segment (1063/1067) was located approximately 20m further to the west and therefore in relative isolation to the alignment of features noted above. It was up to 2.75m long, 0.61m wide and was up to 0.24m deep, with a profile that varied between U-shaped and V-shaped. It contained a single homogenous fill of medium reddish grey brown sandy clay (Fig. 5, S. 24 and 28 and Plate 22). While the absence of further ditch segments in the immediate vicinity of the feature somewhat weakens an argument for a western run of ditch or bank similar to that potentially represented by the three segments located to the east, it is notable that the segment shares a similar north-south alignment to the western side of Enclosure 2, approximately 11m to the south. In this regard it is also notable that the ditch segment marks the western extent of the series of discrete features north of that enclosure.

Six discrete features were recorded to the north of Enclosure 2 and west of Enclosure 4. The majority of these features cluster within a 10m² area located towards the west, although no structural pattern could be discerned within this array (Fig. 4). A rectangular-shaped pit (1101) was noted to the east of ditch 1067 and measured up to 1.5m long and 0.64m wide. Excavation of the western half of the fill revealed a vertical sided profile that extended to a depth of 0.8m, although the feature was never bottomed due to ground water ingress at this depth (Fig. 6, S. 44). At a depth of approximately 0.5m a distinct flat bottomed step was also noted to extend from the western edge for 0.4m, before a sharp break of slope and a continued to the limit of excavation. The pit contained a highly variable fill (1102) of dark to medium grey brown sandy clay, which contained distinct lenses of re-deposited topsoil and natural clay (Plate 23). While no finds were recovered from the pit, and a functional explanation is not immediately obvious, the nature of the fill would seem to indicate a

process of rapid backfilling, probably undertaken relatively recently. Consequently, the feature was interpreted as a modern intrusion and no further excavation was undertaken.

A further oval-shaped possible pit (1069) was located approximately 3.5m to the north of pit 1101. This pit was 1.2m long and up to 0.67m wide, orientated north-south, and in section had a concave profile up to 0.17m deep (Fig. 6, S. 29; Plate 24). It contained a single medium greyish brown silty clay fill (1070) that produced no finds or other dating evidence. Approximately 2.5m to the south-east of this pit a further oval shaped cut (1073) was recorded, measuring 1.5m long and 0.63m wide orientated north-south. It possessed a slightly irregular profile (Fig. 6, S. 31), with a more angled side occurring towards the east, rounding into a concave base which contained a slightly different medium grey sandy silty clay fill (1074). There is some doubt as to the archaeological validity of the feature and an origin as a possible tree throw can not be ruled out. A further oval-shaped cut (1071) was located approximately 2.2m to the south of this feature. It measured 0.41m by 0.32m and was orientated north-south. In possessed a regular V-shaped profile with steeply angled sides and a pointed base up to 0.14m deep (Fig. 6, S. 30) and contained a single fill (1072) of medium grey brown sandy clay that produced no finds or dating evidence. A probable post-hole (1090) was recorded approximately half way between pit 1070 and the northern enclosure ditch represented by Context Group 2. It was circular in plan with a diameter of 0.32m and in section had a well defined and regular U-shaped profile up to 0.14m deep (Fig. 6, S. 38; Plate 25). It contained a single homogenous fill of medium brown silty clay that produced no finds or other dating evidence.

The easternmost discrete feature (1075) recorded in this area was located approximately 0.5m west of 1083. It was sub-circular in plan with a diameter of between 0.55m and 0.6m and contained a single fill of medium grey brown sandy clay (1076). In section the feature was very shallow with a depth of not more than 0.1m with a relatively flat base (Fig. 6, S. 32).

Discrete features within Enclosure 3

A series of discrete features, all representing pits, were recorded in the area of the putative Enclosure 3. Perhaps four features represented a group of intercutting pits that extended in a continuous line, on a north-west to south-east axis, the northernmost of which began approximately 0.5m west of pit 1055 (Fig. 4; Fig. 7, S. 49; Plates 26 and 27). This sequence of pits was initially identified as a single, roughly oblong-shaped spread of material approximately 5.5m long and up to 1.3m wide which was thought to represent a possible corn drying kiln. However, further investigation immediately revealed a series of sub-circular and slightly irregular cuts (1110, 1112 and 1114), each differing in size, profile and depth, with the largest of these feature (1110; Fig. 5, S.25) having a maximum depth of 0.56m. A single relatively homogenous fill of medium reddish grey brown sandy clay was encountered throughout the various cuts and consequently no chronological order could be established to their creation.

Starting approximately 2.25m to the south-east of the sequence of pit cuts, two further pit features were recorded, spaced 2.5m apart and seemingly continuing the same north-west to south-east alignment established by the pit group. Pit 1061 was sub-circular in plan, with dimensions of between 0.96m and 1.06m in width (Plate 28). In section the pit had steeply angled sides rounding into a concave base, at a depth of approximately 0.22m (Fig. 5, S. 26), and contained a single fill (1062) of light to medium yellowish brown silty clay with abundant but degraded charcoal inclusions. The second pit (1065) was circular in plan with a diameter of 0.76m, and extended to a depth of 0.13m with variable sides more steeply angled towards the west, leading to a slightly uneven base (Plate 29). It also contained a single fill of mottled brown and grey silty clay containing charcoal inclusions.

Area C

Area C was located approximately 30m north of Area A and measured 12m by 5.5m or 66m² orientated east-west. It was opened as part of the mitigation contingency and positioned in order to examine the intersection of the linear geophysical anomaly identified in Area A (as well as Trenches 1, 3 and 4), and a trackway extending north from a probable ditched land boundary aligned east-west, identified on first edition OS mapping of the area from 1854 (Fig. 8). It revealed the same series of clinker and coal-filled features encountered elsewhere, including the central pit alignment, flanking gullies and eastern arrangement of smaller pit features, as identified in Area A and Trench 1 (Plate 30). These features clearly extended up to the former land boundary, which was visible as a linear cut extending east-west across the trench. As far as could be assessed without recourse to excavation, the boundary ditch appeared to truncate aspects of the pit and gully grouping and to contain a single medium grey brown sandy clay fill. However, while limited clinker and coal deposits did extend north beyond the boundary ditch, as irregular and intermittent patches towards the west, there was a clear break and possible termination to the pit sequence south of this junction. Furthermore, no clear evidence of a trackway of any sort could be observed extending north from the boundary ditch. This said, the boundary ditch had been in filled, and probably deliberately so, with a series of large sandstone boulders exclusively occurring at the point in the ditch where the pit alignment terminated.

6 Artefact Record

Roman pottery by Ian Rowlandson

The pottery has been archived using count and weight as measures according to the guidelines laid down for the minimum archive by The Study Group for Roman Pottery (Darling 2004).

Twenty-five sherds from two Roman vessels were presented for study from this site. A single abraded greyware bodysherd, weighing 12g, was retrieved from context 1043. The sherd has a fine fabric with common fine mica, sparse quartz and ferrous inclusions. As little of the

surfaces survive and there is little indication of the form of the vessel a broad Roman date should be attributed.

Twenty-four sherds (40g) from a flagon were retrieved from context 1134. The sherds have a light firing 'white ware' fabric with mica similar to the Lincoln 'CR' fabric (Darling 1999).

However, the poor condition of these sherds, probably due to soil conditions, prevents a secure attribution to a Lincoln source on the basis of x20 magnification alone. This vessel dates to the later 1st to 2nd century AD.

It appears likely that there was some later 1st to 2nd-century Roman activity in the vicinity of the site but further interpretation of this group would be spurious. It is recommended that this pottery should be deposited in the relevant museum to facilitate further study of the sources supplying flagons to the region.

Medieval and post-medieval pottery by Chris Cumberpatch BA PhD

The assemblage consisted of 37 fragments of pottery representing a maximum of 36 vessels. The details are summarised in Table 1.

Contexts 1006, 1011 and 1012 produced sherds of medieval, late post-medieval and early modern date, with all of the medieval sherds from context 1006 occurring with a sherd of later 17th or 18th-century type, suggesting that the context was a disturbed one. One of the medieval sherds appeared to have been overfired and may be part of a waster or, perhaps more likely, an over-fired but still usable vessel.

Contexts 1011 and 1012 both produced sherds of late Blackware, a type of pottery typical of 18th-century sites throughout West Yorkshire and neighbouring areas.

Context	Type	No	Wt	ENV	Part	Form	Decoration	Date range
1006	?Waster	1	5	1	BS	U/ID	U/Dec	?Late Medieval
1006	Late Med Sandy ware	1	7	1	BS	Hollow ware	Thin green-brown glaze ext	C14th – C15th
1006	Slipware type	2	4	1	BS/Flake	?Dish	U/Dec	LC17th – C18th
1011	Late Blackware	3	52	3	BS	Hollow ware	Black glaze int & partially ext	C18th
1012	Late Blackware	1	90	1	BS	Hollow ware	Black glaze int & partially ext	C18th
Total		**8**	**158**	**7**				

Table 1. Summary of the medieval and post-medieval pottery

Worked Stone by Zoe Horn

A single rectangular cobble with square section was recovered during the excavation from context 1151. It is likely to have been used as a sharpening (hone) stone and details are provided below and in Table 2.

Geology and form

Sandstone, fine to medium grained, poorly sorted, highly compacted with sparse muscovite. Water rounded cobble, possible erratic. One long edge slightly dished with transverse lines

visible. One face flat with smooth central area and similar transverse lines. Length 162mm, maximum section 45mm by 42mm.

Context	Type	No	Wt	Part	Date range	Notes
1151	Hone Stone	1	564	Hone	not dateable	A natural cobble that has been utilised for sharpening
	Total	**1**	**564**			

Table 2: Summary of the worked stone fragment

Clay tobacco pipe by Zoe Horn

Four stem fragments of clay tobacco pipe were retrieved from four contexts. A catalogue of the assemblage is presented in Table 3.

Context	No	Wt	Part	Decoration	Date range	Notes
1192	1	4	Stem	None	19th C	Stem 6mm thick, bore hole 2mm thick
1170	1	4	Stem	None	18th C	Stem 9mm thick, bore hole 2.5mm thick
1027	1	3	Stem	None	19th C	Stem 7mm thick, bore hole 2mm thick
1011	1	2	Stem	None	19th C	Stem 6mm thick, bore hole 2mm thick
Total	**4**	**13**				

Table 3: Summary of clay tobacco pipe

Metal working debris by Gerry McDonnell

Introduction

This assessment describes the material classified as slag. A brief overview of the material from the site is provided, followed by a detailed description, quantification and a statement of significance. The assessment report follows the guidelines issued by English Heritage (Jones 2001, 7).

Slag Classification

The slags were visually examined and the classification is based solely on morphology. In general they are divided into two broad groups. First are the diagnostic ferrous material which can be attributed to a particular industrial process; these comprise ores and the ironworking slags, i.e. smelting and smithing slags. The second group, are the non-diagnostic slags, which could have been generated by a number of different processes but show no diagnostic characteristic that can identify the process. In many cases the non-diagnostic residues, e.g. hearth or furnace lining, may be ascribed to a particular process through archaeological association. The residue classifications are defined below. The count and weight of each slag type present in each context was recorded.

Diagnostic Ferrous Slags and Residues

Smithing Slag - randomly shaped pieces of iron silicate slag generated by the smithing process. In general slag is described as smithing slag unless there is good evidence to indicate that it derived from the smelting process.

Hammerscale - there are two forms of hammerscale, flake and spheroidal generated during the smithing process. The presence of hammerscale is therefore a strong indicator that smithing (primary or secondary) was carried out on the site. Their small size precludes their hand recovery, and they are usually recovered during soil sample sieving (for environmental data).

Non-Diagnostic Slags and Residues

Hearth or Furnace Lining - the clay lining of an industrial hearth, furnace or kiln that has a vitrified or slag-attacked face. It is not possible to distinguish between furnace and hearth lining.

Clinker - high silica content smithing slag probably generated in a post-medieval coal fired hearths, including, for example, a fire-box.

Results

The material recovered from Area A is dominated by clinker, with one piece of lining with attached clinker, some possible fragments of smithing slag, and some possible hammerscale.

Description

Table 4 lists the slag types, count and weight present on the site, and a list of the identification of the magnetic fractions recovered from the sieving programme is provided in Table 5. The assemblage is dominated by clinker, a high silica non-diagnostic residue probably derived from coal fired hearths including fire-boxes (total weight 0.8kg, distributed in 10 contexts). A small amount (total weight 0.14kg) of smithing slag lumps were recovered from three contexts. In all cases it was noted that the slag also had a cindery appearance and they may be examples which contain higher levels of iron oxide or other minerals. One piece of hearth lining with attached clinker was identified (Context 1006). Three contexts contained fragments of coal, two of which also produced clinker. Two contexts contained material tentatively identified as hammerscale, Context 1007 contained a few possible fragments of flake hammerscale and Context 1220 contained possible examples of flake and spheroidal hammerscale. The other magnetic fraction samples from three other contexts contained no hammerscale. However, it is probable that the magnetic flakes and spheroidal examples were generated in the coal-fired hearths. One context contained a piece of burnt stone that may have derived from a hearth.

Significance

The assemblage is small, and based on the information provided the material derives from 19th-century deposits which would be consistent with the recovery of coal fired residues.

Context	Finds Number	Smith Slag Count	Smith Weight	HL Count	HL Weight	Clinker Count	Clinker Weight	Other Count	Other wt	Other type
1004						1	22	1	294	burnt stone?
1006		14	111	1	69	7	133			
1007	2					2	23			
1009						6	172	1	9	coal
1011						4	107			
1013						1	11			
1015						3	180			
1025		1	10							
1027						3	44			
1033						9	101	1	4	coal
1146								3	3	coal
1226	38	1	15			1	20			
Total		**16**	**136**	**1**	**69**	**37**	**813**	**6**	**310**	

Table 4. Slag listing for Area A (weight in grams)

Context	Sieve number	HS?	flake	sphed
1004	1	n		
1007	2	y?	?	
1151	34	n		
1220	37	y?	?	?
1226	88	n		

Table 5. Identification of the magnetic fraction from the sieving programme

7 Environmental Record

Environmental samples by Diane Alldritt

Introduction

Eleven environmental sample flots from archaeological excavation were assessed for carbonised plant remains and charcoal. Four bags of potential charred material sorted from the retents were also examined.

Methodology

Bulk environmental samples were processed by ASWYAS using a Siraf-style water flotation system (French 1971). The flots were dried before examination under a low powered binocular microscope, and contained very small amounts of charred plant material together with a mixture of burnt coal / cinder and unburnt coal, in amounts from <2.5ml up to 10ml. Modern roots and earthworm egg capsules were recorded in trace amounts of <2.5ml up to

5ml. All identified plant remains, including charcoal, were removed and bagged separately by type.

Wood charcoal was examined using a high powered Vickers M10 metallurgical microscope at magnifications up to x200. 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).

Results

Results are presented in Table 6 (next page) and discussed below.

Discussion

The eleven environmental samples assessed produced very small amounts of carbonised plant remains along with a few small fragments of wood charcoal. Some of the unburnt coal fragments recovered from the samples could have been naturally occurring in the local geology, but the presence of cinder / burnt coal and industrial residue indicated coal might have been used as fuel in industrial processes.

Samples 1 (1004), 2 (1007), 24 (1109), 31 (1126), 37 (1220) and 38 (1226) contained coal, with some of the burnt fragments resembling cinder, burnt coal or other residue. Two of these samples, 37 (1220) and 38 (1226) also produced industrial type remains, possibly slag, indicating some waste from industrial processes in the deposits.

Charcoal was scarce and generally poorly preserved, with indeterminate fragments recorded from 3 (1051) and 28 (1111). Two fragments of *Quercus* (oak) were identified from 5 (1062) and two fragments of Prunoideae (cherry Family) type from 6 (1066). The Prunoideae type was probably *Prunus spinosa* (blackthorn), but the pieces too degraded to accurately identify. All of the charcoal had probably been used as fuel, with some of the poorer pieces extremely cindery.

Sample 28 (1111) produced a single *Hordeum vulgare* sl. (barley), in reasonable condition, although perhaps a stray accidental occurrence in this deposit. An unusual fruit / nutshell was recorded from 16 (1085) but was unfortunately too degraded to identify.

	Sample	1	2	3	5	6	16	24	28	31	37	38
	Context	1004	1007	1051	1062	1066	1085	1109	1111	1126	1220	1226
	Total CV	10ml	<2.5ml	5ml	5ml	5ml	<2.5ml	2.5ml	5ml	20ml	<2.5ml	10ml
	Modern	5ml	0	0	0	0	0	0	0	0	<2.5ml	2.5ml
Carbonised Cereal Grain	**Common Name**											
Hordeum vulgare sl.	barley								1			
Charcoal												
Quercus	oak				2 (0.10g)							
Prunoideae	cherry Family					2 (0.32g)						
Indeterminate				1 (0.24g)	1 (0.54g)				2 (0.09g)			
Other Remains												
Indeterminate fruit / nut shell							1					
Burnt coal / cinder		5+						3		15+		
Unburnt coal			10+			1					5+	20+
Industrial remains											1	2
Earthworm egg capsules									1			

Table 6. Results from the environmental sampling

Conclusion

The samples generally produced very small amounts of carbonised plant remains, including charcoal, with the majority of burnt residue in the samples probably originating from coal or other industrial fuel residue.

The single cereal grain (from context 111, Area B) consisted of barley, which could provide tentative indication of some cereal use in the vicinity, but is more likely to be intrusive.

Charcoal identification suggested the use of oak for fuel (from 1062, Area B). Prunoideae types (from 1066, Area B) gathered from local scrub or hedgerows were probably also burnt opportunistically. Coal and industrial remains, recovered exclusively from Areas B, suggested some industrial activities in this area.

Overall the assessment samples produced a scarce assemblage of carbonised plant remains with much of the charcoal in poor condition, suggesting a fairly low potential for future work at the site to produce large quantities of plant material.

8 Discussion

The Enclosure Complex by I. Roberts

From the limited dating evidence recovered it is reasonable to attribute the linear boundaries the appended enclosure complex to the very late Iron Age or Roman period (1st or 2nd century AD). Whilst there is, insufficient clear-cut stratigraphic and diagnostic artefactual evidence to inform an unequivocal phasing of the site, the plan-form of the features is suggestive of a staged evolution, which would appear to involve at least three phases of development.

The earliest feature would appear to have been the eastern north-south (Group 6) ditch, which was possibly contemporary with the east-west (Group 8) ditch to the north. The sinuous nature of the north-south ditch is curious, but not unusual and many of the earliest Late Iron Age and Romano-British land divisions in ancient landscape are notable for this – possibly because the represent the ragged edges of a clearance phase (see Roberts *et al.* 2010, 62). Subsequently, Enclosure 1 was appended to the western side of the Group 6 ditch, and thereafter Enclosures 2, 3 and 4. Although it is impossible to be sure in which order these were added, it seems likely that Enclosure 2 was probably created first. Better preserved aggregated enclosure complexes of similar nature have been excavated elsewhere, for example at Bullerthorpe Lane, Colton (Wheelhouse 2001) and Low Common, Whitwood (Burgess and Roberts 2004).

The interval between the enclosure ditches and the Group 6 ditch is suggestive of a former bank on the western side of the former. This pattern is seemingly repeated with the addition of Enclosure 2, in which case it would imply that Enclosure 1 had possessed an external

bank. This, however, does not tally with the physical link displayed by the Group 4 ditch and thus the gaps between Enclosure 1 and Enclosure 2 might be better regarded as entrance points.

There is no doubt that the ditches of the enclosures have suffered considerable truncation by ploughing. This does not, however, explain the segmented nature of some of the ditches. The northern side of Enclosure 2 and the western sides of Enclosures 4 are composed of irregular and misaligned ditch segments which will never have formed a continuous ditch. In these instances it is likely that it was the up-cast material from these dug features that was used to create the linear boundary. Similar discontinuous features have been found forming the sides of an enclosure at Swillington Common (Howell 2001, 63, fig. 47).

Given the limited nature of the finds and environmental evidence, there is little upon which to base an argument for the function of the enclosure complex. There is no reason to suppose that any of the enclosures ever contained a dwelling or a structure, although it is conceivable that truncation has removed all such evidence. Only Enclosure 1 has a complete ditch circuit that might have made it suitable as a corral for livestock, but the less formal boundaries elsewhere, which may have become demarcated by hedges over time, rather than ditches, suggest that the enclosures were probably used for a variety of different agricultural practices associated with crops, which was the conclusion drawn for the Swillington Common example, based upon charred seeds and plant remains (Howell 2001, 63–4).

The Trackway

The features recorded within Areas A and C, as well as Trenches 1, 3 and 4 of the evaluation, represent a very consistent group that extends north to south across the western half of the development site and clearly relate to the linear anomaly detected during geophysical assessment of the site (Harrison 2012). However, this obviously does not correspond to a trackway defined by flanking ditches, as originally anticipated, but rather a continuous line of parallel rectangular pits flanked, mainly to the north, by numerous gullies and an additional shallow pit alignment. Such an arrangement suggests a rather obvious interpretation in which the central alignment can be argued to represent a system of sleeper beds, the sleepers themselves having been removed and originally comprising either wood or stone, probably supporting one or more pairs of rails. Such an interpretation finds support at other sites, for example, excavation of similar features at the nearby Dark Lane Colliery, in Mirfiled, West Yorkshire (CFA 2012) and recorded as the Silkstone Waggonway further to the south on Silkstone Common, South Yorkshire (Northern Archaeology 2012) where they were interpreted as examples of a horse drawn railway.

A possible counter to this interpretation may be raised with reference to the size of the proposed sleeper beds which, at up to 3.5m in length and 1m wide, appear quite large next to comparable examples and indeed modern standard gauge rail systems. However, it is only since the standardisation of railway gauges brought about by the Railway Regulation (Gauge) Act of 1846, enacted in response to the proliferation of locomotive railway systems that

accompanied and simultaneously fuelled the Industrial Revolution and burgeoning passenger market that the modern rail system has emerged. Prior to this a wide range of broad, standard and narrow gauge rail systems were in use by private individuals and corporate concerns, with examples established as far back as the early post-medieval period (Guy and Rees 2011). Many of these often small-scale and highly localised transportation systems functioned using predominantly horse power to pull a train of wagons transporting goods and raw materials from the point of production on to other bulk transportation networks such as canal systems, rivers and coastal ports and from there to market. Prior to standardisation individual tracks could therefore be highly idiosyncratic, a fact that would easily accommodate the variation evident between the dimensions of features recorded at Carr Gate and elsewhere. In addition, it may also be suggested that the greater size of the proposed sleeper beds perhaps accommodated more than one set of tracks, perhaps providing a two way transportation system. In either instance it is difficult to propose an alternative explanation for the pit system that would fit better than a railed transportation route of one form or another.

Given that the dimensions of the sleeper system probably indicate the use of a broad gauge rail, this would suggest a relatively early and probably pre-locomotive date for the railway and indeed the findings of Area C linked to additional documentary and cartographic sources would appear to corroborate this. While excavation was not undertaken to conclusively prove the stratigraphic sequence in Area C, the boundary ditch, first identified on the Ordnance Survey mapping for 1854, appeared to truncate aspects of the central pit alignment and associated gully system. This sequence would argue for the railway having been established prior to the second half of the 19th century and may actually have gone out of use by this point. In addition Jason Dodds (WYAAS) has highlighted a linear feature that may relate to a railway on an early edition of the Ordnance Survey map dating from 1840-41, which extends from north of ‘Car House’ towards staiths on the River Calder at Bottomboat, Stanley (Dodds pers. comm.). If a railway, this linear feature would appear to run close to several sandstone quarries and a number of pit heads, including those situated within the immediate vicinity of the development site, and may have serviced all such industries, perhaps having been undertaken as a joint venture by the respective owners in order to better transport their goods on to the canal or river network. In addition, documentary sources have also been identified that indicate a horse drawn railway did indeed operate in the vicinity of East Ardsley as early as 1803, providing a link to the Aire and Calder Navigation (D. Hunter, pers. comm.). This section of track perhaps functioned as an extension to the established Lake Lock Railway and is noted to have probably possessed a single relatively narrow gauge rail apparently fenced or screened on one or both sides. In this context the note of a single narrow gauge rail conflicts with the archaeological evidence and the suggestion of a broad gauge or multiple rail system based on the greater comparative dimensions of the sleeper bed pits. In this light an alternative explanation may be that the greater size of the sleeper pits derives instead from alterations or renewal to the track yet the evidence for this was not apparent in the sequence

of deposition. While an interpretation of the pit sequence as a railed transportation route involving horse drawn wagons would appear rational and well founded the exact nature and set up of that system remains elusive.

While a functional explanation for the central pit sequence can be advanced, the array of ancillary features remain enigmatic, although they are obviously connected to the system of sleeper beds and the associated railway by virtue of their physical proximity and identical fills. The series of shallow gullies that intermittently flanked the sleeper pits may have housed a series of upright posts, perhaps providing a vertical screen or fence to the railway as suggested by documentary sources relating to the 1803 railway (see above). However, the identification of a single and perhaps disputable post setting provides limited support to this interpretation, while the general form of the gullies do not readily fit with such an arrangement. An alternative explanation may be that the gullies simply functioned as a water management system, channelling surface water away from the track system in an area that is naturally subject to boggy conditions. In this regard several other similar coal and clinker filled gullies were also identified, but not otherwise recorded, within the context of Trench 2 during the evaluation phase (Tinsley 2012), where they were accompanied by a series of obvious ceramic and rubble filled land drains and were likewise interpreted as such. These additional gullies extended on an east-west axis and therefore probably intersected those flanking the central pit system at right angles. In this regard they followed the general slope of the ground in this area, from west to east, and if acting to channel water away from the main gully network, may have fed into a boundary ditch to the east of the railway.

The sequence of shallow pit features arranged down the eastern flank of the railway also suggest no immediately obvious functional interpretation. In terms of form, individual examples of this group were much smaller and generally more ephemeral than their central counterparts, which would suggest that they perhaps did not function in the same capacity. In addition the general sequence of the eastern pits appear out of alignment with the central group and also were not continuous along the entire length of the railway, being entirely absent from the area examined by Trenches 3 and 4. Nevertheless, it is possible that they represent a different phase in the construction of the railway or perhaps the presence of an additional side track. An alternative suggestion may be that they provided a raised walk way, perhaps indicating a loading point associated with one or other of the nearby pit heads or the potential end of the line indicated by the abrupt termination of the railway at the boundary ditch in Area C.

9 Conclusions

The excavations at Carr Gate have investigated two sets of features of very different date and function. The earliest evidence in Area B points to exploitation in the Late Iron Age and Roman period, in the form of ditched land divisions and the truncated remains of an

associated enclosure complex, which was probably utilised for agricultural activities rather than for occupation. Some 1,700 years later, in the early 19th century, the landscape was being exploited for its mineral wealth and it is likely that the evidence found in Areas A and C represent the remains of a horse drawn railway designed to carry coal and stone from the Carr Gate mines and quarries to the Aire-Calder Navigation for transport by river.

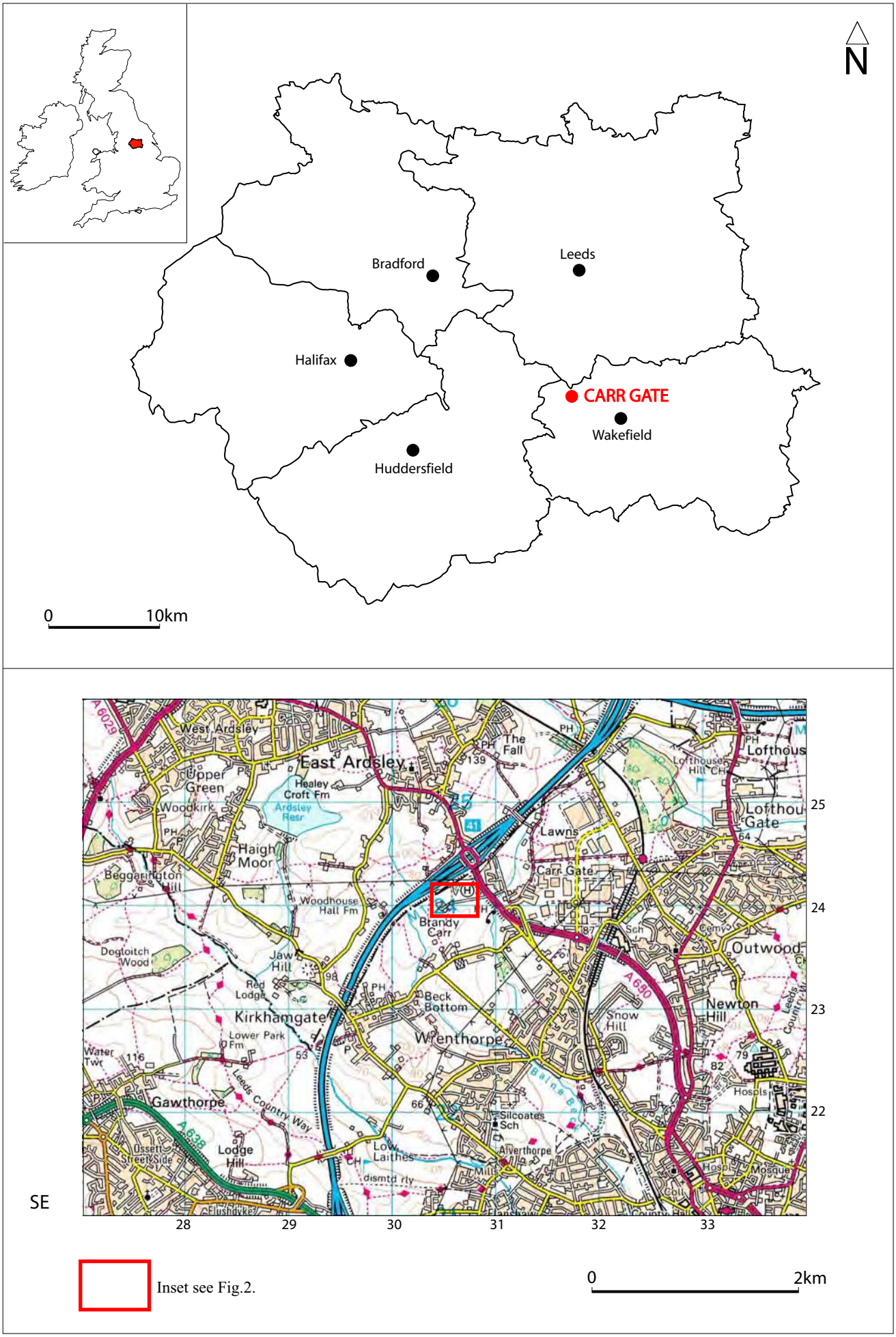


Fig. 1. Site location

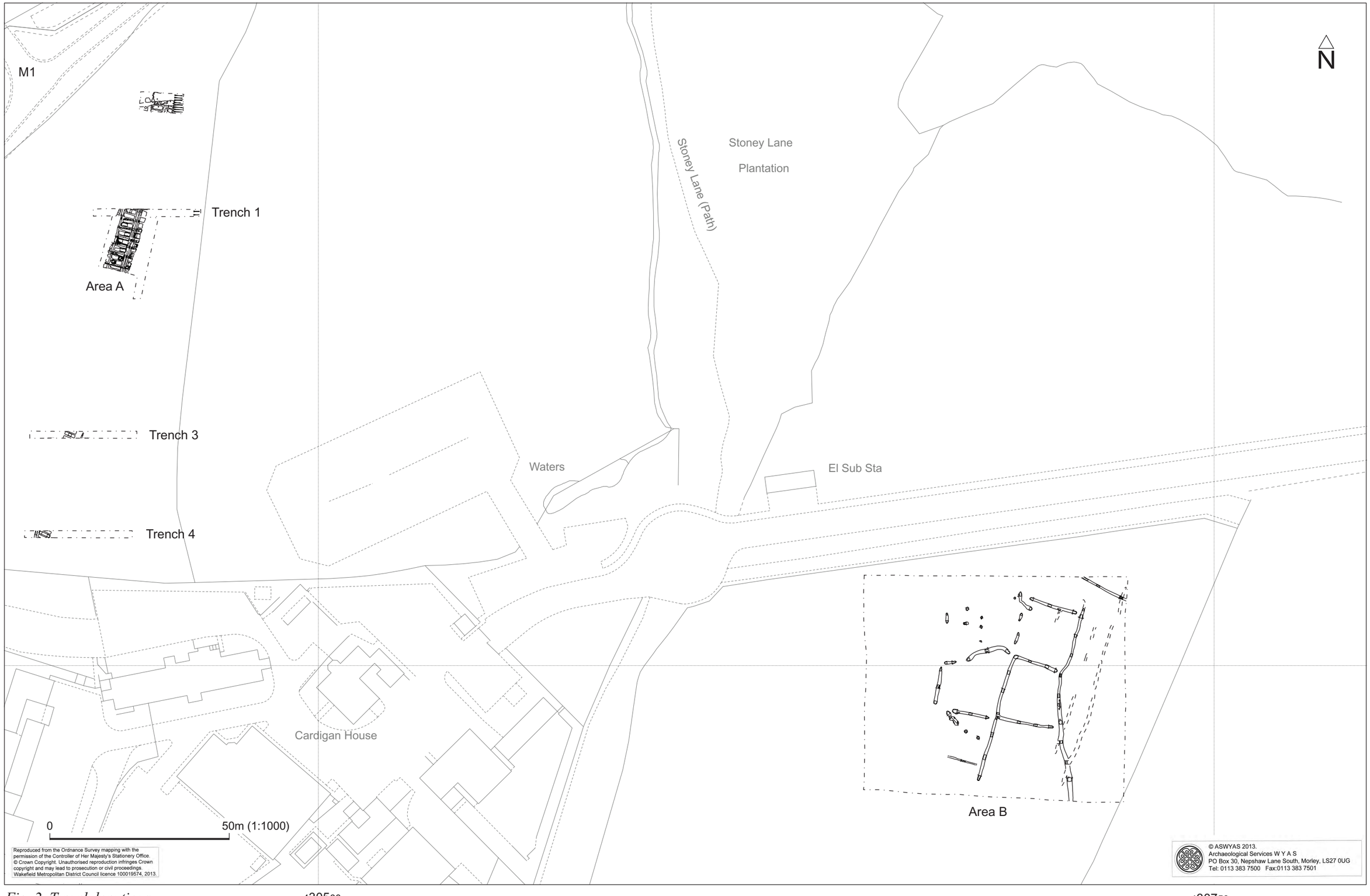
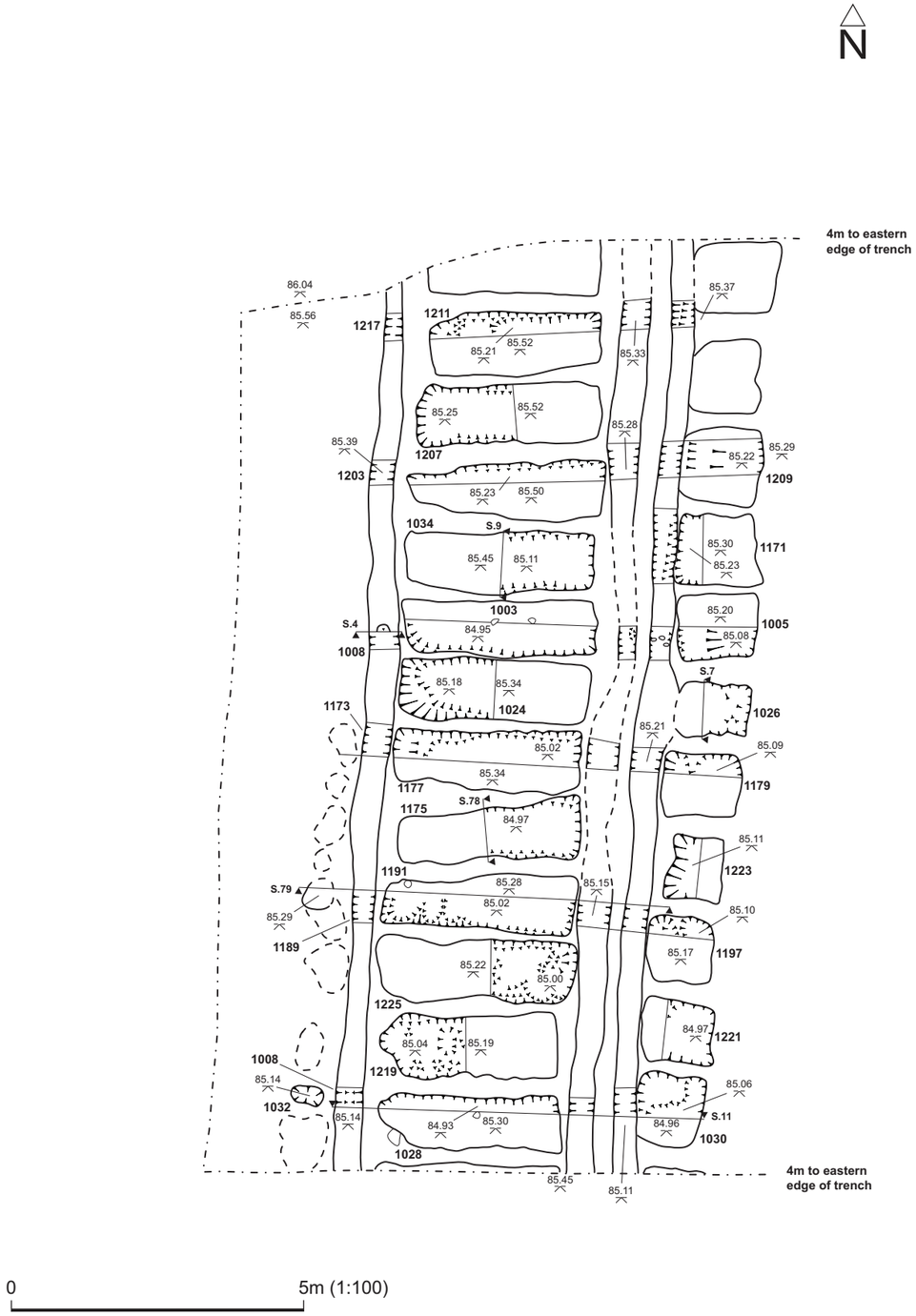


Fig. 2. Trench locations



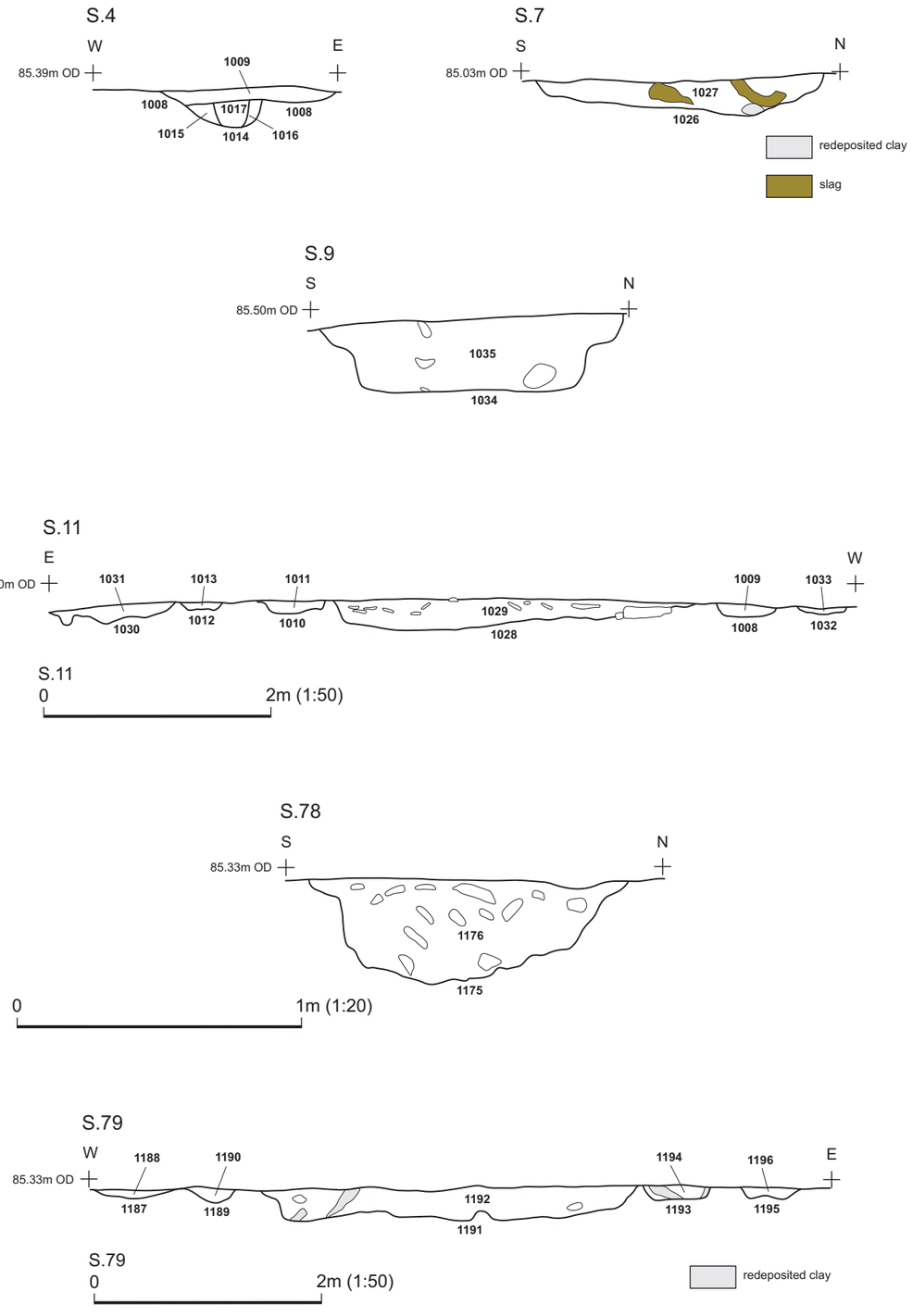


Fig. 3. Area A, plan and sections

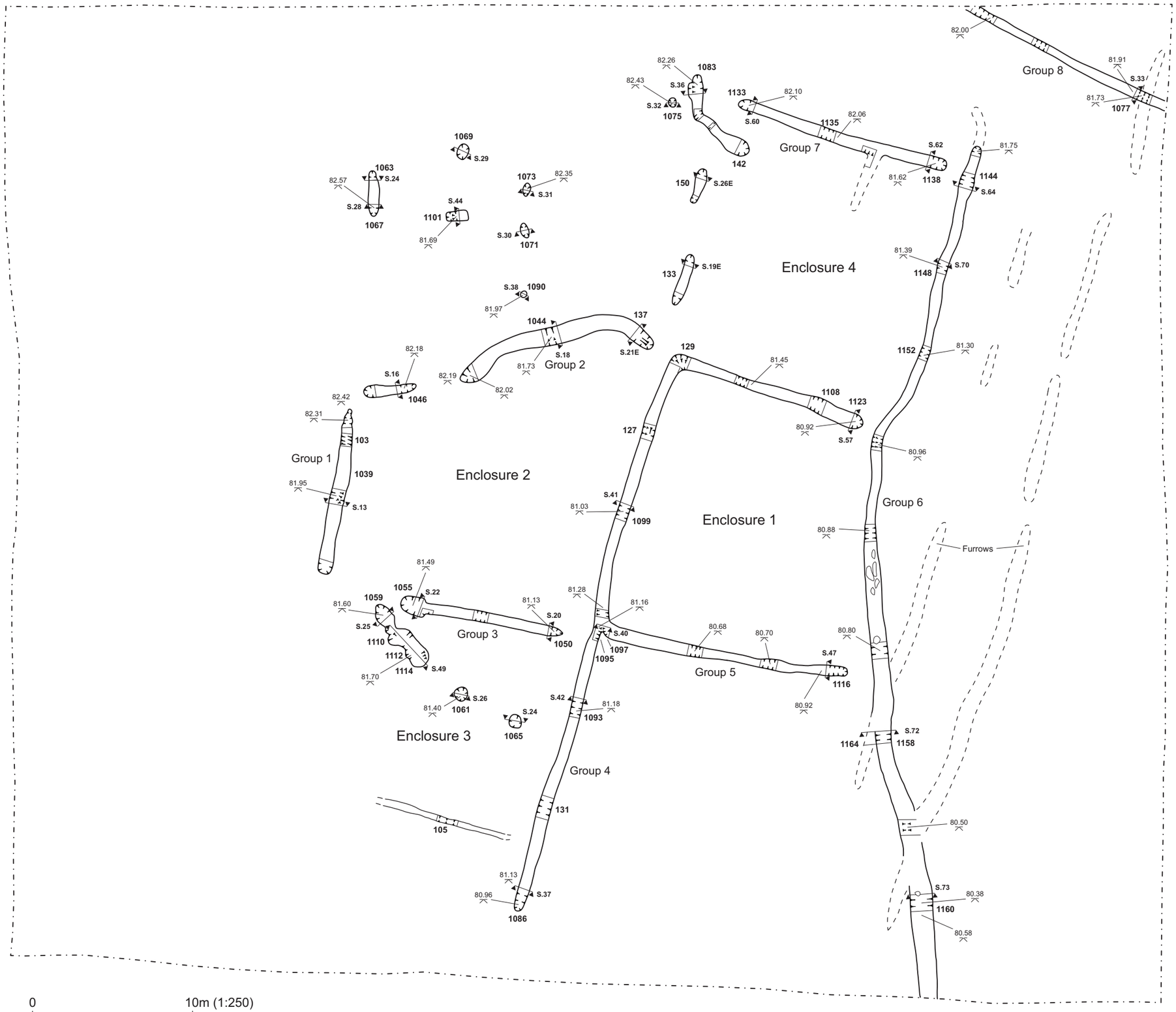


Fig. 4. Area B, plan

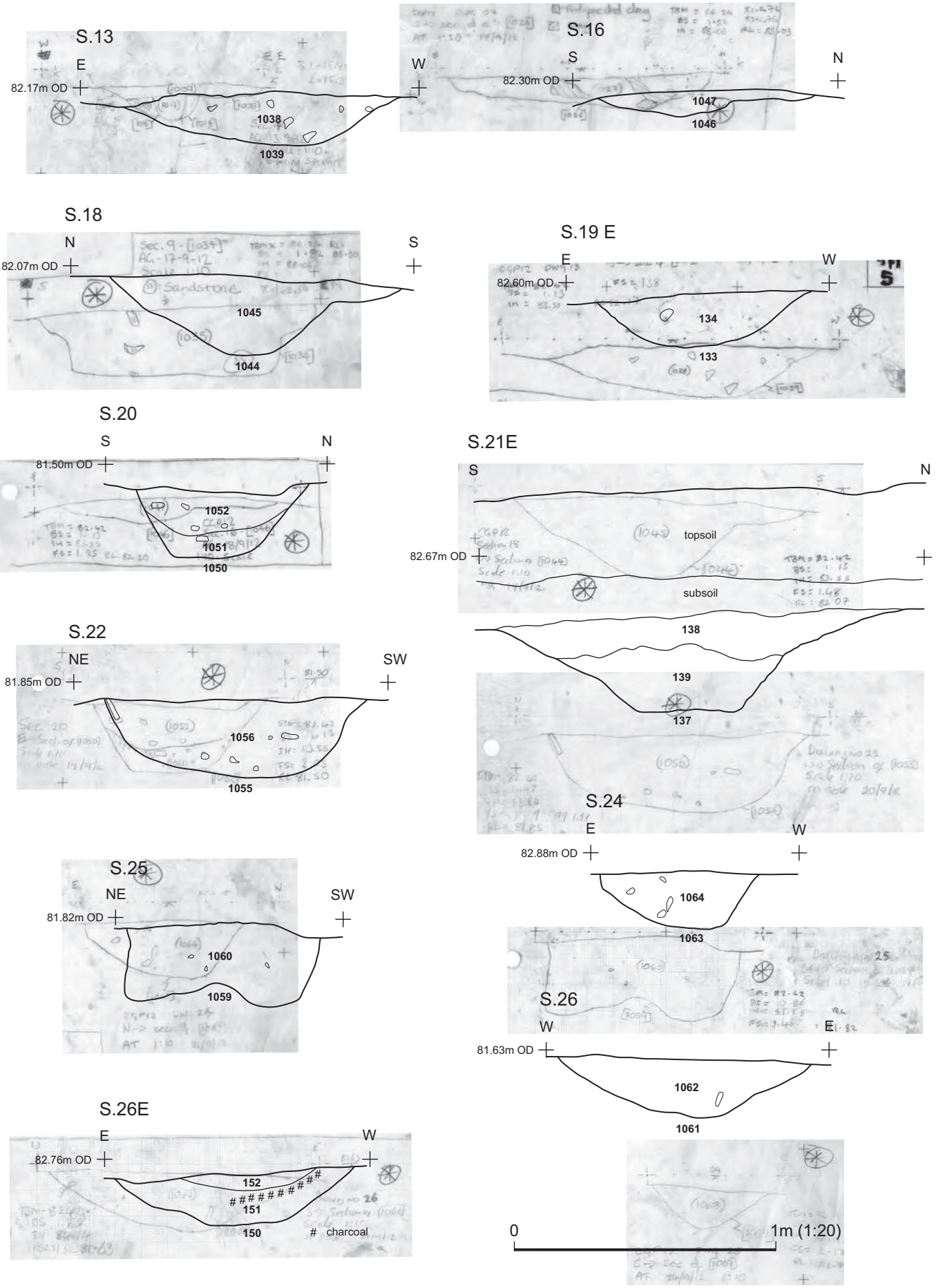


Fig. 5. Area B, sections

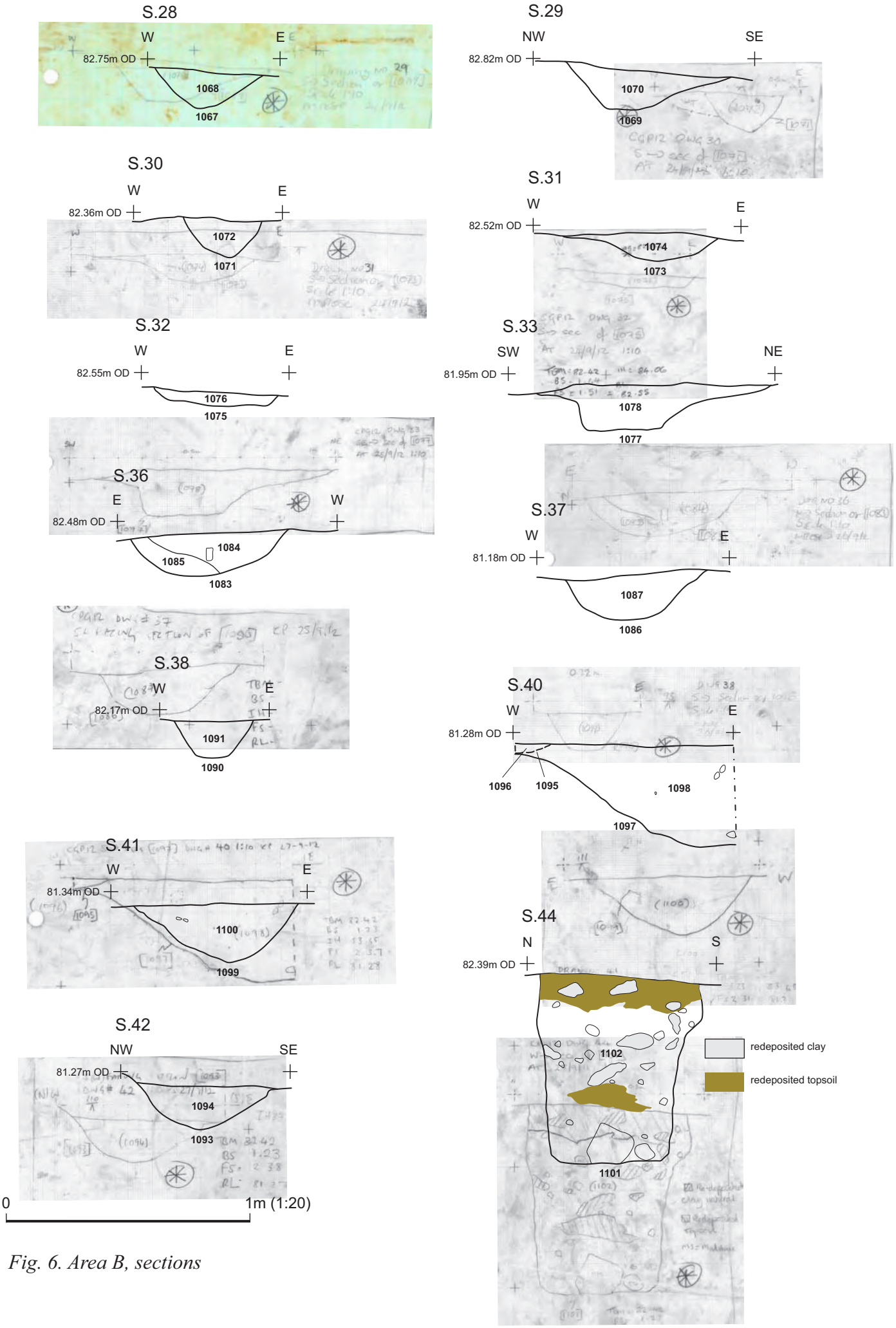


Fig. 6. Area B, sections

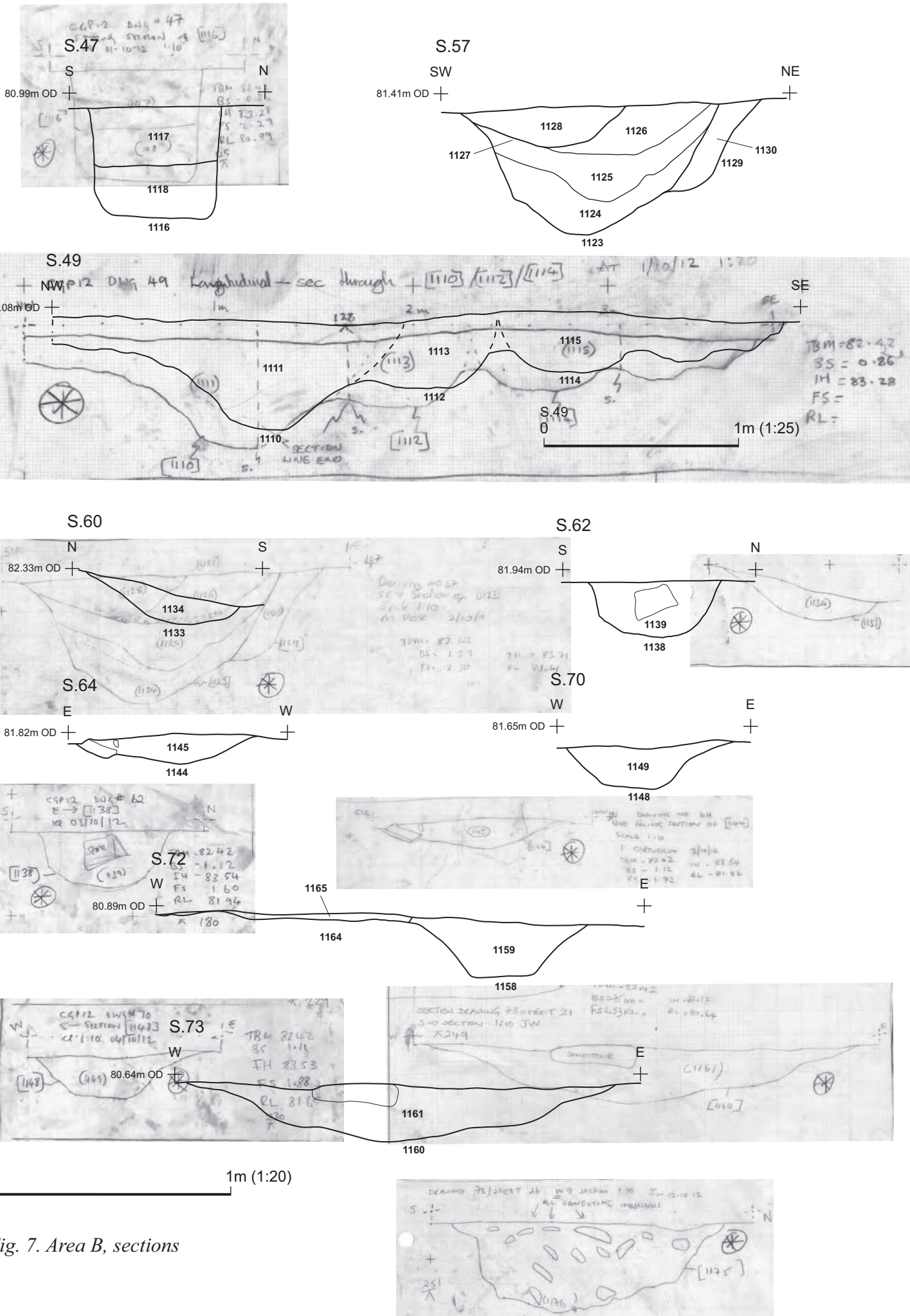


Fig. 7. Area B, sections

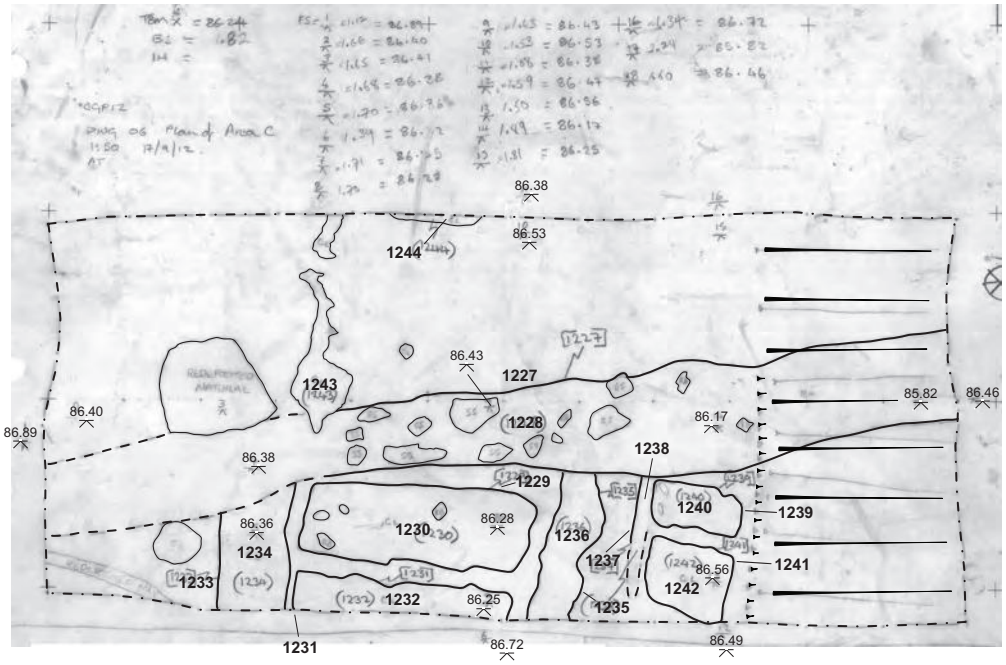


Fig. 8. Area C, plan

Plate 1. General view of Area A. Viewed facing north.

Plate 2. The east facing section of sleeper pit 1034, showing the internal lip running along the upper edge. Viewed facing west.

Plate 3. The west facing section of sleeper pit 1024, with the western step visible in foreground. Viewed facing east.

Plate 4. South facing section through the gullies to the east of the central alignment of sleeper pits. Viewed facing north.

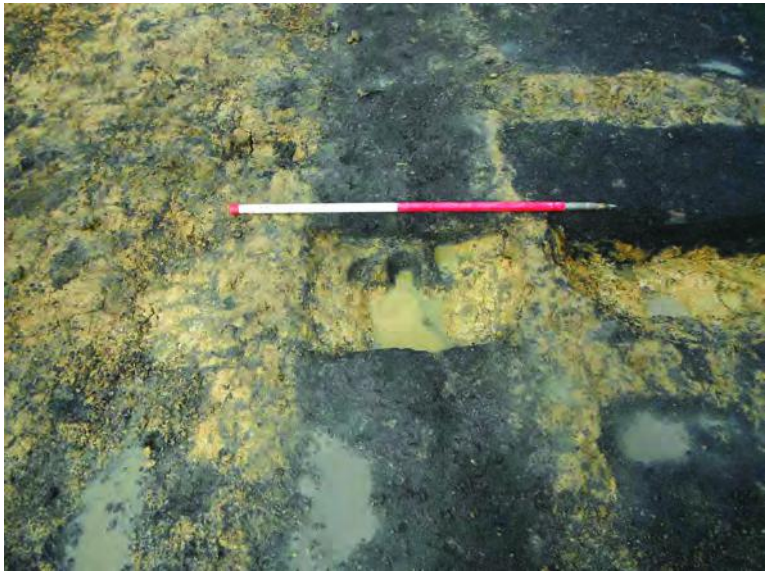


Plate 5. South facing section through the possible post-hole setting (1014 and 1016). Viewed facing north.

Plate 6. The north facing section of shallow sleeper pit (1179). Viewed facing south.

Plate 7. Context Group 1 ditch (Area B). Viewed facing south with the northern terminus (1037) in foreground.

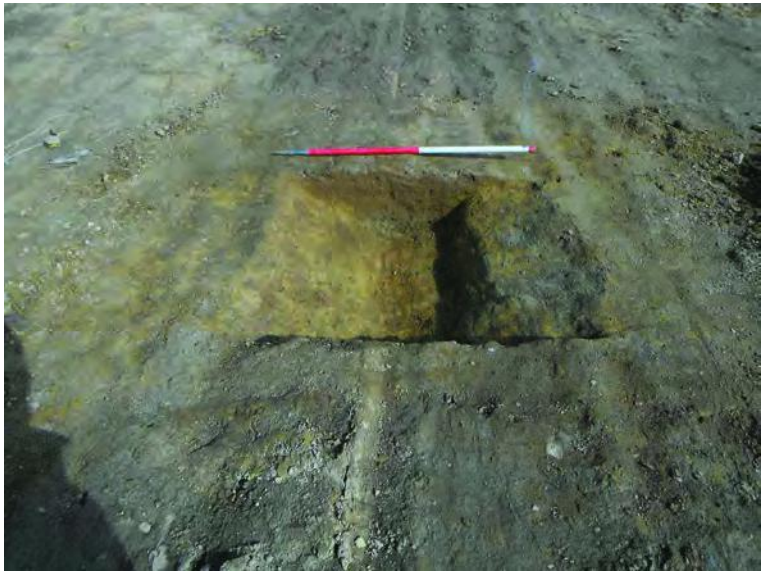


Plate 8. The west facing section of the central slot across the Context Group 2 ditch (1044). Viewed facing east.

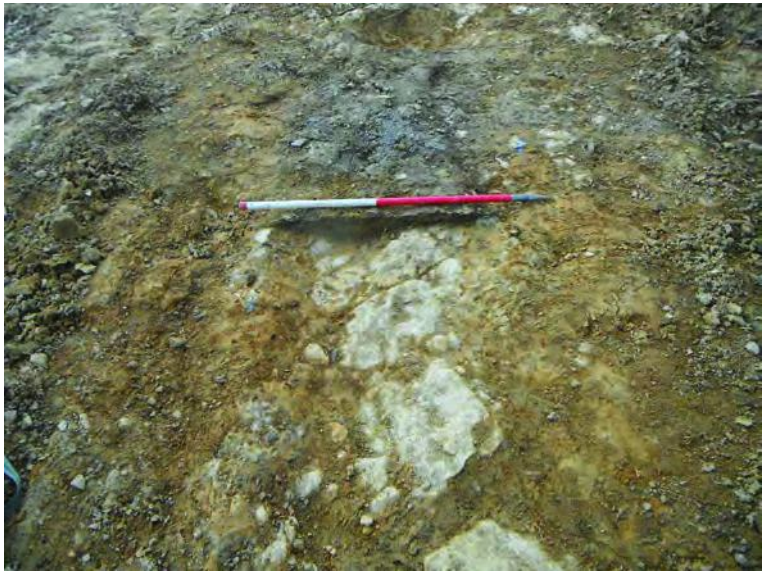


Plate 9. The east facing section across the shorter length of the Context Group 2 ditch (1046). Viewed facing west.

Plate 10. The eastern terminal of the Context Group 3 ditch. Viewed facing west.

Plate 11. The western terminal /pit of the Context Group 3 ditch. Viewed facing east.

Plate 12. A south facing section through the Context Group 4 ditch (1093). Viewed facing north.

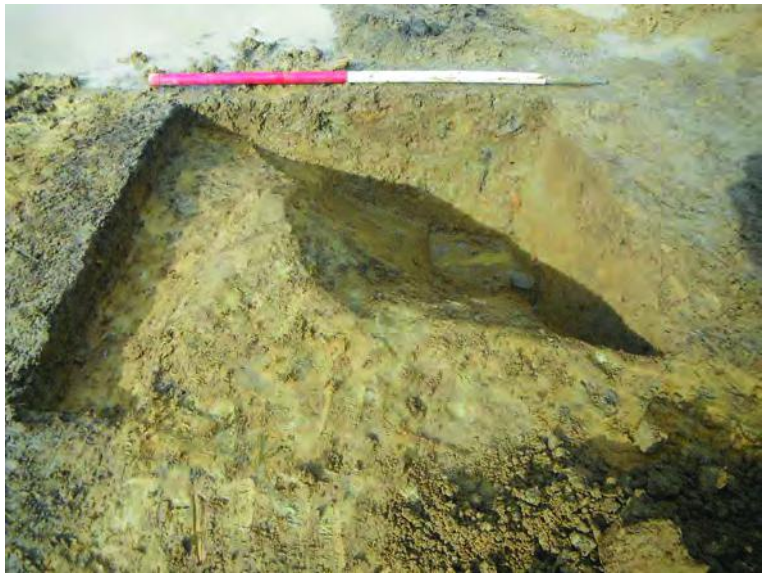


Plate 13. (left) The south facing section at the intersection of the Context Group 4 (left) and 5 (right) ditches. Viewed facing north.

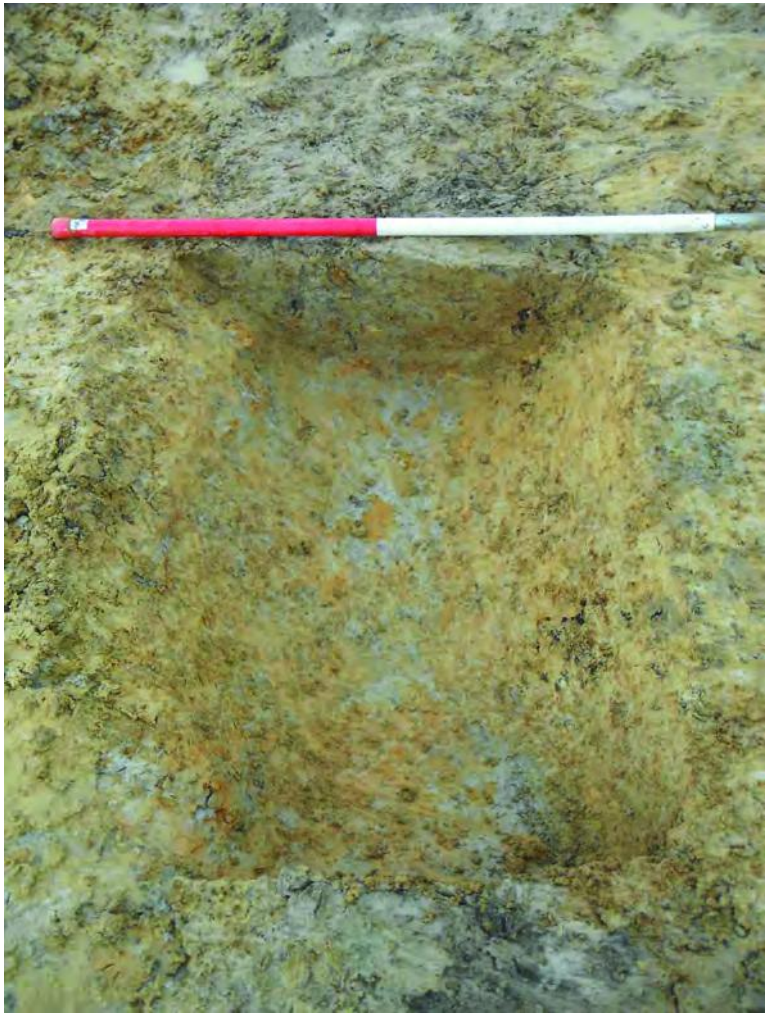


Plate 14. The south facing section across the western, north south return of the Context Group 5 ditch (1099). Viewed facing north.

Plate 15. The east facing section of the terminal to the southern, east west return to the Context Group 5 ditch (1116). Viewed facing west.

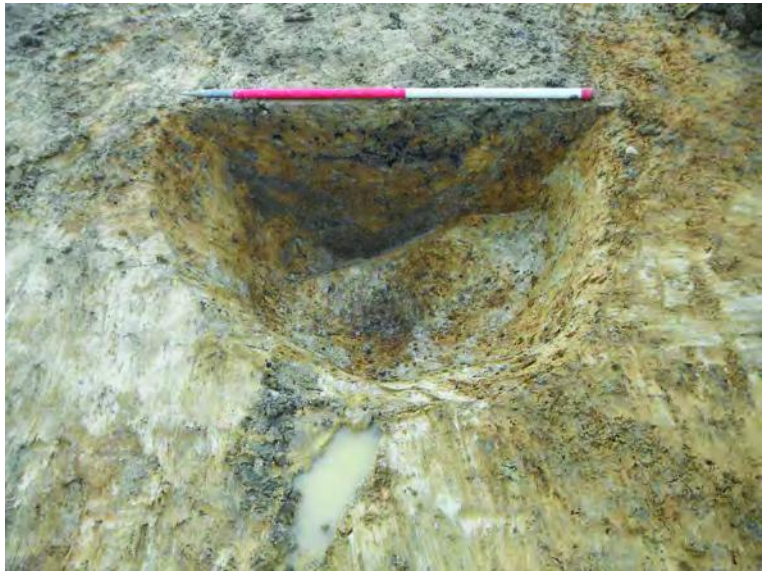


Plate 16. The east facing section of the terminal to the northern, east west return to the Context Group 5 ditch (1129 and re-cuts 1123 and 1127). Viewed facing west.

Plate 17. A south facing section through the Context Group 6 ditch (1152). Viewed facing north.

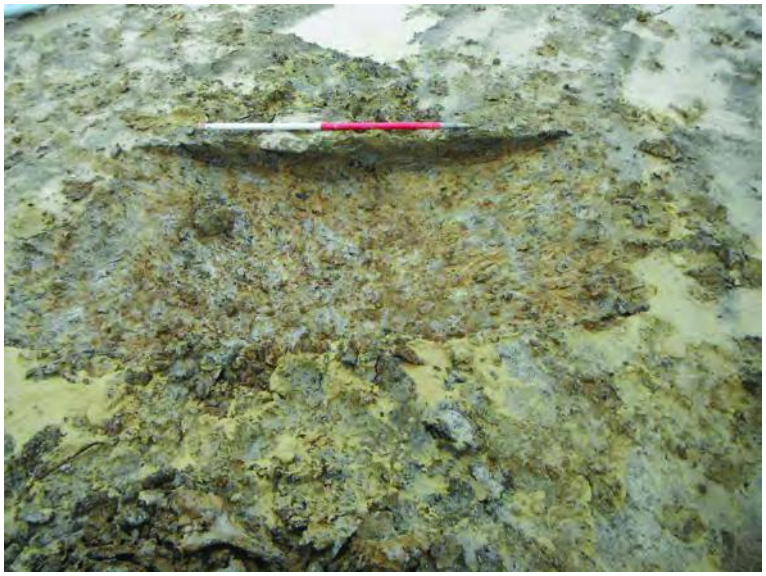


Plate 18. A further example of a south facing section through the Context Group 6 ditch (1160), demonstrating the variability of profile compared to other sections. Viewed facing north.

Plate 19. A west facing section through the Context Group 7 ditch (1135). Viewed facing east.

Plate 20. A south-east facing section through the Context Group 8 ditch (1077). Viewed facing north-west.

Plate 21. The north facing section of the northern ditch segment (1083). Viewed facing south.

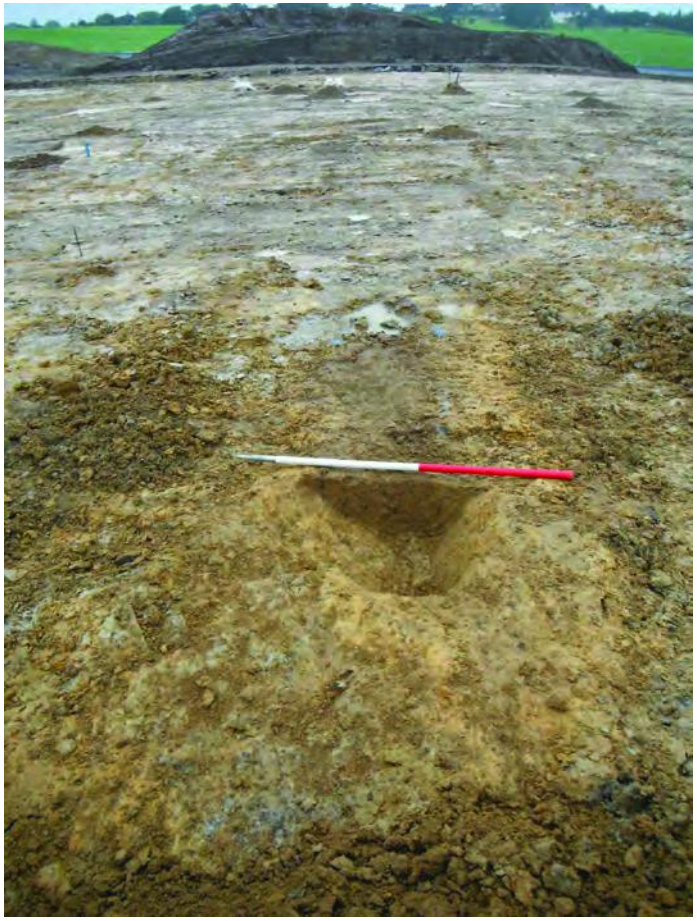


Plate 22. The north facing section of ditch segment 1063/1067. Viewed facing south.

Plate 23. The west facing section of the modern rectangular pit (1101). Viewed facing east .

Plate 24. South facing section through pit 1069. Viewed facing north.

Plate 25. The south facing section of post-hole 1090. Viewed facing north.

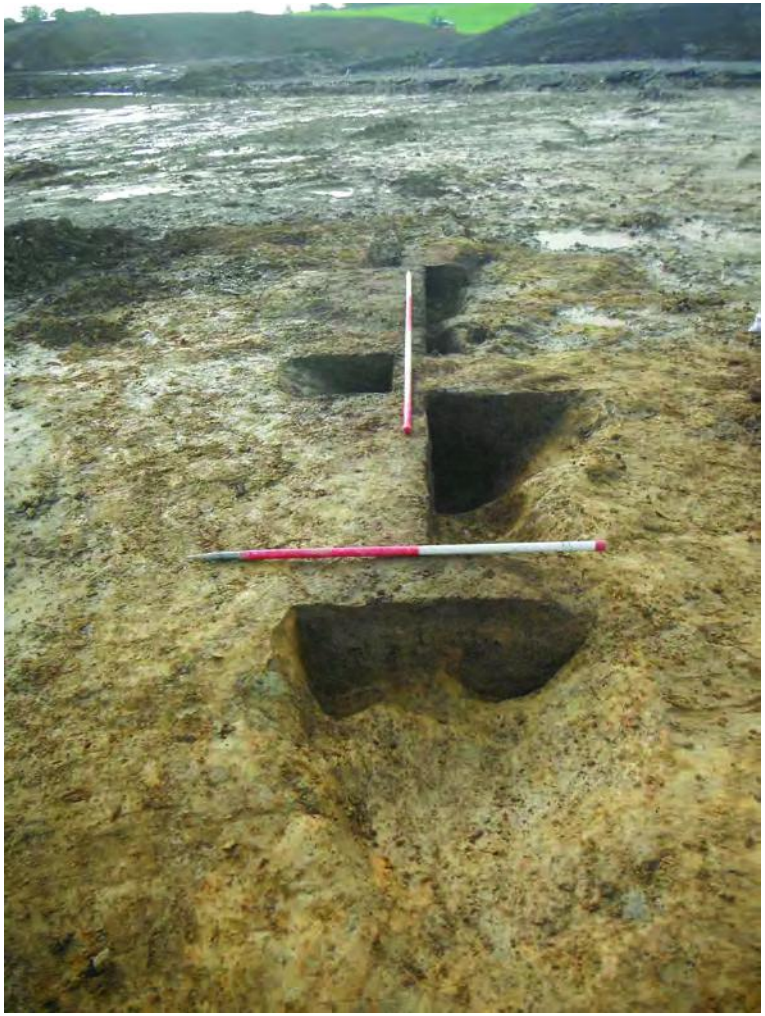


Plate 26. Sections excavated through the inter-cutting pit sequence, with pit 1059 in foreground. Viewed facing south-east.

Plate 27. Post-excavation shot of the inter-cutting pit group. Viewed facing south-east.

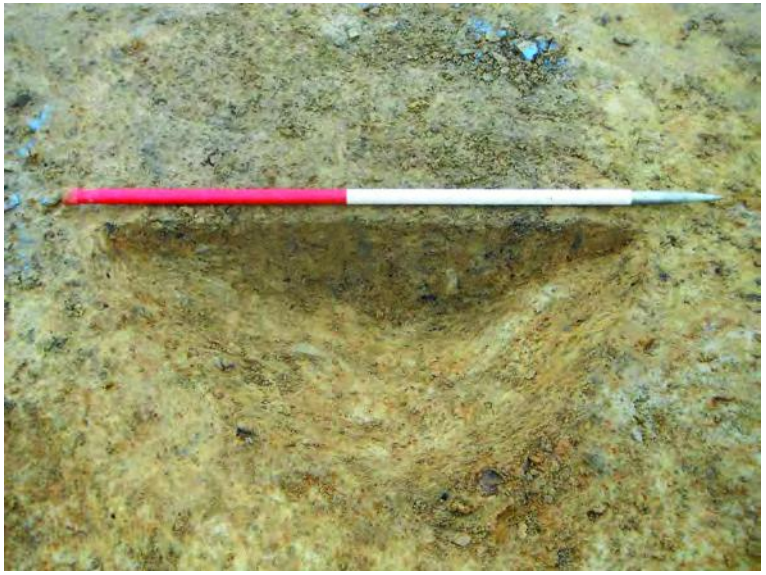


Plate 28. The south facing section of pit 1061. Viewed facing north.

Plate 29. The south facing section of pit 1065. Viewed facing north.

Plate 30. General view of Area C. Viewed facing west.

Plate 31. The pottery fragments from the Context Group 7 ditch (deposit 1134).

Appendix 1: Inventory of primary archive

Phase	File/Box No	Description	Quantity
Evaluation	1	Daily Site Recording Form	14
	1	Trench Record Sheet	36
	1	Digital Photograph Record Sheet (Download nos 12D125, 12D129, 12D138)	3
	1	Photograph Record sheets (Film nos 9059, 9060, 9061, 9063)	4
	1	Black and White contact sheets (Film nos 9059, 9060, 9061, 9063)	4
	1	Sample Register	1
	1	Finds and Samples Record Sheet	1
	1	Drawing Register	2
	1	Drawing Sheet Number Record	1
	1	Drawing Sheets	9
	1	Context Register	2
	1	Context Cards (100-105, 108-152)	51
Excavation	2	Levels book	1
	2	Written scheme of investigation	1
	2	Method statement and risk assessment	1
	2	Daily site Record Form for dates inclusive of 4/9/12 to 19/10/12	35
	2	Sample Register	2
	2	Form B Finds and Sample Records	3
	2	Digital Photographic Record Sheet (Download numbers 12D175 and 12D192)	4
	2	Photographic Record Sheet (Film nos 9074, 9079, 9084 and 9088)	4
	2	Drawing Register	4
	2	Drawing Sheet Register	5
	2	Context Register	10
	2	Group Context Register	1
	2	Group Context Sheet	8
	2	Environmental Laboratory Sheets	20
	2	Context Cards Area C (nos 1227-1244)	18
Excavation	3	Context sheets Area A (nos.1000-1035, 1168-1226)	94
	3	Context sheets Area B (nos.1036-1167)	132

Appendix 2: Concordance of contexts

Context	Trench	Group	Description	Artefacts and environmental samples
1000	-	-	Topsoil	
1001	-	-	Sub-soil	
1002	-	-	Natural yellow grey clay	
1003	Area A	-	Cut of central sleeper pit	
1004	Area A	-	Secondary fill of central sleeper pit (1003)	Sample 1, CBM, Slag
1005	Area A	-	Cut of shallow sleeper pit	
1006	Area A	-	Fill of shallow sleeper pit (1005)	Sample 2, Slag
1007	Area A	-	Primary fill of central sleeper pit (1003)	
1008	Area A	-	Cut of western gully	
1009	Area A	-	Fill of western gully (1008)	Slag
1010	Area A	-	Cut of eastern gully	
1011	Area A	-	Fill of eastern gully (1009)	Pot, clay pipe stem, slag
1012	Area A	-	Cut of eastern gully	
1013	Area A	-	Fill of eastern gully (1012)	Slag
1014	Area A	-	Cut of possible post hole	
1015	Area A	-	Clay packing deposit of post hole (1014)	
1016	Area A	-	Cut of post pipe	
1017	Area A	-	Fill of post pipe (1016)	
1018	Area A	-	Cut of possible stake hole	
1019	Area A	-	Fill of possible stake hole (1018)	
1020	Area A	-	Cut of possible stake hole	
1021	Area A	-	Fill of possible stake hole (1020)	
1022	Area A	-	Cut of possible stake hole	
1023	Area A	-	Fill of possible stake hole (1022)	
1024	Area A	-	Cut of central sleeper pit	
1025	Area A	-	Fill of central sleeper pit (1024)	Slag
1026	Area A	-	Fill of shallow sleeper pit (1027)	Slag, clay pipe stem
1027	Area A	-	Cut of shallow sleeper pit	

Context	Trench	Group	Description	Artefacts and environmental samples
1028	Area A	-	Cut of central sleeper pit	
1029	Area A	-	Fill of central sleeper pit (1028)	
1030	Area A	-	Cut of shallow sleeper pit	
1031	Area A	-	Fill of shallow sleeper pit (1030)	
1032	Area A	-	Cut of western gully/clinker spread	
1033	Area A	-	Fill of western gully/clinker spread	Slag
1034	Area A	-	Cut of central sleeper pit	
1035	Area A	-	Fill of central sleeper pit (1034)	
1036	Area B	1	Fill of (1037)	
1037	Area B	1	Cut of northern ditch terminal	
1038	Area B	1	Fill of (1039)	Sample 4.
1039	Area B	1	Cut of central ditch section	
1040	Area B	1	Fill of (1041)	
1041	Area B	1	Cut of southern ditch terminal	
1042	Area B	2	Cut of western ditch terminal	
1043	Area B	2	Fill of (1042)	
1044	Area B	2	Cut of central ditch section	
1045	Area B	2	Fill of (1044)	
1046	Area B	2	Cut of eastern ditch terminal (short length)	
1047	Area B	2	Fill of (1046)	
1048	Area B	2	Cut of western ditch terminal (short length)	
1049	Area B	2	Fill of (1048)	
1050	Area B	3	Cut of eastern ditch terminal	
1051	Area B	3	Primary fill of (1050)	Sample 3, Charcoal
1052	Area B	3	Secondary fill of (1050)	
1053	Area B	3	Cut of central ditch section	
1054	Area B	3	Fill of (1053)	
1055	Area B	3	Cut of sub-rectangular pit/western ditch terminus	
1056	Area B	3	Fill of (1055)	

Context	Trench	Group	Description	Artefacts and environmental samples
1057	Area B	3	Cut of western ditch terminal	
1058	Area B	3	Fill of (1057)	
1059	Area B	-	Cut of pit (north west in sequence)	
1060	Area B	-	Fill of (1059)	
1061	Area B	-	Cut of pit	
1062	Area B	-	Fill of (1061)	Sample 5, Charcoal
1063	Area B	-	Cut of northern ditch terminal (isolated segment)	
1064	Area B	-	Fill of (1063)	Sample 7
1065	Area B	-	Cut of pit	
1066	Area B	-	Fill of (1065)	Sample 6, Charcoal
1067	Area B	-	Cut of southern ditch terminal (isolated segment)	
1068	Area B	-	Fill of (1067)	Sample 8
1069	Area B	-	Cut of possible pit	
1070	Area B	-	Fill of (1069)	
1071	Area B	-	Cut of possible small pit	
1072	Area B	-	Fill of (1071)	Sample 9
1073	Area B	-	Cut of possible pit	
1074	Area B	-	Fill of (1073)	Sample 11
1075	Area B	-	Cut of possible pit	
1076	Area B	-	Fill of (1075)	
1077	Area B	8	Cut of ditch section	
1078	Area B	8	Fill of (1077)	
1079	Area B	8	Cut of ditch section	
1080	Area B	8	Fill of (1079)	
1081	Area B	8	Cut of ditch section	
1082	Area B	8	Fill of (1081)	Sample 14
1083	Area B	-	Cut of northern ditch terminal	
1084	Area B	-	Secondary fill of (1083)	Sample 15
1085	Area B	-	Primary fill of (1083)	Sample 16
1086	Area B	4	Cut of southern ditch terminal	

Context	Trench	Group	Description	Artefacts and environmental samples
1087	Area B	4	Fill of (1086)	Sample 17
1088	Area B	4	Cut of central ditch section	
1089	Area B	4	Secondary fill of (1088)	Sample 18
1090	Area B	-	Cut of post hole	
1091	Area B	-	Fill of (1091)	Sample 19
1092	Area B	4	Primary fill of (1088)	
1093	Area B	4	Cut of central ditch section	
1094	Area B	4	Fill of (1093)	Sample 20
1095	Area B	4	Cut of central ditch section (interface with Group 5)	
1096	Area B	4	Fill of (1095)	
1097	Area B	5	Cut of south western corner ditch section	
1098	Area B	5	Fill of (1097)	
1099	Area B	5	Cut of central ditch section (western north south return)	
1100	Area B	5	Fill of (1099)	Sample 21
1101	Area B	-	Cut of modern rectangular pit	
1102	Area B	-	Fill of (1101)	Sample 22
1103	Area B	5	Cut of central ditch section (northern east west return)	
1104	Area B	5	Secondary fill of (1103)	Sample 21
1105	Area B	5	Primary fill of (1103)	
1106	Area B	5	Cut of central ditch section (southern east west return)	
1107	Area B	5	Fill of (1106)	Sample 23
1108	Area B	5	Cut of central ditch section (northern east west return)	
1109	Area B	5	Fill of possible re-cut (1137)	Sample 24 and 25, Charcoal
1110	Area B	-	Cut of pit (centre of pit sequence)	
1111	Area B	-	Fill of (1110)	Sample 28
1112	Area B	-	Cut of pit (centre of pit sequence)	
1113	Area B	-	Fill of (1112)	Sample 29
1114	Area B	-	Cut of pit (south east terminal pit)	

Context	Trench	Group	Description	Artefacts and environmental samples
1115	Area B	-	Fill of (1114)	
1116	Area B	5	Cut of eastern terminus (southern east west return)	
1117	Area B	5	Secondary fill of (1116)	
1118	Area B	5	Primary fill of (1116)	Sample 27
1119	Area B	5	Secondary fill of (1108)	
1120	Area B	5	Primary fill of (1108)	
1121	Area B	5	Cut of central ditch section (southern east west return)	
1122	Area B	2	Fill of (1121)	Sample 30
1123	Area B	5	Re-cut of eastern ditch terminal (northern east west return)	
1124	Area B	5	Primary fill of (1123)	Sample 32
1125	Area B	5	Secondary fill of (1123)	
1126	Area B	5	Tertiary fill of (1123)	Sample 31
1127	Area B	5	Re-cut of eastern ditch terminal (northern east west return)	
1128	Area B	5	Fill of (1127)	
1129	Area B	5	Original cut of eastern ditch terminal (northern east west return)	
1130	Area B	5	Fill of (1129)	
1131	Area B	5	Cut of central ditch section (western north south return)	
1132	Area B	5	Fill of (1131)	
1133	Area B	7	Cut of western ditch terminal	
1134	Area B	7	Fill of (1133)	Iron Age pottery fragments
1135	Area B	7	Cut of central ditch section	
1136	Area B	7	Fill of (1135)	
1137	Area B	5	Re-cut of central ditch section (northern east west return)	
1138	Area B	7	Cut of eastern ditch terminal	
1139	Area B	7	Fill of (1138)	Sample 33
1140	Area B	-	Cut of probable furrow	
1141	Area B	-	Fill of (1140)	

Context	Trench	Group	Description	Artefacts and environmental samples
1142	Area B	7	Cut of central ditch section (interface with 1140)	
1143	Area B	7	Fill of (1142)	
1144	Area B	6	Cut of central ditch section	
1145	Area B	6	Fill of (1144)	
1146	Area B	6	Fill of (1147)	Possible pot sherd
1147	Area B	6	Cut of northern ditch terminus	
1148	Area B	6	Cut of central ditch section	
1149	Area B	6	Fill of (1148)	Sample 36
1150	Area B	6	Cut of central ditch section	
1151	Area B	6	Fill of (1150)	Sample 34, Charcoal, Sample 35, Whet stone
1152	Area B	6	Cut of central ditch section	
1153	Area B	6	Fill of (1152)	
1154	Area B	6	Cut of central ditch section	
1155	Area B	6	Fill of (1154)	
1156	Area B	6	Cut of central ditch section	
1157	Area B	6	Fill of (1156)	
1158	Area B	6	Cut of central ditch section	
1159	Area B	6	Fill of (1158)	
1160	Area B	6	Cut of central ditch section	
1161	Area B	6	Fill of (1160)	
1162	Area B	6	Cut of central ditch section	
1163	Area B	6	Fill of (1162)	
1164	Area B	-	Cut of furrow	
1165	Area B	-	Fill of (1164)	
1166	Area B	-	Cut of furrow	
1167	Area B	-	Fill of (1166)	
1168	Area A	-	Cut of western gully	
1169	Area A	-	Primary clay fill of (1168)	
1170	Area A	-	Secondary clinker and coal fill of (1168)	Slag, Clay pipe
1171	Area A	-	Cut of shallow sleeper bed pit	

Context	Trench	Group	Description	Artefacts and environmental samples
1172	Area A	-	Fill of (1172)	
1173	Area A	-	Cut of western gully	
1174	Area A	-	Fill of (1173)	
1175	Area A	-	Cut of central sleeper bed pit	
1176	Area A	-	Fill of (1175)	
1177	Area A	-	Cut of central sleeper bed pit	
1178	Area A	-	Fill of (1177)	
1179	Area A	-	Cut of shallow sleeper bed pit	
1180	Area A	-	Fill of (1179)	
1181	Area A	-	Cut of eastern gully	
1182	Area A	-	Fill of (1181)	
1183	Area A	-	VOID	VOID
1184	Area A	-	VOID	VOID
1185	Area A	-	Cut of eastern gully	
1186	Area A	-	Fill of (1185)	
1187	Area A	-	Cut of western pit or gully section	
1188	Area A	-	Fill of (1187)	
1189	Area A	-	Cut of western gully	
1190	Area A	-	Fill of (1189)	
1191	Area A	-	Cut of central sleeper bed pit	
1192	Area A	-	Fill of (1191)	
1193	Area A	-	Cut of eastern gully	
1194	Area A	-	Fill of (1193)	
1195	Area A	-	Cut of eastern gully	
1196	Area A	-	Fill of (1195)	
1197	Area A	-	Cut of shallow sleeper bed pit	
1198	Area A	-	Fill of (1197)	
1199	Area A	-	Cut of central sleeper bed pit	
1200	Area A	-	Fill of (1199)	
1201	Area A	-	Cut of eastern gully	

Context	Trench	Group	Description	Artefacts and environmental samples
1202	Area A	-	Fill of (1201)	
1203	Area A	-	Cut of western gully	
1204	Area A	-	Fill of (1203)	
1205	Area A	-	Cut of eastern gully	
1206	Area A	-	Fill of (1205)	
1207	Area A	-	Cut of central sleeper bed pit	
1208	Area A	-	Fill of (1207)	
1209	Area A	-	Cut of shallow sleeper bed pit	
1210	Area A	-	Fill of (1209)	
1211	Area A	-	Cut of central sleeper bed pit	
1212	Area A	-	Fill of (1211)	
1213	Area A	-	Cut of eastern gully	
1214	Area A	-	Fill of (1213)	
1215	Area A	-	Cut of eastern gully	
1216	Area A	-	Fill of (1215)	
1217	Area A	-	Cut of western gully	
1218	Area A	-	Fill of (1217)	
1219	Area A	-	Cut of central sleeper bed pit	
1220	Area A	-	Fill of (1219)	
1221	Area A	-	Cut of shallow sleeper bed pit	
1222	Area A	-	Fill of (1221)	
1223	Area A	-	Cut of shallow sleeper bed pit	
1224	Area A	-	Fill of (1223)	
1225	Area A	-	Cut of central sleeper bed pit	
1226	Area A	-	Fill of (1225)	
1227	Area C	-	Cut of boundary ditch	
1228	Area C	-	Fill of (1227)	
1229	Area C	-	Cut of central sleeper bed pit	
1230	Area C	-	Fill of (1229)	
1231	Area C	-	Cut of central sleeper bed pit	

Context	Trench	Group	Description	Artefacts and environmental samples
1232	Area C	-	Fill of (1231)	
1233	Area C	-	Cut of western gully	
1234	Area C	-	Fill of (1233)	
1235	Area C	-	Cut of eastern gully	
1236	Area C	-	Fill of (1236)	
1237	Area C	-	Cut of eastern gully	
1238	Area C	-	Fill of (1237)	
1239	Area C	-	Cut of shallow sleeper bed pit	
1240	Area C	-	Fill of (1239)	
1241	Area C	-	Cut of shallow sleeper bed pit	
1242	Area C	-	Fill (1241)	
1243	Area C	-	Irregular spread of clinker and coal	
1244	Area C	-	Partially exposed spread of clinker and coal (possibly a further sleeper bed pit)	

Appendix 3: Specification

WEST YORKSHIRE ARCHAEOLOGY ADVISORY SERVICE:
SPECIFICATION FOR AN ARCHAEOLOGICAL EXCAVATION AT CARR GATE POLICE OPERATIONS FACILITY, WAKEFIELD

Specification prepared on behalf of Wakefield Metropolitan District Council at the request of Gary Carbutt / JP Allen of Interserve Construction Ltd (Planning Application reference12/00196/FUL)

1. Summary

1.1 A limited amount of archaeological work consisting of open-area excavation in two defined areas is proposed to mitigate the impact of development at the above site.

1.2 This specification deals with the required excavation, with the preparation of a post-excavation assessment of the results of the excavation, and with the preparation of a report on the site (in the event that no further analysis of the finds and samples resulting from the excavation is required). The limited excavation work will focus on the northern portion of a linear feature interpreted as an industrial transport feature. Open area excavation work will also be undertaken on the Iron Age/Roman enclosure identified by geophysical survey and confirmed by archaeological evaluation.

1.3 This specification has been prepared by the curatorial branch of the West Yorkshire Archaeology Advisory Service (WYAAS), the holders of the West Yorkshire Sites and Monuments Record.

NOTE: The requirements detailed in paragraphs 6.1, 6.2, 6.3, 6.4, 6.5, 7.6, 7.7 and 9.1 are to be met by the archaeological contractor **prior** to the commencement of fieldwork by completing and returning the attached form to the WY Archaeology Advisory Service.

2. Site Location & Description (Fig.1)

Grid Reference: SE 3097 2425

2.1 The site is located to the northwest of Wakefield city centre, and southeast of East Ardsley. It is bounded to the north by the M1 motorway and to the east by the A650, and to the south and west by fields and open land. Part of the site is currently occupied by the Police Operations Centre, and the new buildings will be constructed around these existing buildings in areas which have not previously been developed. An overhead line on wooden poles runs along the south side of the access road into the existing Operations Centre. The site slopes from c.90m AOD in the northeast to c.80m AOD in the southwest.

2.2 The geology of the site consists of mudstone, siltstone and sandstone of the Pennine Middle Coal Measures, which is overlain by soils which are described as slowly permeable, seasonally wet acid loamy and clayey soils.

3. Planning Background

3.1 Planning permission (12/00196/FUL) has been granted for the development of a specialist police training facility on the site in question. A condition requiring an archaeological scheme of works has been placed on the permission.

3.2 Evaluation of the site by ASWYAS in June/July 2012 revealed that significant archaeological remains are present in two areas of the site. These remains will be disturbed or destroyed by the development of the site and further archaeological excavation and recording works are required to mitigate this impact.

3.3 This specification has been prepared by WYAAS, at the request of JP Allen of Interserve Construction Ltd., to detail what is required and to allow an archaeological contractor to provide a quotation.

4. Archaeological Interest

4.1 Two particular areas of archaeological interest have been identified by the geophysical survey and trial trenching work undertaken by ASWYAS. Both areas are depicted on Figure 1 as areas A & B. Area A represents what has tentatively been identified as a mineral railway of post-medieval date. No dating evidence was, however, discovered by the evaluation work. The feature is shown as a footpath on the mid-19th century Ordnance Survey map of the area where a coal pit is positioned to the west.

4.2 Within Area B geophysical survey identified an enclosure suggested on the basis of similar site types within the county to be an enclosure of Iron Age/Romano British date. Trial trenching targeting these geophysical anomalies confirmed the existence of a series of linear ditches forming a small enclosure complex. As with site A no artefactual remains were discovered and environmental processing of soil samples also failed to provide any further information.

5. Aims of the Excavations

5.1 The objective of the project is to fully record, analyse and report all archaeological remains within the areas of interest ('preservation by record') prior to their destruction during the development of the site, and to place the results of this work in the public domain by depositing it with the WY Historic Environment Record (Registry of Deeds, Newstead Road, Wakefield WF1 2DE).

5.2 For the transport feature the objective of the excavation is to date and determine the precise nature of the possible railway/tramway feature. Further assessment of the feature will provide a better understanding of the form and function of the feature and artefactual evidence may help more precisely date the feature.

5.3 The objective of the open area excavation of the Iron Age/Romano British enclosure are to more precisely date the period or periods of use. The objective is to also define the function of the enclosure and the excavation should aim to establish the precise economic activity which was occurring within the enclosure. Any settlement features such as roundhouses, which may occur either within the

enclosure or as unenclosed settlement outside the enclosure will also be assessed. The wider area for this excavation has been defined in order to establish the enclosure's relationship with its immediate surrounding landscape. Commonly this type of enclosure feature is discovered in association with field systems and this excavation will help assess any direct relationship. Any ritual activity (which may be entwined with otherwise domestic activity) needs also to be investigated.

6. General Instructions

6.1 Health and Safety

6.1.1 The archaeologist on site will naturally operate with due regard for Health and Safety regulations. Regard should also be taken of any reasonable additional constraints that the developer or other contractors may impose. The excavation may require the preparation of a Risk Assessment of the site in accordance with the Health and Safety at Work Regulations. WYAAS and its officers cannot be held responsible for any accidents or injuries that may occur to outside contractors while attempting to conform to this specification. Any Health and Safety issues which may hinder compliance with this specification should be discussed with WYAAS at the earliest possible opportunity (see section 13.2).

6.2 Confirmation of Adherence to Specification

6.2.1 Prior to the commencement of *any work,* the archaeological contractor must confirm adherence to this specification in writing to WYAAS, or state (with reasons) any proposals to vary the specification. Should the contractor wish to vary the specification, then written confirmation of the agreement of WYAAS to any variations is required prior to work commencing. Unauthorised variations are made at the sole risk of the contractor. **Modifications presented in the form of a re-written specification/project design will not be considered by WYAAS.** Any technical queries arising from the specification detailed below should be addressed to WYAAS without delay.

6.3 Confirmation of Timetable and Contractors' Qualifications

6.3.1 Prior to the commencement of *any work*, the archaeological contractor **must** provide WYAAS **in writing** with:

- a projected timetable for the site work;
- details of the staff structure and numbers;
- names and *CVs* of key project members (the project manager, site supervisor, any proposed specialists, sub-contractors *etc.*).

6.3.2 All project staff provided by the archaeological contractor must be suitably qualified and experienced for their roles. The timetable should be adequate to allow the work to be undertaken to the appropriate professional standard, subject to the ultimate judgement of WYAAS.

6.4 Notification

6.4.1 The excavations will be monitored as necessary and practicable by WYAAS in its role as curator of the county's archaeology. WYAAS should be provided with **as**

much notice as possible in writing (and certainly not less than one week) of the intention to start work. A copy of the archaeological contractor's risk assessment of the site should accompany the notification.

6.4.2 The museums officer named in paragraph 9.1 should be notified in writing of the commencement of fieldwork at the same time as WYAAS.

6.4.3 As a courtesy, English Heritage's Science Adviser, Andy Hammon should also be notified of the intention to commence fieldwork. (Tel.: 01904 601983; email: Andy.Hammon@english-heritage.org.uk).

6.5 Documentary Research
6.5.1 Prior to the commencement of fieldwork, the West Yorkshire Historic Environment Record should be visited, by either the project manager or the site supervisor, in order to gain an overview of the archaeological/historical background of the site and environs and to familiarise themselves with the results of the evaluation of the site. In addition to providing a knowledge base for the work in hand, the results of this assessment may be incorporated into the contractor's report where they are considered to contribute to that report, but any extraneous material should be omitted. A formal desk-based report is not required and the results of this exercise should be used to inform the whole project. Please note that the HER makes a charge for consultations of a commercial nature.

6.6 Location of Services, etc.
6.6.1 The archaeological contractor will be responsible for locating any drainage pipes, service pipes, cables etc which may cross any of the trench lines, and for taking the necessary measures to avoid disturbing such services.

7. Fieldwork Methodology

7.1 Trench Size and Location (Fig. 1)
7.1.1 The work will involve the excavation of 2 areas totalling 4556m^2. The contractor should also make provision for a contingency area of up to 20m^2. The use of the contingency will depend upon the results obtained during the initial excavations and will be implemented at the discretion of WYAAS. The decision to invoke all or part of the contingency area will be issued in writing, in retrospect after site discussions if necessary.

7.1.2 The open-area excavation trenches should be located as shown on Figure 2.

	Area (m^2)	**Rationale**
Area A	205m^2	Further test the linear, possible transport feature
Area B	4351m^2	Excavate the Iron Age/Roman enclosure

Total excavation area: **4556m^2**
Contingency allowance: **up to 20m^2**

7.2 Method of Excavation
7.2.1 The excavation areas may be opened using an appropriate machine fitted with a wide toothless ditching bucket. The topsoil and recent overburden should be

removed down to the first significant archaeological horizon in successive level spits of maximum 0.2m thickness. **Under no circumstances should the machine be used to cut arbitrary trenches down to natural deposits.** All machine work must be carried out under direct archaeological supervision and the machine halted if significant archaeological deposits are encountered. The top of the first significant archaeological horizon may be exposed by the machine, but must then be cleaned by hand and inspected for features. Excavation should then continue manually.

7.2.2 All archaeological remains will be hand excavated in an archaeologically controlled and stratigraphic manner sufficient to meet the aims and objectives of the project. The excavation will record the **complete** stratigraphic sequence, down to naturally occurring deposits and will investigate and record **all** inter-relationships between features. The following excavation strategy will be employed:

- Linear boundary features: a minimum sample of 20% of each linear boundary feature such as ditches and trackways. Each section should be at least 1m wide and, where possible, sections will be located and recorded adjacent to the trench edge. All intersections will be investigated to determine the relationship(s) between the component features. All termini will be investigated. The corners of the enclosure are also to be investigated as this is commonly a focus for ritual deposition. If no finds are discovered within this 20% sample of the enclosure then rapid excavation by hand or by mini digger should be employed in order to recover artefactual material which will help date the feature, and give an indication of activities within it.

- Other linear and discrete features: all stake-holes, post-holes, pits, ring ditches, kilns, and other structural/funerary/industrial features will be 50% excavated in the first instance, recorded in section, and then fully excavated. All intersections will be investigated to determine the relationship(s) between the component features. Where possible, sections will be located and recorded adjacent to the trench edge.

- Within area A all features are to be 50% excavated, with similar features being excavated on alternative sides in order to gain an appreciation of the profile of the feature. Within area A there is not a requirement to 100% excavate the features unless a significant discovery is made.

- Built structures: walls, floors etc will be excavated sufficient to establish their form, phasing, construction techniques. All intersections will be investigated to determine the relationship(s) between the component features.

7.2.3 All artefacts are to be retained for processing and analysis except for unstratified 19th & 20th-century material, which may be noted and discarded.

7.2.4 Samples for environmental analysis and scientific dating should be taken if suitable material is encountered during the excavation. Provision should also be made for specialist sampling if appropriate (soil profiles, archaeomagnetic dating, dendrochrology etc.) (Also see paragraph 7.5.)

7.3 Method of Recording

7.3.1 The trenches are to be recorded according to the normal principles of stratigraphic excavation. The stratigraphy of each area is to be recorded, even when no archaeological deposits have been identified.

7.3.2 Section drawings (at a minimum scale of 1:20) must include heights A.O.D. Plans (at a minimum scale of 1:50) must include O.D. spot heights for all principal strata and any features. At least one section of each trench edge, showing a representative and complete sequence of deposits from the modern ground surface to the natural geology, will be drawn.

7.3.3 The actual areas of excavation and all archaeological (and possibly archaeological) features should be accurately located on a site plan and recorded by photographs, scale drawings and written descriptions sufficient to permit the preparation of a detailed archive and report on the material. The trench locations, as excavated, will be accurately surveyed, tied into the O.S. National Grid and located on an up-to-date 1:1250 O.S. map base.

7.3.4 Except where otherwise requested, black and white photography using orthodox monochrome chemical development should be used. Film should be no faster than ISO400. Slower films should be used where possible as their smaller grain size yields higher definition images. Technical Pan (ISO 25), Pan-F (ISO50), FP4 (ISO125) and HP5 (ISO400) are recommended. The use of dye-based films such as Ilford XP2 and Kodak T40CN is unacceptable due to poor archiving qualities. Black and white photography should be supplemented by colour photography; this should be in transparency format (i.e. slides or digital photography as an acceptable alternative, see paragraph 7.3.5 below).

7.3.5 Digital photography: as an alternative for colour slide photography, good quality digital photography may be supplied, using cameras with a minimum resolution of 4 megapixels. Note that conventional black and white print photography is still required and constitutes the permanent record. Digital images will only be acceptable as an alternative to colour slide photography if each image is supplied in three file formats (as a RAW data file, a DNG file and as a JPEG file). The contractor must include metadata embedded in the DNG file. The metadata must include the following: the commonly used name for the site being photographed, the relevant centred OS grid coordinates for the site to at least six figures, the relevant township name, the date of photograph, the subject of the photograph, the direction of shot and the name of the organisation taking the photograph. **Any digital images are to be supplied to WYAAS on gold CDs by the archaeological contractor accompanying the hard copy of the report.**

7.4 Use of Metal Detectors

7.4.1 Spoil heaps are to be scanned for non-ferrous metal artefacts using a metal detector capable of making this discrimination, operated by an experienced metal detector user (if necessary, operating under the supervision of the contracting archaeologist). Modern artefacts are to be noted but not retained (19th-century material and earlier should be retained.)

7.4.2 If a non-professional archaeologist is to be used to carry out the metal-detecting, a formal agreement of their position as a sub-contractor working under direction must be agreed in advance of their use on site. This formal agreement will apply whether they are paid or not. To avoid financial claims under the Treasure Act a suggested wording for this formal agreement with the metal detectorist is: "In the process of working on the archaeological investigation at [*location of site*] between the dates of [*insert dates*], [*name of person contributing to project*] is working under direction or permission of [*name of archaeological organisation*] and hereby waives all rights to rewards for objects discovered that could otherwise be payable under the Treasure Act 1996 and later amendments."

7.5 Environmental Sampling Strategy

7.5.1 Bulk samples must be taken from **all** securely stratified deposits using a strategy which combines systematic and judgement sampling, but which also follows the methodologies outlined in the English Heritage (2011) 'Environmental Archaeology: A Guide to the Theory and Practice of Methods, from Sampling and Recovery to Post-excavation (Second Edition)' guidance

7.5.2 Samples for specialist environmental analysis and scientific dating (soil profiles, archaeomagnetic dating, dendrochrology etc.) should be taken if suitable material is encountered during the excavation. **The English Heritage Science Advisor should be consulted (Dr Andy Hammon, tel.: 01904 601983, email: andy.hammon@english-heritage.org.uk) and provision should be made for an appropriate specialist(s) to visit the site**, take samples and discuss the sampling strategy, if necessary.

7.6 Conservation Strategy

7.6.1 A conservation strategy must be developed in collaboration with a recognised laboratory. All finds must be assessed in order to recover information that will contribute to an understanding of their deterioration and hence preservation potential, as well as identifying potential for further investigation. Furthermore, all finds must be stabilised and packaged in accordance with the requirements of the receiving museum. As a guiding principle, only artefacts of a “displayable” quality would warrant full conservation, but metalwork and coinage from stratified contexts would be expected to be x-rayed if necessary, and conservation costs should also be included as a contingency.

7.7 Human Remains

7.7.1 Any human remains that are discovered must initially be left *in-situ*, covered and protected. WYAAS will be notified at the earliest opportunity. If removal is necessary the remains must be excavated archaeologically in accordance with the *Guidance for Best Practice for Treatment of Human Remains Excavated from Christian Burial Grounds in England* published by English Heritage (2005), a valid Ministry of Justice licence, if appropriate, and any local environmental health regulations.

7.8 Treasure Act

7.8.1 The terms of the Treasure Act 1996, as amended, must be followed with regard to any finds that might fall within its purview. Any finds must be removed to a

safe place and reported to the local coroner as required by the procedures as laid down in the "Code of Practice". Where removal cannot be effected on the same working day as the discovery, suitable security measures must be taken to protect the finds from theft.

7.9 Unexpectedly Significant or Complex Discoveries

7.9.1 Should there be unexpectedly significant or complex discoveries made that warrant, in the professional judgement of the archaeologist on site, more detailed recording than is appropriate within the terms of this specification, then the archaeological contractor should urgently contact WYAAS with the relevant information to enable them to resolve the matter with the developer.

8. Monitoring

8.1 The project will be monitored as necessary and practicable by WYAAS, in its role as curator of the county's archaeology and advisor to the local Planning Authority. WYAAS's representative will be afforded access to the site at any reasonable time. It is usual practice that the visit is arranged in advance, but this is not always feasible.

8.2 WYAAS's representative will be provided with a site tour and an overview of the site by the senior archaeologist present and should be afforded the opportunity to view all trenches, any finds made that are still on site, and any records not in immediate use. It is anticipated that the records of an exemplar context that has previously been fully recorded will be examined. Any observed deficiencies during the site visit are to be made good to the satisfaction of WYAAS's representative, by the next agreed site meeting. Access is also to be afforded at any reasonable time to English Heritage's Regional Archaeological Scientific Advisor.

8.3 Please note that WYAAS now make a charge for site monitoring visits. An invoice will be raised on the archaeological contractor. One monitoring visit will be charged for this project. Please contact us for the current charge.

9. Archive Deposition

9.1 Before commencing any fieldwork, the archaeological contractor must contact the relevant District museum archaeological curator to determine the museum's requirements for the deposition of an excavation archive. In this case the contact is Agreement for the deposition of the archive should be confirmed in writing by the archaeological contractor and copied to WYAAS.

9.2 It is the policy of Wakefield Museum to accept complete excavation archives, including primary site records and research archives and finds, from all excavations carried out in the District that it serves.

9.3 It is the responsibility of the archaeological contractor to endeavour to obtain consent of the landowner, in writing, to the deposition of finds with Wakefield Museum.

9.4 It is the responsibility of the archaeological contractor to meet Wakefield Museums' requirements with regard to the preparation of excavation archives for deposition.

10. Post-excavation Assessment and Analysis

10.1 Initial Treatment of Artefacts and Samples

Upon completion of fieldwork all finds will be cleaned, identified, marked (if appropriate) and properly packed and stored in accordance with the requirements of national guidelines. Metalwork will be x-rayed (as per paragraph 7.6) and assessed by a conservator. Any samples taken shall be processed appropriately.

10.2 Archive Consolidation

10.2.1 The site archive will be checked, cross-referenced and made internally consistent. A fully indexed archive shall be compiled consisting of all primary written documents, plans, sections, photographic negatives and a complete set of labelled photographic prints/slides.

10.2.2 Any digital prints in the report must be made on paper and with inks which are certified against fading or other deterioration for a period of 75 years or more when used in combination. If digital printing is employed, **the contractor must** supply details of the paper/inks used in writing to the WYAAS, with supporting documentation indicating their archival stability/durability.

10.2.3 Standards for archive compilation and transfer should conform to those outlined in *Archaeological Archives – a guide to best practice in creation, compilation, transfer and curation* (Archaeological Archives Forum, 2007). The contractor should also take account of any additional requirements imposed by the recipient museum (see section 9 above).

10.2.4 The original archive is to accompany the deposition of any finds, providing the landowner agrees to the deposition of finds in a publicly accessible archive (see paragraph 9.3 above). In the absence of this agreement the field archive (less finds) is to be deposited with the West Yorkshire Archaeology Advisory Service.

10.3 Assessment - Artefacts

All artefacts must be assessed by a qualified and experienced specialist. Assessment should be generally based on MORPHE but should include:

- preparation of a descriptive catalogue;
- dating (where possible);
- an assessment of the significance of the assemblage;
- an assessment of the potential for further analysis to contribute to the interpretation of the archaeology of this site;
- an assessment of the potential for further analysis to contribute to artefact studies;
- recommendations for additional artefact illustration/photography;
- an assessment of the condition of the assemblage and recommendations for conservation, retention/discard and archiving.

10.4 Assessment - Samples

All environmental material must be assessed by a qualified and experienced specialist. Assessment should be generally based on MORPHE but should include:

- preparation of a descriptive table/catalogue;
- identification of material suitable for scientific dating;
- an assessment of the significance of the assemblage;
- an assessment of the potential for further analysis to contribute to the interpretation of the archaeology of this site;
- an assessment of the potential for further analysis to contribute to environmental studies;
- an assessment of the condition of the assemblage and recommendations for retention/discard and archiving.

10.5 Dating

Scientific dating should be undertaken at this stage if it is required to fulfil the aims of the project.

11 Reporting (Stage 1) – Interim Assessment of Potential

11.1 Following the return of the specialist reports to the archaeological contractor, but prior to the commencement of preparation of the detailed site report, the contractor should arrange a meeting with the WY Archaeology Advisory Service and (at his discretion) English Heritage's Science Adviser (Andy Hammon, English Heritage, 37 Tanner Row, York Y01 6WP). The purpose of this meeting is to discuss the results of the initial stratigraphic synthesis and initial scientific analyses, and to determine

- the ability of the available data to fulfil the stated aims and objectives of the project
- any requirement for further scientific analyses prior to the formulation of the full report on the site.

The meeting may take the form of a telephone discussion, at the discretion of the WY Archaeology Advisory Service.

11.2 Prior to the meeting, documentation sufficient to enable the Advisory Service and English Heritage's Science Adviser to evaluate any proposals for further analysis should be made available to WYAAS and EH. This documentation should consist of the following as a minimum, but should not include a detailed site narrative or constitute a draft of the final report:

11.2.1 Text

- A brief narrative outline of the results of the excavation (**N.B.** this is not intended to be a detailed description of the stratigraphic sequence, but should provide sufficient detail to permit the form and development of the site to be understood by a third party who has not visited the excavation);
- Detailed description of any features/feature groups, the interpretation of which may be affected by the results of further scientific analysis;
- A re-evaluation of the aims and objectives of the project in the light of the initial specialist analysis;
- A descriptive context catalogue;

- Unedited copies of specialist reports;
- Detailed and specific recommendations for further artefact and environmental analysis;
- Detailed and specific recommendations for any additional scientific dating;
- Detailed and specific recommendations for further documentary research;
- Costings for any recommended further research, scientific analysis or dating;
- Recommendations for general publication in monograph form or in an appropriate journal, if warranted by the results of the excavation.

11.2.2 Illustrations

Illustrations should be sufficient to permit the summary discussion to be understood by a third party, and should include:

- Location plan;
- Trench locations (as excavated), overlaid on an up-to-date 1:1250 O.S. map base;
- Draft phase plans (these should be at a scale sufficient to illustrate major context and feature groups important to an understanding of the site narrative)
- Plans, sections and photographs sufficient to permit the narrative outline to be understood, and to support recommendations for further specialist analysis. Draft drawings and marked-up digital photographs are acceptable as long as these are legible.

12. Reporting (Stage 2) – Full Report

12.1 If further specialist analysis is judged by the WY Archaeology Advisory Service to be necessary and appropriate, this work should be commissioned and the results incorporated into a full report. If no further specialist analysis is required, then a full report will be produced.

12.2 Details of the style and format of the full report are to be determined by the archaeological contractor. However, it should be produced with sufficient care and attention to detail to be of academic use to future researchers. The report should be fully illustrated and include:

- background information;
- a description of the methodology;
- a full description of the results;
- an interpretation of the results in a local/regional/national context as appropriate;
- a full bibliography.

Appendices to the report should include:

- Unedited copies of final specialist reports;
- a quantified index to the site archive
- written confirmation from the relevant museum or other repository that the archive has been accepted for long-term storage, with full location details of the archive
- a copy of this specification.

12.3 Location plans should be produced at a scale which enables easy site identification and which depict the full extent of the site. A scale of 1:50,000 is not regarded as appropriate unless accompanied by more detailed plan(s). The location of the trenches (as excavated) should be overlaid on an up-to-date 1:1250 O.S. map base.

12.4 All illustrations should be executed to publication standard. Site plans should be at an appropriate, measurable scale showing the trenches as excavated and all identified (and, if possible, predicted) archaeological features/deposits. Trench and feature plans must include O.D. spot heights for all principal strata and any features. Section drawings must include O.D heights and be cross-referenced to an appropriate plan.

12.5 Finds that are critical for dating and interpretation should be illustrated.

12.6 Discrete features crucial to the interpretation of the site should be illustrated photographically.

12.7 In addition to the full report to be deposited with the WY Historic Environment Record, the results of this excavation may merit publication in monograph form or in a suitable archaeological journal (subject to the judgement of the WY Archaeology Advisory Service). If further publication is considered to be necessary, the archaeological contractor will be expected to approach the editor of the appropriate publication (after discussions with WYAAS) to confirm the journal's requirements and views with regard to the suitability of the proffered material.

12.8 **A hard copy of the full report (plus a digital copy on gold disk) will be submitted directly to the WY Archaeology Advisory Service within a timescale agreed by both parties.** The report will then assessed by WYAAS to establish whether or not it is suitable for accession into the WY Historic Environment Record. Any comments made by WYAAS in response to the submission of an unsatisfactory report will be taken into account and will result in the reissue of a suitably edited report to all parties, within a timescale which has been agreed with WYAAS. Completion of this project and a recommendation from WYAAS for the full discharge of the archaeological condition is dependant upon receipt by WYAAS of i) a satisfactory full report and, should publication be warranted, ii) a copy of a letter from an appropriate journal editor or publisher confirming acceptance of the article.

12.9 A copy of the final report (in .pdf format) shall also be supplied to English Heritage's Science Advisor (Andy Hammon, English Heritage, 37 Tanner Row, York Y01 6WP) and to the English Heritage Archive at Swindon (FAO Mike Evans. English Heritage, Archive Services, The Engine House, Fire Fly Avenue, Swindon, SN2 2EH. archive@english-heritage.org.uk).

12.10 The full report, once accepted by WYAAS, will be supplied on the understanding that it will be added to the West Yorkshire Historic Environment Record and will become a public document after an appropriate period of time (generally not exceeding six months).

12.11 Copyright - Please note that by depositing this report, the contractor gives permission for the material presented within the document to be used by the WYAAS, in perpetuity, although The Contractor retains the right to be identified as the author of all project documentation and reports as specified in the *Copyright, Designs and Patents Act* 1988 (chapter IV, section 79). The permission will allow the WYAAS to reproduce material, including for non-commercial use by third parties, with the copyright owner suitably acknowledged.

12.12 The West Yorkshire HER supports the Online Access to Index of Archaeological Investigations (OASIS) project. The overall aim of the OASIS project is to provide an online index to the mass of archaeological grey literature that has been produced as a result of the advent of large-scale developer funded fieldwork. The archaeological contractor must therefore complete the online OASIS form at http://ads.ahds.ac.uk/project/oasis/. Contractors are advised to contact the West Yorkshire HER officer prior to completing the form. Once a report has become a public document by submission to or incorporation into the HER, the West Yorkshire HER may place the information on a web-site. Please ensure that you and your client agree to this procedure in writing as part of the process of submitting the report to the case officer at the West Yorkshire HER.

12.13 The attached summary sheet should be completed and submitted to the West Yorkshire Archaeology Advisory Service for inclusion on WYAAS's website.

13. General Considerations

13.1 Authorised Alterations to Specification by Contractor

13.1.1 It should be noted that this specification is based upon records available in the West Yorkshire Historic Environment Record. It is recommended that archaeological contractors should carry out a site inspection prior to submitting a tender. If, upon visiting the site or at any time during the course of the recording exercise, it appears in the archaeologist's professional judgement that:

> I) a part or the whole of the site is not amenable to recording as detailed above, and/or
> ii) an alternative approach may be more appropriate or likely to produce more informative results,

Then it is expected that the archaeologist will contact WYAAS as a matter of urgency. If contractors have not yet been appointed, any variations which WYAAS considers to be justifiable on archaeological grounds will be incorporated into a revised specification, which will then be re-issued to the developer for redistribution to the tendering contractors. If an appointment has already been made and site work is ongoing, WYAAS will resolve the matter in liaison with the developer and the Local Planning Authority.

13. 2 Unauthorised Alterations to Specification by Contractor

13.2.1 It is the archaeological contractor's responsibility to ensure that they have obtained WYAAS's consent in writing to any variation of the specification prior to the commencement of on-site work or (where applicable) prior to the finalisation of the

tender. Unauthorised variations may result in WYAAS being unable to recommend determination of the planning application to the Local Planning Authority based on the archaeological information available and are therefore made solely at the risk of the contractor.

13.3 Technical Queries
13.3.1 Any technical queries arising from the specification detailed above should be addressed to WYAAS without delay.

13.4 Publicity
13.4.1 If the project is to be publicised in any way (including media releases, publications etc.), then it is expected that WYAAS will be given the opportunity to consider whether its collaborative role should be acknowledged, and if so, the form of words used will be at WYAAS's discretion.

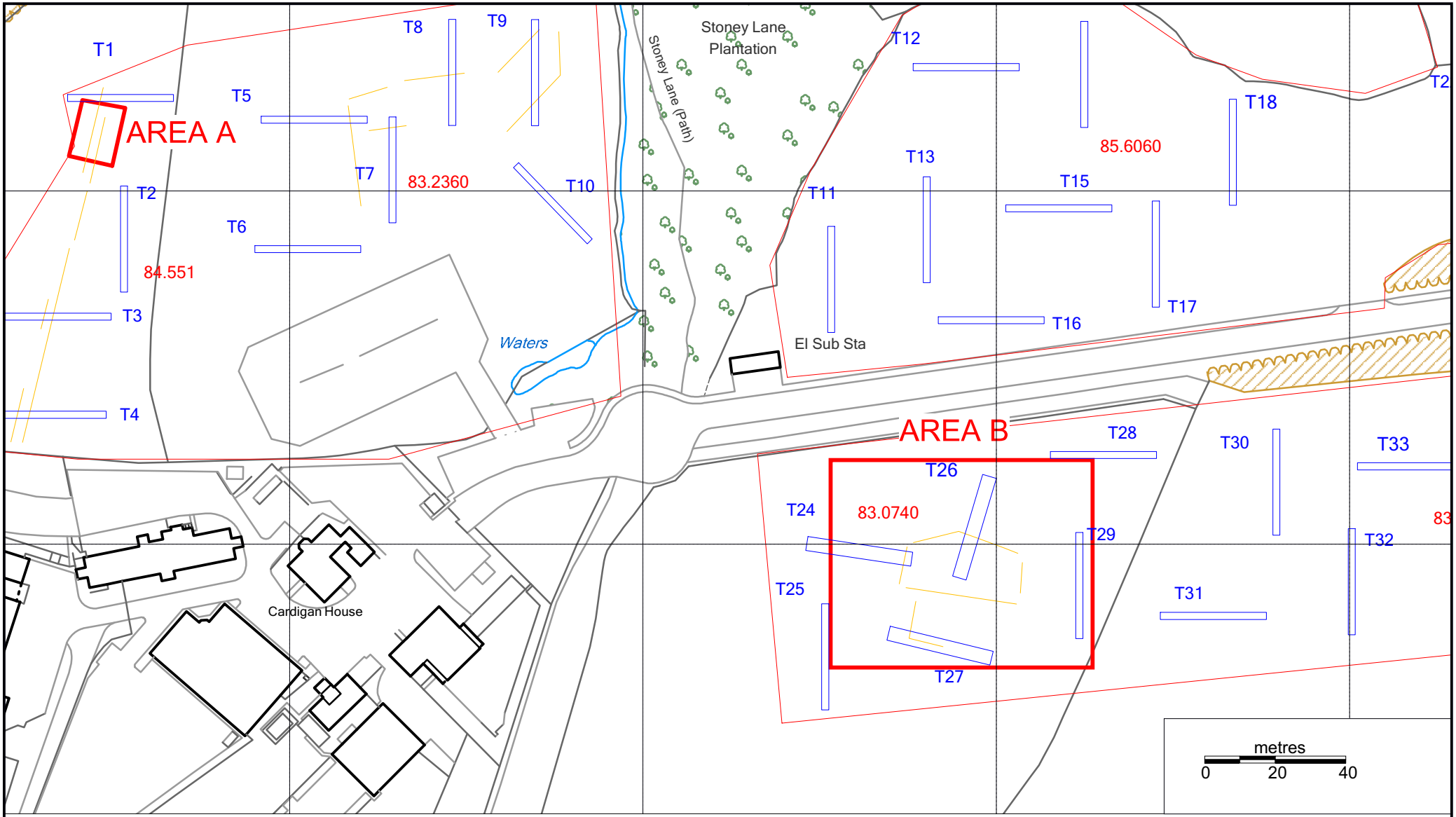
13.5 Valid Period of Specification
13.5.1 This specification is valid for a period of one year from date of issue. After that time it may need to be revised to take into account new discoveries, changes in policy or the introduction of new working practices or techniques.

Jason Dodds **August/2012**
West Yorkshire Archaeology Advisory Service

West Yorkshire Archaeology Advisory Service
Registry of Deeds
Newstead Road
Wakefield
WF1 2DE

Telephone: 01924 305992
Fax: 01924 306810
E-mail: jdodds@wyjs.org.uk

Appendix 3: Specification



WYAAS
County Historic Environment Record
Registry of Deeds, Newstead Road
Wakefield WF1 2DE

Tel. 01924 306797 Fax. 01924 306810

Fig. 1: Areas of Archaeological Mitigation, Carr Gate, Wakefield WYAAS

Date Plotted: 16/08/2012

Sheet No.: SE3024SE

Scale 1: 1500

N W E S

Bibliography

ASWYAS, 2010, Excavation Manual

BGS, 2012., http://mapapps.bgs.ac.uk/geologyofbritain/home.html (Accessed: 8th July 2012)

Burgess, A. and Roberts, I., 2004, *Two Late Iron Age/Romano-British Settlement Sites Near Whitwood, West Yorkshire*, ASWYAS Publication 6

CFA, 2012, 'Dark Lane Colliery, Mirfield, West Yorkshire, Archaeological Works', CFA Archaeology Ltd Client Report No. 2053

Darling, M.J., 1999, 'Roman Pottery', in Colyer, C., Gilmour, B.J.J. & Jones, M.J., *The Defences of the Lower City. Excavations at The Park and West Parade 1970-2*, CBA Research Report 114, 52-135

Darling, M.J., 2004, 'Guidelines for the archiving of Roman Pottery'. *J. Roman Pottery Stud.* 11, 67-74

French, D.H., 1971, An Experiment in Water Sieving, *Anatolian Studies 21,* 59-64

Guy, A. and Rees, J., 2011, *Early Railways 1569-1830*, Oxford, Shire Publications Ltd

Harrison, D., 2012, 'Carr Gate, Wakefield, West Yorkshire: Geophysical Survey' ASWYAS Report no. 2368

Howell, J.K., 2001, 'Swillington Common', in Roberts, I., Burgess, A. and Berg, D. (eds), *A New Link to the Past. The Archaeological Landscape of the M1-A1 Link Road*, Yorkshire Archaeology 7, 47–67

IfA, 2008, Standards and Guidance for Archaeological Excavation, Institute for Archaeologists

Jones, D.M., (Ed.), 2001, *Centre for Archaeology Guidelines: Archaeometallurgy*, English Heritage

Northern Archaeology, 2012, 'Leading the way in community-led regeneration', Northern Archaeology Issue 2, The York Archaeological Trust Magazine, 6-9

Roberts, I., with Deegan, A. and Berg, D., 2010, *Understanding the Cropmark Landscapes of the Magnesian Limestone*, ASWYAS/English Heritage

Schweingruber, F.H., 1990, *Anatomy of European Woods*, Paul Haupt Publishers Berne and Stuttgart.

Soil Survey of England and Wales, 1980, *Soils of Northern England* Sheet 1

Stace, C., 1997, *New Flora of the British Isles.* 2nd Edition.

Tinsley, A., 2012, 'Carr Gate, Wakefield, West Yorkshire: Archaeological Evaluation'

ASWYAS Report no. 2369

Wheelhouse, P., 2001, 'Bullerthorpe Lane', in Roberts, I., Burgess, A. and Berg, D. (eds), *A New Link to the Past. The Archaeological Landscape of the M1-A1 Link Road*, Yorkshire Archaeology 7, 37–46

Zohary, D., and Hopf, M., 2000, *Domestication of Plants in the Old World.* 3rd Edition.