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**Darrington Quarry Northern Extension
West Yorkshire**

Archaeological Excavation

Phase 1: Mitigation (Strip, Record and Excavate)

Interim Report

September 2011

Report No.2251

CLIENT

Waste Recycling Group Limited

Darrington Quarry Northern Extension West Yorkshire

Archaeological Excavation

Phases 1: Mitigation (Strip, Record and Excavate)

Interim Report

Summary

Following extensive trial excavations in the Phase 1 extraction area, four larger excavation areas were centred on recorded archaeological features found in Trenches 26, 45, 52 and 61. The expanded excavation 'Areas' revealed the features in Areas 26, 52 and 61 to be linear boundary features on an alignment consistent with that identified in previous geophysical survey and excavation data for the Late Iron Age and Romano-British field systems that once sub-divided this landscape. The features identified in Area 45 may include such a field boundary, but may also represent the remnants of a small enclosure, confused by variations in the natural strata. The archaeological features are all very degraded, being almost ploughed out in some instances. A very small assemblage of finds included two sherds of Romano-British pottery.

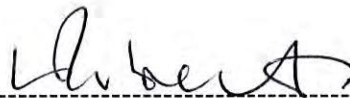


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Report Information

Client: Waste Recycling Group Limited
Address: 6 Sidings Court, White Rose Way, Doncaster DN4 5NU
Report Type: Evaluation
Location: Darrington Quarry Northern Extension
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1 Introduction

Archaeological Services WYAS was commissioned by Waste Recycling Group Limited to carry out archaeological trial trenching in an area of proposed limestone extraction located just north of the M62 motorway and south of Knottingley. The evaluation involved the excavation of 63 trial trenches within the area of the first four phases of mineral extraction to the east of Leys Lane. Some of the trenches were targeted upon anomalies identified by previous geophysical survey, although most fell in areas of unknown archaeological potential, between the archaeological features previously investigated by 23 pre-determination trenches (Williams *et al.* 2008). The scope of the required archaeological evaluation was determined by the West Yorkshire Archaeological Advisory Service (WYAAS) in their specification of August 2011 (Appendix 3).

Site location and topography

The site is located to the north of the village of Darrington, on the north side of the M62, between the motorway and Knottingley. The four areas of limestone extraction presently under consideration lie to the east of Leys Lane and form part of an eight phase extraction area that extends to the west. The initial extraction areas (Phases 1-4) are centred on NGR SE 4500 4223 and lies at a height of approximately 30m AOD (Fig. 1). The four phases form a roughly rectangular area of land bounded by Knottingley to the north and west, the railway line to the east, and the M62 to the south (Fig. 2). The land is gently undulating with a ridge of high ground located in the southern part of the area.

Soils, geology and land-use

The solid geology of the site is mapped as Permian Magnesian Limestone (Institute of Geological Sciences 2001). The soils comprise well-drained loamy soil of the Aberford Series (Soil Survey of England and Wales 1980). A small rectangle of land in the south-eastern part of the site is under arable cultivation and has recently been re-seeded after the harvesting of a wheat crop. The remainder of the site had not been under any recent agricultural regime.

2 Archaeological and Historical Background

The desk-based assessment (Ford 2007) revealed that there was, at that time, relatively little known archaeological potential within the proposed extraction area. Fragmented cropmarks, however, pointed to the existence of former fields systems and enclosures in the surrounding landscape, there being a well defined crop mark of a trapezoidal enclosure in the south eastern (Phase 2) part of the site.

The potential for invisible remains has been borne out by the discoveries made through geophysical survey, trial trenching and excavation on the Darrington Quarry West site, immediately to the south of the M62 (Heapy 2008; Williams 2010). In 2008 the present site

was subject to partial geophysical (magnetometer) survey (Webb 2008). As well as enhancing the plan of the trapezoidal crop mark enclosure, the survey results revealed fragments of a former regime of ditched land division and associated enclosures. Many of the boundaries are erratic and generally the enclosures are appended to the principal boundaries. The arrangement is typical of many irregular Late Iron Age or Romano-British enclosure and field systems found elsewhere on the Magnesian Limestone in this region (Roberts *et al.* 2010).

Following the identification of potential archaeological features by geophysical survey a limited programme of pre-determination trial trenching was carried out in 2008. This work saw 23 trenches targeted upon the main crop mark and geophysical survey anomalies to reveal evidence of land division and settlement dating to the Iron Age and Roman periods. The earliest dated feature was a human pit burial, near the entrance to the trapezoidal enclosure, which has been radiocarbon dated to the pre-Roman Iron Age (380-180 cal. BC). The main period of exploitation, as represented by the pottery, appears to have been in the later Roman period with peaks of activity in the 3rd and 4th centuries (Williams *et al.* 2008).

To complete of the required trial trench evaluation a further 63 trenches were excavated in the areas not investigated by the 23 pre-determination trenches. Nineteen of these fell within the Phase 1 mineral extraction area. Of these only four (Trenches 26, 45, 52 and 61) produced archaeological features which became subject to a final phase of archaeological mitigation work, as required by WYAAS.

3 Aims and Objectives

The aim of the final archaeological mitigation work in the Phase 1 area was to establish whether the features identified within the four positive trenches were of an isolated nature, or part of a larger feature array, group or structure that might lend itself to meaningful interpretation.

4 Methodology

The investigation areas were excavated in accordance with the WYAAS specification (Appendix 3), and with accepted professional standards and guidelines (English Heritage 2006, Institute of Field Archaeologists 2008), as well as the ASWYAS site recording manual (ASWYAS 2007).

In the cases of Trenches 45, 52 and 61 a 20m by 20m area was centred on each of the features found in the original trial trenches. In the case of Trench 26 a 35m by 20m trench was centred over the two features found in the original trench. These four areas provided the scope for the strip, record and excavate operation that represented the final archaeological mitigation work for the Phase 1 extraction area.

All topsoil and subsoil deposits within all of these areas was removed in level spits (not more than 0.2m) using a 360° excavator equipped with a smooth bladed ditching bucket, working in tandem with a front-tipping dumper, under direct archaeological supervision. All machining was stopped at the first identifiable archaeological horizon or natural deposits. The stripped surface was cleaned by hand and inspected for any archaeological remains. All linear features were subject to a manual sampling regime of 10% of their total length within the stripped areas, and each excavated section was no less than 1m in length. All terminal-ends, corners and intersections were fully investigated. All discrete features revealed such as pits and post-holes were at a minimum 50% excavated (by area).

All archaeological features were accurately recorded in plan at a scale of 1:50 or 1:20 and all excavated features were recorded in section at scales of either 1:10 or 1:20. All plans and sections include spot heights relative to the Ordnance Datum (OD) in metres. A full written and photographic record was made of all archaeological features. A soil-sampling programme was undertaken for the identification and recovery of carbonised remains, vertebrate remains, molluscs and small artefactual material. Soil samples of up to 40 litres were taken from the fills of excavated features where appropriate.

5 Results

Area 26 (centred on Trench 26)

The 35m by 20m area showed that Pit 502 in the northern part of the area was an isolated feature, whilst Feature 500 was revealed to be a shallow segmented ditch/gully on a north-east to south-west alignment. It continued under the eastern baulk, but petered out before reaching the western edge of the stripped area (Fig. 4). No further finds were recovered from any of the feature fills.

Feature 500

This linear boundary comprised of three separate segments, one of which (537) at the south-western end might more properly be termed a pit. The segmented boundary is effectively represented by two sections of gully (500/535 and 533). The former was exposed in its entirety and found to be 5.3m in length and up to 1m wide, but no more than 0.25m deep. The latter (533), about 4.5m to the north-east, was exposed for 5m of its length and was up to 1.3m wide and of similar depth. In both cases the fills (536/501 and 534) were brown, sandy clay loams with frequent inclusions of limestone (Fig. 4, S.233 and S.234).

Pit 537 lay just 0.4m from the south-western end of segment 500/535 and may have facilitated an upright that terminated the segment boundary in this direction. It was sub-circular and about 1m in diameter, but only 0.28m deep and with an irregular profile. Its fill (538) was similar to that of the linear segments.

Area 45 (centred on Trench 45)

At the centre of this 20m by 20m area the feature originally identified and numbered as 'Pit 506' was revealed to be the northern terminus of a gully (506) extending northwards from a sinuous linear feature (562). At the point at which 506 had been excavated, it had intersected with an earlier linear feature (549) that ran diagonally north-east to south-west across the excavated areas. Other potential features include another short (un-numbered) gully, similar to Gully 506, extending from the northern edge of gully/ditch 562, and an arcing, intermittent gully (556), which could conceivably represent a small D-shaped enclosure appended to the north side of 562, and which appears to have been cut by gully 549 (Fig. 5).

Gully 506

A short stretch of gully extending from the southern side of Ditch 562, the northern terminus of which was seemingly excavated as 'Pit 506' during the initial trial trenching work. It is probably from this feature that the single sherd of Romano-British pottery and two fragments of indeterminate ceramic material, was recovered during the trial trenching phase of the work (context 508). The gully was 3.5m long, 1.4m wide and 0.56m deep and was filled with a primary deposit of re-deposited natural limestone (507) and an overlying fill of brown clayey soil (508). No further finds were recovered.

Ditch 562

This feature meandered east-west across the northern part of the stripped area and possessed no discernible relationships with the other gullies. It measured up to 19m in length, up to 3.2m in width and was up to 1m deep. Its fills at the central point of its course consisted of a primary deposit of re-deposited natural limestone (563), between 0.35m and 0.7m deep, overlain by deposits of mixed natural limestone and brown loam (568), with a tertiary fill (564) of brown sandy clay silt (Fig. 5, S.250). The fills showed no consistency along its length and there is a possibility that this is a natural feature. No finds were recovered from the fills.

Gully 549

A linear gully running north-east to south west, diagonally through the middle of the stripped area. It seemingly cut Gully 555, but was cut by Gully 506. Its relationship with Feature 562 at its north-eastern extent was not established. In the south-western corner this feature's course was similarly lost in an area of variegated natural deposits. The gully was plotted over a distance of 16m, was 1m wide. It was excavated at three locations (558, 560 and 566) and found to be no more than 0.1m deep, being filled in all instances by a light brown sandy clay (Fig. 5, S. 248, S.249). No finds were recovered from its fill.

Gully 555

This curving feature may have been an appended to the south side of Ditch 562, although like 562 there is a question-mark over its authenticity. In its northern part it has a distinct V-shaped profile, but elsewhere it is less clear and virtually non-existent. It was plotted over a

distance of 23m and excavated at four locations. It was about 1.5m wide and 0.7m deep, being deepest on the inner (southern) side of the curve and possibly being consistent with it having been a palisade slot (Fig. 5, S.247). No finds were recovered from its dark brown sandy clay fill.

Un-numbered 'gully'

A short linear feature extending from the southern side of Ditch 562, to the east of, Gully 505 is regarded as a natural deposit. The deposit was 3m long, up to 1.3m wide and 0.3m deep. It was filled with brown sandy clay soil and may well be a remnant of the natural subsoil. No finds were recovered.

Area 52 (centred on Trench 52)

A 20m by 20m was centred upon a trial trench section through a linear gully which, when exposed more fully, was traced over a distance of 18m on a north-east to south-west alignment. The gully was further sample excavated at its north-eastern terminal (539) and at the point where it disappeared beneath the southern baulk (541). The gully proved to be up to 1m wide but no more than 0.1m deep (Fig. 6, S.238, S. 239) and was filled with a brown sandy clay soil (540/542). No finds were recovered from the fill of this feature.

Area 61 (centred on Trench 61)

A 20m by 20m was centred upon a trial trench section through a linear east-west gully which, when exposed more fully, was traced across the entire width of the trench (Gully 545/547). An additional linear feature (543) was found in the north-east corner of the area, running into the eastern baulk.

Gully 545/547

This feature ran east-west across the entire excavated area, bearing towards the north-east over the easternmost 7m of its exposed length. At this point it was at its widest, being 1.7m although for most of its length it was no more than 1m wide. The gully had a U-shaped, in places flat-bottomed, profile and was no more than 0.3m deep (Fig. 7, S.241, S. 242). No finds were recovered from the fill (544/546), a brown clayey sandy loam.

Gully 543

Only the western 5.5m of this linear feature was exposed. It was up to 1.2m wide and 0.2m deep, with a rather irregular profile (Fig. 7, S.243). Its fill (548) was a brown sandy clay that produced no artefacts.

6 Artefact Record

The only finds recovered are two abraded sherd of Romano-British pottery and two fragments of ceramic material. One of the pottery sherds came from the fill of Pit 502 in Area 26, during the trial excavation phase. The other came from Gully 506 in Area 45 (context 508), along with the two fragments of ceramic material. It has not been possible to obtain an expert opinion on these finds in time for the production of this interim report. However, the pottery sherds appear consistent with the Roman activity represented in the material recovered from the targeted pre-determination trial trenching carried out in 2008.

7 Environmental Record

Soil samples were taken from all investigated features in accordance with the specification, but it has not been possible to have these processed and analysed for the production of this interim report. From visual inspection, none of the samples appears to be rich in organic remains.

8 Discussion

The four open area excavations in the Phase 1 extraction area have confirmed the truncated nature of the archaeology on the Magnesian Limestone in this area, as was apparent from the work carried out previously (Williams *et al.* 2008; Williams 2010). The results provide no evidence indicative of unenclosed settlement, or any other features, that might not have been shown up in crop mark or geophysical data. The results are entirely consistent with a highly degraded regime of land division on north-east to south west and north-west to south-east axes, as has been deduced from work elsewhere in this landscape. The main linear features from Areas 26, 45 and 52 (all north-east to south west) would support this, although that in Area 61 was mainly east-west, but veering north-east.

The linear features are very shallow and have been termed ‘gullies’ and a ‘segmented boundary’ although fact they are probably the bases of truncated (ploughed out) ditches that were of much greater size when they were created in the late Iron Age or Roman period. The validity of some of the gully features recorded in Area 45 remains doubtful, given their irregular plans and inconsistent depositional sequences.

The poor finds return from these features may signify that there was no settlement in close proximity to this part of the field system in the Roman period.

9 Conclusions and Further Mitigation

Four open area excavations, in the Phase 1 extraction area, were centred on features discovered through trial trenching. The results have provided some further information about the land division of the area in the Late Iron Age and Roman period and indicates that there is no evidence of unenclosed settlement or other archaeological activity likely to survive in this area. It is not anticipated that further archaeological mitigation measures will be required for this Phase 1 area of mineral extraction.

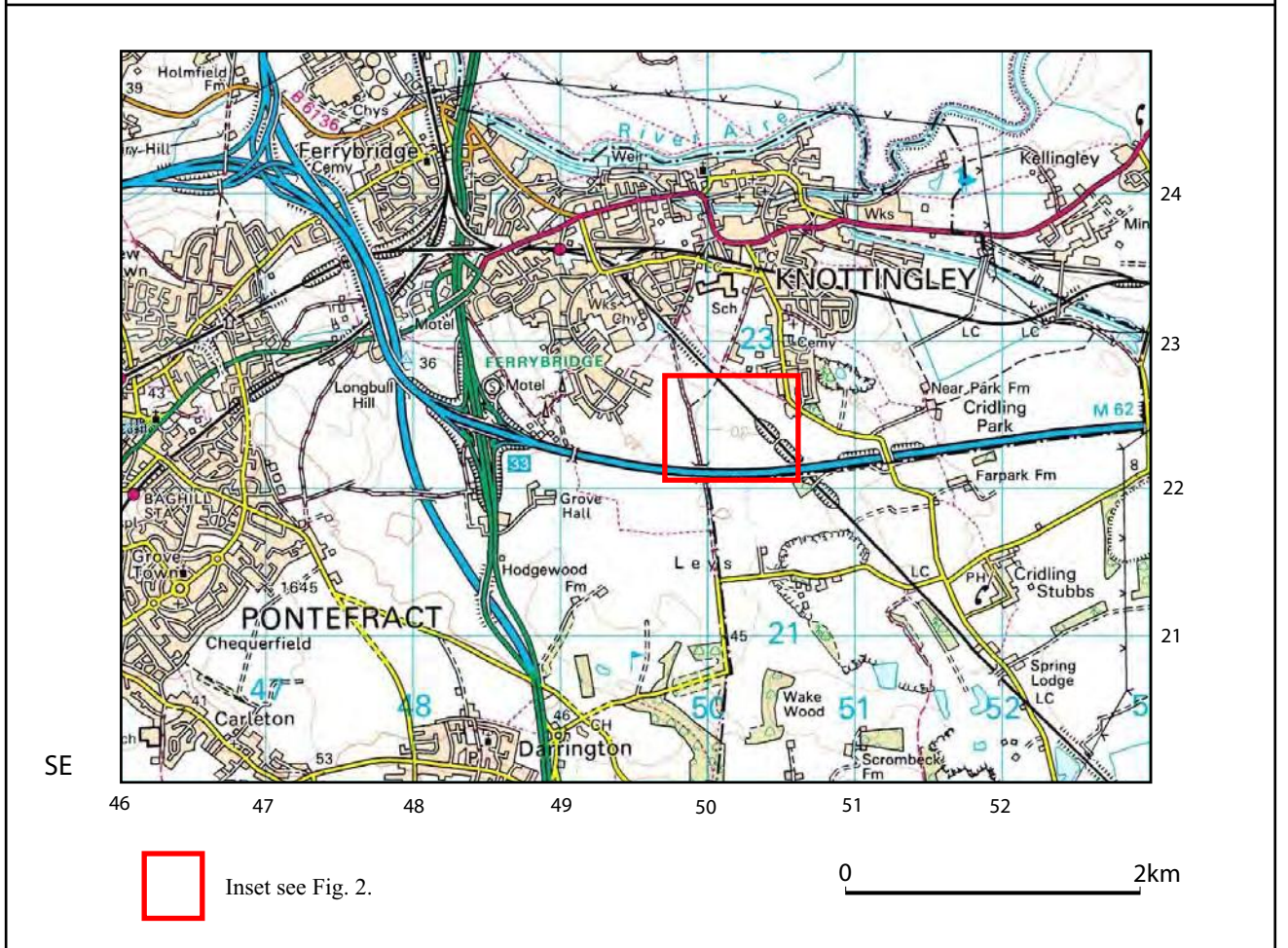
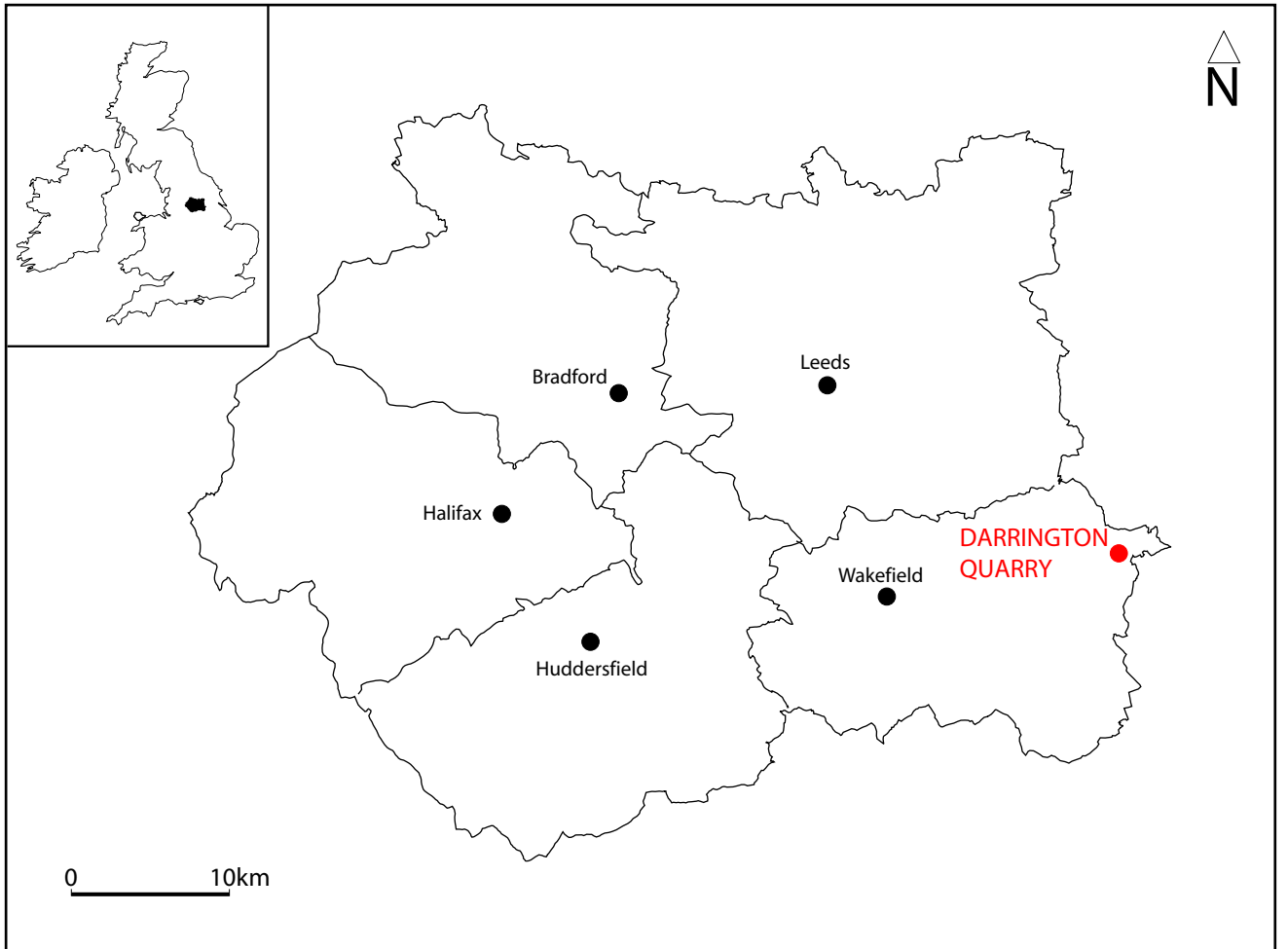


Fig. 1. Site location

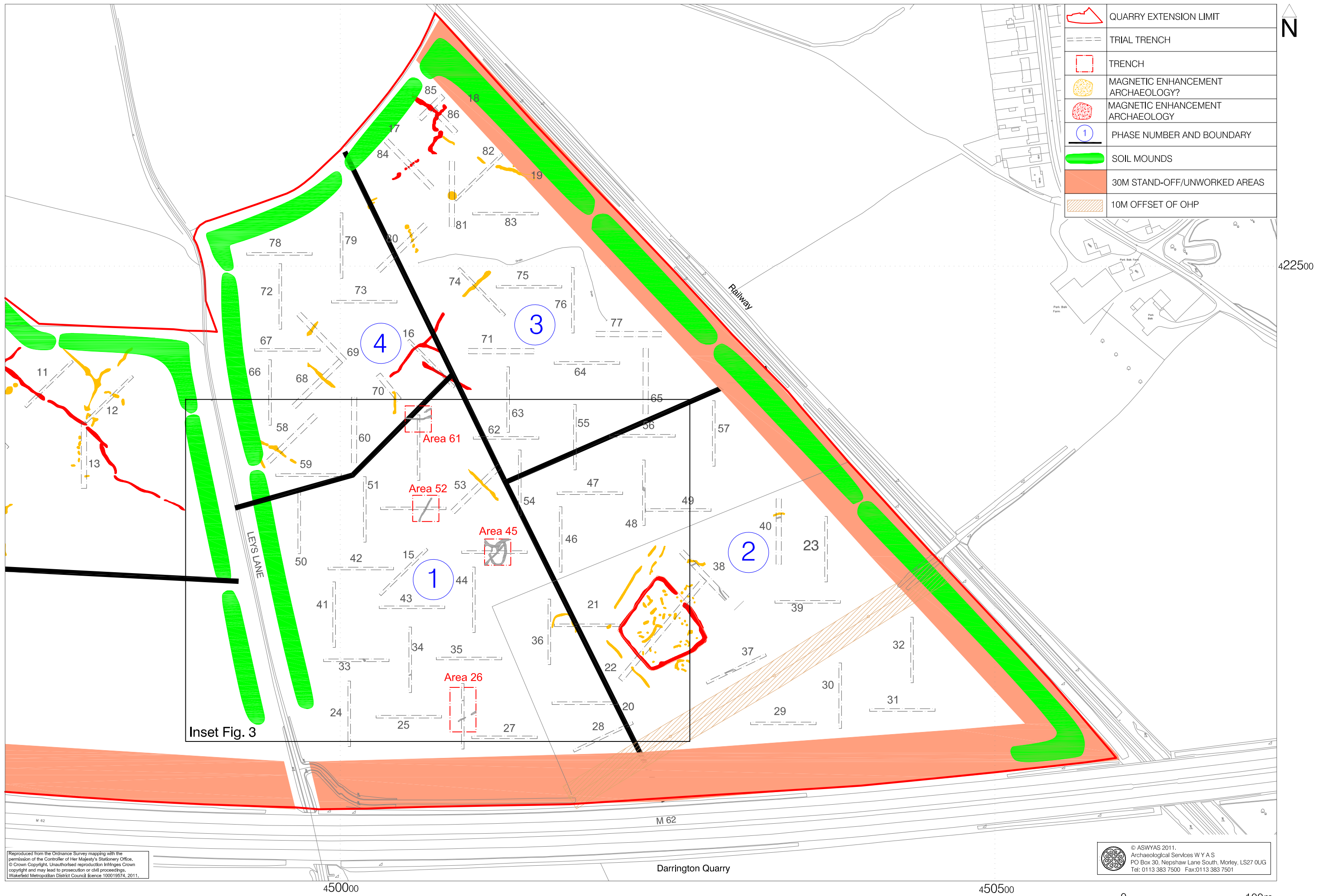


Fig. 2. Site plan showing trial trench and Phase 1 mitigation areas in mineral extraction Phases 1 - 4 to the east of Leys Lane (1:2500 @ A3)

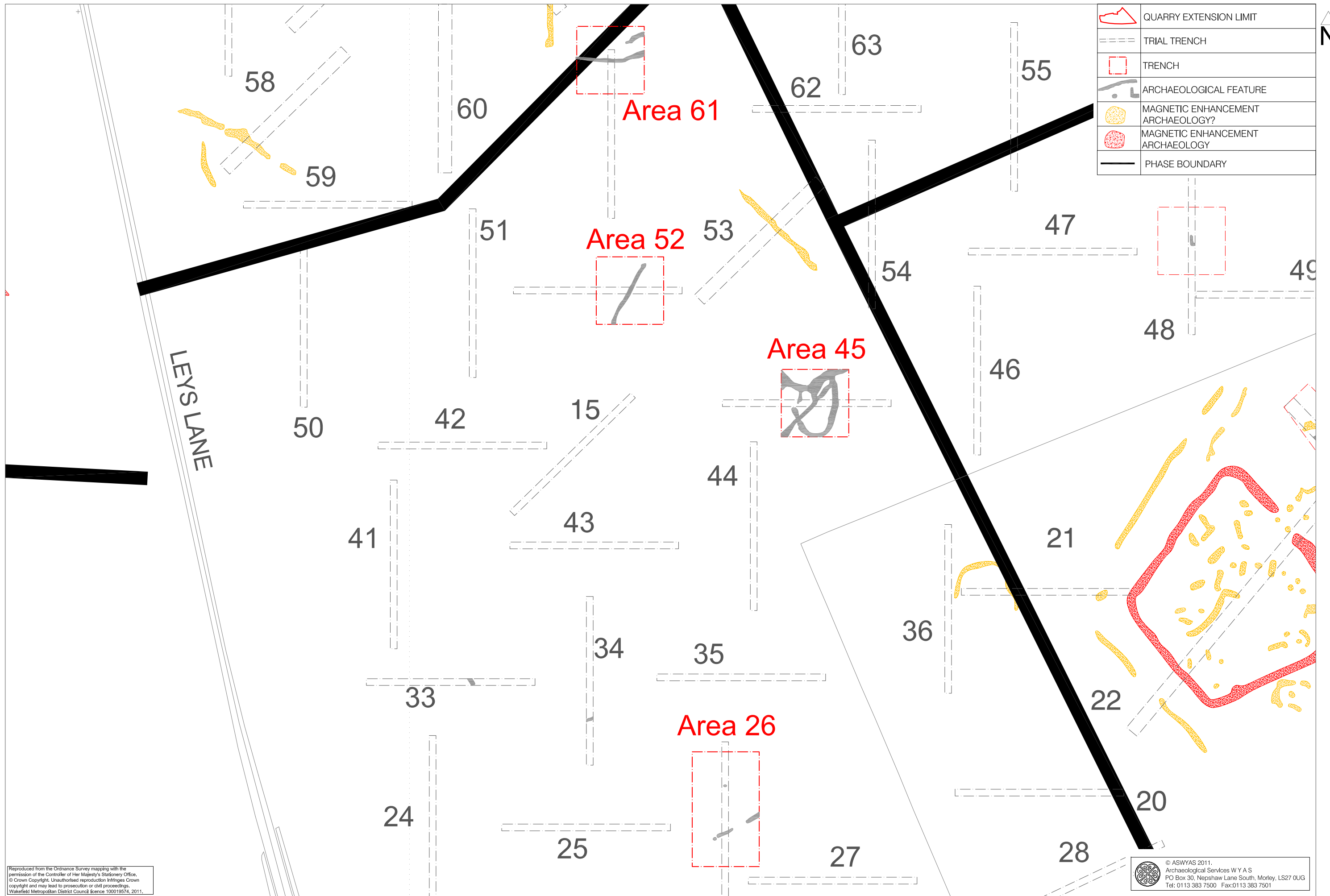


Fig. 3. Phase 1 mitigation areas (1:1000 @ A3)



Trench extends 10m

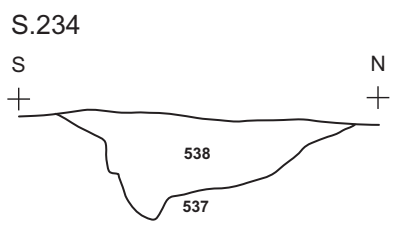
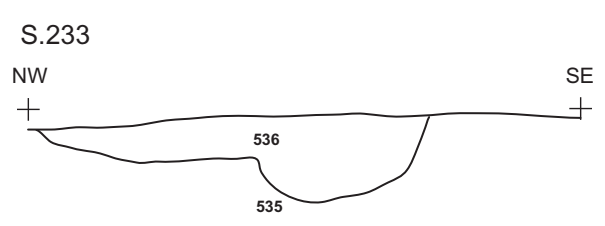
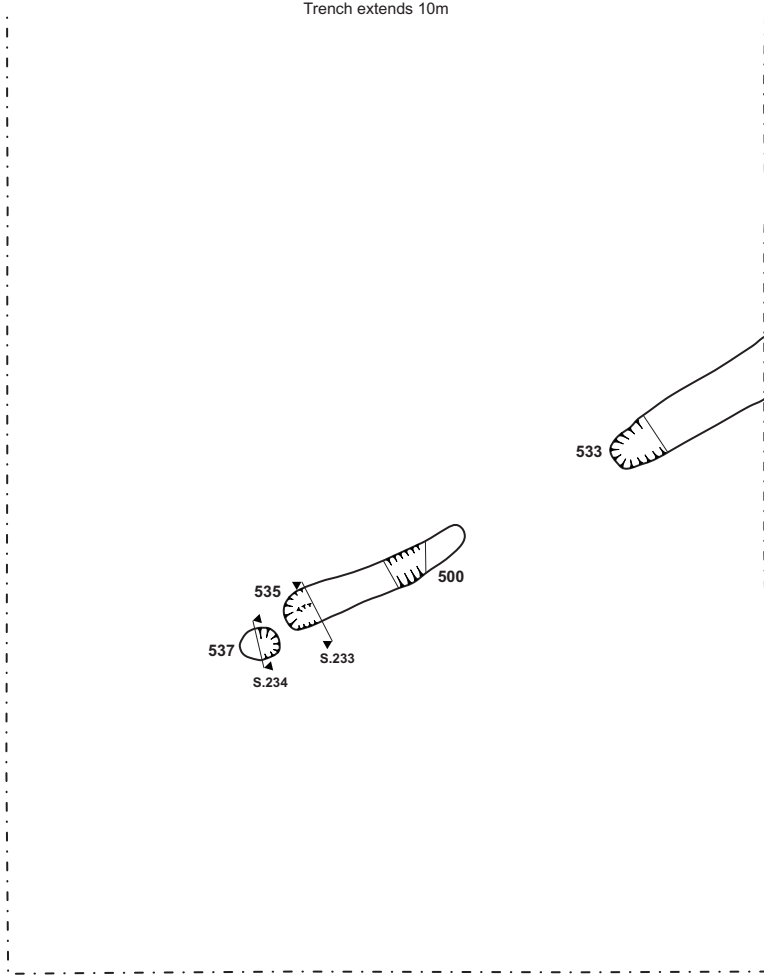
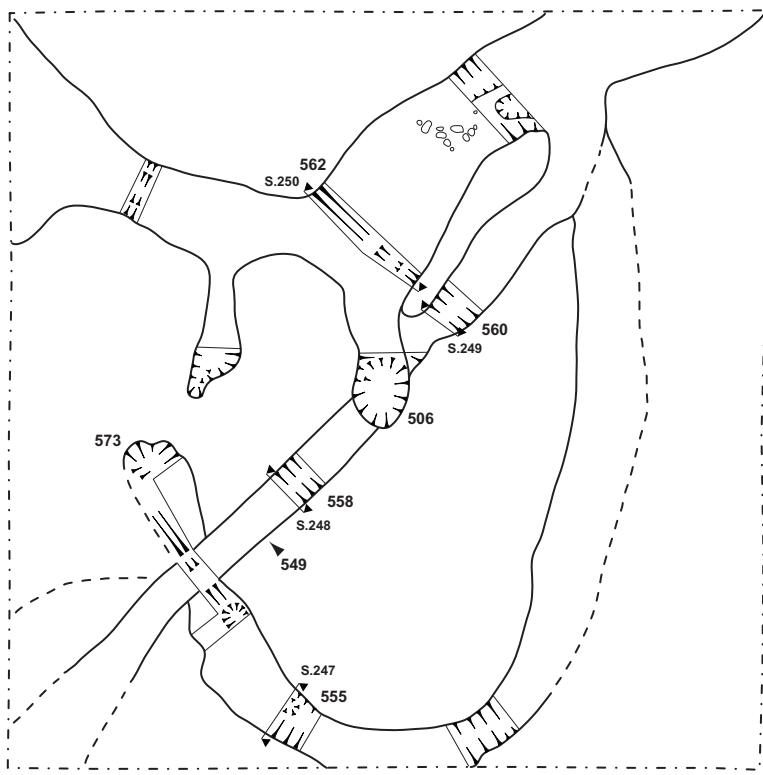


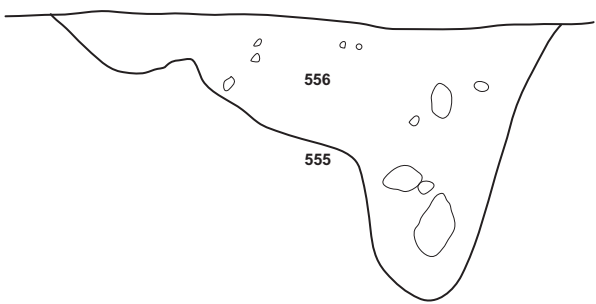
Fig. 4. Area 26, plan and sections



Plan
0 10m (1:200)

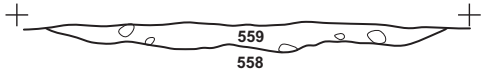
S.247

SW NE
+ +



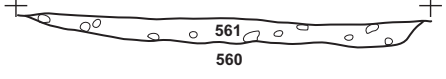
S.248

SE NW
+ +



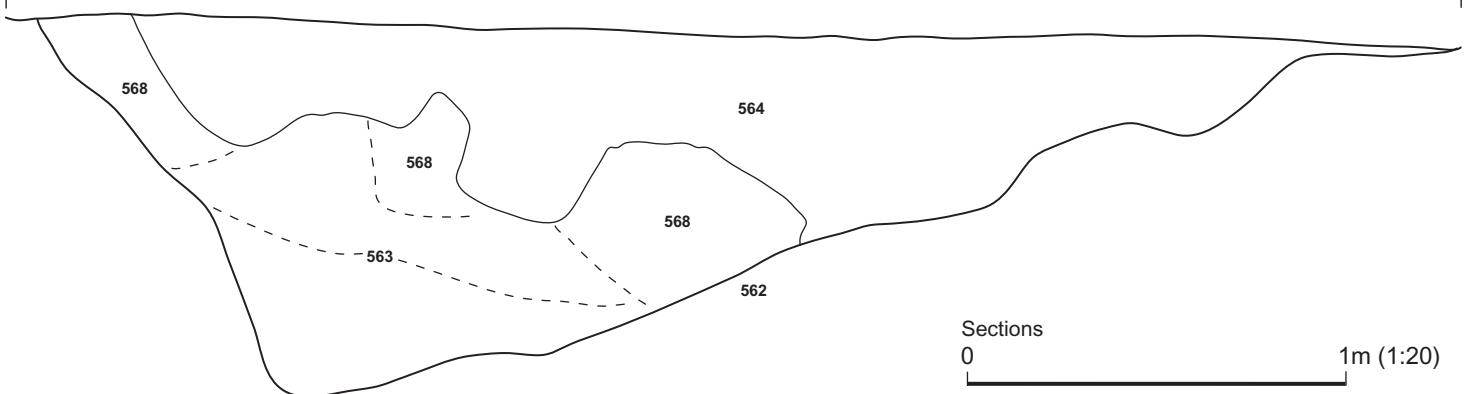
S.249

SE NW
+ +



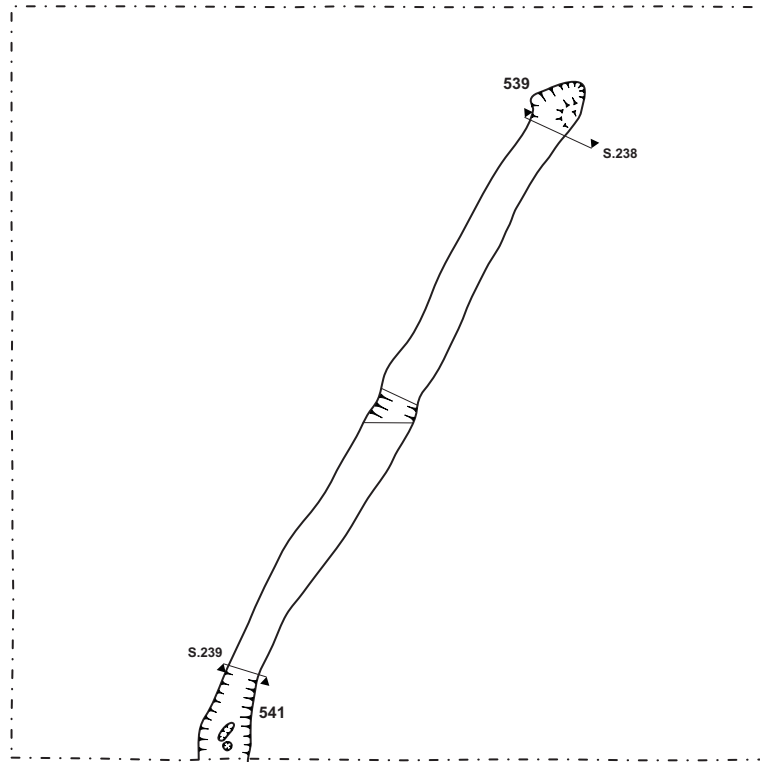
S.250

SE NW
+ +

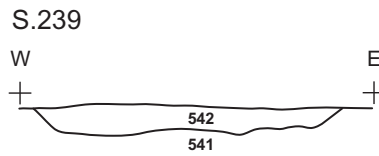
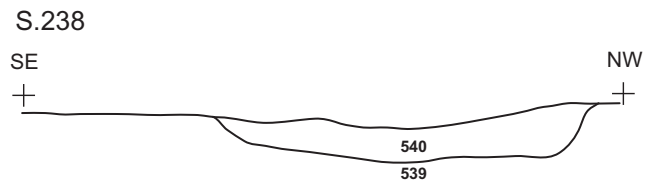


Sections
0 1m (1:20)

Fig. 5. Area 45, plan and sections



Plan
0 10m (1:200)



Sections
0 1m (1:20)

Fig. 6. Area 52, plan and sections

Appendix 1: Inventory of primary archive

Phase	File/Box No	Description	Quantity
Evaluation	File no.1	Context register sheets	1
		Drawing register sheets	1
		Levels sheets	1
		Sample register sheets	1
		Finds register sheets	1
		Photo register sheets	1
		Colour negative strips	1
		B&W negative strips	1
Excavation	File no. 2	Context register sheets	1
		Drawing register sheets	1
		Sample register sheets	1
Excavation	File no. 3	Context sheets (nos. 1000-1199)	45
		Daily site recording forms	7

Appendix 2: Concordance of contexts yielding artefacts or environmental remains

Context	Area	Phase	Description	Artefacts and environmental samples
500	26	1	Cut of ditch segment	
501	26	1	Fill of ditch segment 500	
502	26	1	Cut of irregular pit	
503	26	1	Fill of irregular pit 502	Romano-British pottery
533	26	1	Cut of ditch segment terminal	
534	26	1	Fill of ditch segment 500	
535	26	1	Cut of ditch segment terminal	
536	26	1	Fill of 535	
537	26	1	Cut of pit	
538	26	1	Fill of pit	
506	45	1	Cut of pit	
507	45	1	Basal fill of Pit 506	
508	45	1	Upper fill of Pit 506	Romano-British pottery
549	45	1	Cut of gully	
550	45	1	Fill of gully 549	
551	45	1	Cut of gully	
552	45	1	Fill of gully 551	
553	45	1	Cut of gully	
554	45	1	Fill of gully 553	
555	45	1	Cut of gully	
556	45	1	Deposit/layer	
557	45	1	Fill of gully 553	
558	45	1	Cut of gully	
559	45	1	Fill of gully 558	
560	45	1	Cut of gully	
561	45	1	Fill of gully 560	
562	45	1	Cut of gully	
563	45	1	Fill of gully 562	
564	45	1	Fill of gully 562	
565	45	1	Cut of gully	
566	45	1	Cut of gully	
567	45	1	Fill of gully 566	
568	45	1	Fill of gully 562	
569	45	1	Cut of gully	
570	45	1	Fill of gully 569	
571	45	1	Cut of gully	
572	45	1	Fill of gully 571	
573	45	1	Cut of gully	
574	45	1	Fill of gully 573	
575	45	1	Cut of gully	
576	45	1	Fill of gully 575	
577	45	1	Cut of gully	
578	45	1	Fill of gully 577	

579	45	1	Fill of gully 577
539	52	1	Cut of gully terminal
540	52	1	Fill of 539
541	52	1	Cut of gully
542	52	1	Fill of 541
543	61	1	Cut of gully
544	61	1	Fill of 543
545	61	1	Cut of gully
546	61	1	Fill of 545
547	61	1	Cut of gully
548	61	1	Fill of 547

Appendix 3: Specification

WEST YORKSHIRE ARCHAEOLOGY ADVISORY SERVICE (WYAAS): SPECIFICATION FOR TRIAL TRENCHING TO EVALUATE AND RECORD ARCHAEOLOGICAL REMAINS IN ADVANCE OF DEVELOPMENT AT DARRINGTON QUARRY NORTHERN EXTENSION

Specification prepared on behalf of Wakefield Metropolitan District Council at the request of Ian Roberts of Archaeological Services WYAS (Planning Permission reference 08/01696/FUL)

1 Summary

1.1 A limited amount of archaeological work consisting of trial trenching is proposed to help establish the below ground archaeological survival at the above site and to record it if encountered. **Any significant additional work that may be necessary will be covered by a supplementary specification.** This specification has been written by the West Yorkshire Archaeology Advisory Service (WYAAS), the holders of the West Yorkshire Historic Environment Record. Depending upon the results obtained, additional archaeological work may need to be carried out. This additional work will be governed by separate specifications.

NOTE: The requirements detailed in paragraphs 6.3, 6.4, 6.5, 6.6 and 8.1 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

Grid Reference: centred on SE 4995 2218

2.1 The area proposed for quarrying is located south of Knottingley and north of Darrington. The site is bisected by Leys Lane, which runs north to south. This specification covers the part of the site which lies to the east of Leys Lane, and will be extracted first. A separate specification will be produced for the site to the west of Leys Lane. This first extraction area is bounded to the west by Leys Lane, to the south by the M62, to the east by a railway line and to the north by open fields. The underlying geology is Upper Magnesian Limestone.

2.2 The site is located in the District of Wakefield and the historic township of Knottingley and Cridling Stubbs.

3 Planning Background

3.1 Planning permission for an extension to Darrington Quarry to extract Magnesian Limestone has been granted by Wakefield Metropolitan District Council.

3.2 The Planning Authority have attached an archaeological condition to the above planning permission as they have been advised by the WYAAS that there is reason to believe that important archaeological remains may be affected by the proposed development and that an archaeological evaluation is required to establish the degree of archaeological recording that is necessary. The site has already been subject to a pre-determination geophysical survey and limited trial trenching exercise which demonstrated that significant archaeological remains were present on site,

and that further evaluation and open area excavation would be required before extraction commenced.

3.3 This specification has been prepared by the WYAAS at the request of Ian Roberts of ASWYAS (idroberts@aswyas.com 0113 3837 504), acting on behalf of the applicants, to detail what is required for the evaluation.

4. Archaeological Interest

4.1 Cropmarks visible on aerial photographs show fragments of enclosures and ditches in fields in the vicinity of the site. Investigations of similar enclosures elsewhere in the district have revealed occupation dating to the late prehistoric or the Romano British period.

4.2 Limited pre-determination geophysical survey and trial trenching were carried out in June – September 2008 on the site. The geophysical survey identified evidence of a field system comprising ditches and enclosures of a probably Iron Age/Romano British date in the west and north of the site. To the southwest of the site a large trapezoidal enclosure was also located. Linear anomalies relating to medieval and post medieval ridge and furrow cultivation was identified across the whole of the site.

4.3 The limited trial trenching confirmed the results of the geophysical survey. 23 trenches were opened to investigate the geophysical anomalies. The excavation indicated that the earliest activity on site dated to the pre-Roman Iron Age. A human burial found in a pit was radiocarbon dated to this period. The finds evidence indicated that activity on site mostly occurred during the 3rd and 4th centuries AD, in the later Roman period.

5. Aim of the Specified Work

5.1 The aim of this project is to gather sufficient information to establish the extent, condition, character and date (as far as circumstances permit) of any archaeological features and deposits within the proposed development area, and to record at an appropriate level, archaeological features encountered in the excavation trenches, with the aim of elucidating the issues discussed in section 4.

5.2 More specifically, the aims of the project would be to;

- to preserve by record the archaeological remains that will be impacted by the proposed development;
- to confirm and enhance the results of the earlier evaluation;
- to determine if the features relate to prehistoric/ Roman agricultural field systems or settlement activity;
- to where possible determine how these features fit into the prehistoric/ Roman landscape of the area;
- if more than one period is represented on site determine whether there is continuity between these;
- to establish the evidence for continuity of Iron Age/ Roman occupation;

- to determine if any other human burials are located on site;
- to contribute information to key research objectives identified by the following research agendas:
 - I. The Neolithic, Bronze Age and Iron Age in West Yorkshire (Blaise Vyner 2008); and
 - II. The Iron Age & Romano-British periods in West Yorkshire (Adrian Chadwick 2009).

5.3 It is conceivable that a larger, more open area excavation may be identified as being warranted, or alternatively a wider strip and record exercise may be required during top soil stripping prior to extraction, possibly with provision for rapid salvaging recording. All possibilities will be considered depending upon the results of this exercise and it would be anticipated that if further significant fieldwork is required, then the contractor would draft the specification and agree it with the WYAAS. It is a primary aim of the specified work that all aspects should be placed in the public domain by depositing the results with the WY Historic Environment Record (Registry of Deeds, Newstead Road, Wakefield WF1 2DE)

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. This work may require the preparation of a Risk Assessment of the site, in accordance with the Health and Safety at Work Regulations. The 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 Location of Services, etc.

6.2.1 The archaeological contractors 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.

6.3 Confirmation of Adherence to Specification

6.3.1 Prior to the commencement of *any work*, the archaeological contractor must confirm adherence to this specification in writing to the 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 the West Yorkshire Archaeology Advisory Service 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 the WYAAS.** Any technical queries arising from the specification detailed below should be addressed to the WYAAS *without delay*.

6.4 Confirmation of Timetable and Contractors' Qualifications

6.4.1 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.*),

6.4.2 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.

6.5 Notification

6.5.1 The project will be monitored as necessary and practicable by the WYAAS, in its role as “curator” of the region’s archaeology. The WYAAS should receive as much notice as possible, and certainly one week, of the intention to start fieldwork. This notification is to be supplied **in writing**, and copied to the relevant District Museum (see para. 9.1 below). As a courtesy, English Heritage’s Regional Science Adviser Dr Andy Hammon should also be notified of the intention to commence fieldwork (contact : tel. 01904 601983; email andy.hammon@english-heritage.org.uk). A copy of the contractor’s risk assessment should accompany notification of intention to commence work.

6.6 Documentary Research

6.6.1 A Desk Based assessment, geophysical survey and limited trial trenching have already been carried out for this project; copies of these reports should be obtained from ASWYAS who have requested this specification. In addition to providing a knowledge base for the work in hand, the results of these investigations may be incorporated into the contractor’s fieldwork report where they are considered to contribute to that report, but any extraneous material should be omitted. The results of the desk based assessment, along with the results of the earlier geophysical survey and trial trenching should be used to help inform the interpretation of the survey results.

7.0 Trenching Methodology

7.1 Trench Size and Placement (Figure 1)

7.1.1 The work will involve the excavation of forty seven 50m by 2m trenches (marked in green on figure 1), thirteen 50m by 4m trenches (marked in blue on the attached map), three 25m by 4m trenches (also marked in blue) which can be machine-opened. (An area excavation covering 8500m² is also proposed, but this is final stage mitigation and may be added to once the results of this evaluation are known.) The contractor should also allow for a contingency amount of 400 square metres. The use of the contingency will depend upon the results obtained in the initial trial trenching. The use of the contingency will be at the decision of the WYAAS, whose decision will be issued in writing, if necessary in retrospect after site discussions. Proposed trench locations are shown on Figure 1.

7.1.2 The trench plan was prepared by ASWYAS after visits to the site and discussions with the developer.

7.2 Method of Excavation

7.2.1 The trial trenches may be opened and the topsoil and recent overburden removed down to the first significant archaeological horizon in successive level spits of a **maximum** 0.2m. thickness, by the use of an appropriate machine using a wide toothless ditching blade. **Under no circumstances should the machine be used to cut arbitrary trenches down to natural deposits.** Any 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 and then dug by hand.

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 **complete** stratigraphic sequence, down to naturally occurring deposits will be excavated and the work will investigate and record **all** inter-relationships between features. The contractor should make provision for the use of shoring/stepping to accomplish this if necessary. All trenches are to be the stated dimensions at their base. The following 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.
- 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.
- 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 20th-century material, which may be noted and discarded. Finds will be stored in secure, appropriate conditions following the guidelines in First Aid for Finds (3rd edition).

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 Digital photography: as an alternative to 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. 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."

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 by English Heritage in the Centre for Archaeology Guidelines no.1 (2002), "Environmental Archaeology. A Guide to the Theory and Practice of Methods, from Sampling and Recovery to Post-excavation".

7.5.2 Samples for specialist environmental analysis and scientific dating (soil profiles, archaeomagnetic dating, dendrochronology etc.) should be taken if suitable

material is encountered during the excavation. The English Heritage Regional 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. The sampling strategy used must be presented in the evaluation report.

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 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 the WYAAS with the relevant information to enable them to resolve the matter with the developer.

7.10 Access/Monitoring Arrangements

7.10.1 The representative of the WYAAS 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. The WYAAS’ 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 the

WYAAS' representative, by the next agreed site meeting. Access is also to be afforded at any reasonable time to English Heritage's Regional Archaeological Science Advisor.

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

8. Excavation Archives Deposition.

8.1 Before commencing any fieldwork, the archaeological contractor must contact the archaeological curator of the relevant district museum to determine the museum's requirements for the deposition of an excavation archive. In this case the contact is Wakefield M.D.C. Museum and Arts, Pontefract Museum, 5 Salter Row, Pontefract, WF8 1BA. telephone 01924 305352; Museums Curatorial and Collections Officer: Mr David Evans. Agreement for deposition should be confirmed in writing by the archaeological contractor; this correspondence is to be copied to the WY Archaeology Advisory Service.

8.2 It is the policy of Wakefield Museums 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.

8.3 It is the responsibility of the archaeological contractor to endeavour to obtain the written consent of the landowner to the deposition of finds with Wakefield Museums.

8.4 It is the responsibility of the archaeological contractor to meet Wakefield Museum's requirements in the preparation of excavation archives for deposition.

9. Post-Excavation Analysis and Reporting

9.1 Requirement for Further Fieldwork

9.1.1 It is anticipated that upon (or approaching) completion of fieldwork a meeting with WYAAS will be arranged by the archaeological contractor, either at the WYAAS offices or on site, to discuss the results and agree what, if any, additional work may be warranted. The developer should also be invited to attend this meeting. The meeting may take the form of a telephone discussion at WYAAS' discretion. Following the meeting the archaeological contractor will either produce a report (if no further archaeological work is warranted), or draft a specification (if further work is required) to be submitted to WYAAS for written approval prior to the commencement of any further work.

9.1.2 If further fieldwork is required, the results of the evaluation will be integrated into an overall report encompassing all stages of work. However, if a different contractor is employed by the developer to undertake subsequent works, then a full, formal evaluation report (see paragraph 9.3 below) should be prepared and accepted by WYAAS before further fieldwork commences.

9. Post-Excavation Analysis and Reporting

9.1 Finds and Samples

9.1.1 On completion of the fieldwork, any samples taken shall be processed and any finds shall be cleaned, identified, assessed/analysed, dated (if possible), marked (if appropriate) and properly packed and stored in accordance with the requirements of national guidelines.

9.1.2 Samples should be processed for the recovery of artefactual material, animal/fish/human bones, industrial residues (including hammerscale), shell, molluscs, charcoal and mineralised plant remains as a minimum. 'Specialist' samples (e.g. monoliths, cores, plant/invertebrate macrofossils) should be processed separately as appropriate.

9.1.3 Material suitable for scientific dating (e.g. charcoal) should be identified to species and assessed for suitability by an environmental specialist prior to submission to a dating laboratory. Any human remains submitted for C14 dating should also have carbon ($\delta^{13}\text{C}$) and nitrogen isotope analysis carried out by the radiocarbon laboratory.

9.1.4 All finds and biological material must be analysed by a qualified and experienced specialist.

9.1.5 Following identification, finds of 20th-century date should be noted, quantified and summarily described, but can then be discarded if appropriate. All finds which are of 19th century or earlier date should be retained and archived.

9.2 Field Archive

9.2.1 A fully indexed field archive shall be compiled consisting of all primary written documents, plans, sections, photographic negatives and a complete set of labelled photographic prints/slides. 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 9.1 above). An index to the field archive is to be deposited with the West Yorkshire Archaeology Advisory Service (preferably as an appendix in the report).

9.2.2 Prints may be executed digitally from scanned versions of the film negatives, and may be manipulated to improve print quality (but **not** in a manner which alters detail or perspective). All digital prints 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 WY Archaeology Advisory Service, with supporting documentation indicating their archival stability/durability. Written confirmation that the materials are acceptable must have been received from the WYAAS prior to the commencement of work on site.

9.2.3 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

para. 8.4 above). In the absence of this agreement the field archive (less finds) is to be deposited with the West Yorkshire Archaeology Advisory Service.

9.3 Report Format and Content

9.3.1 A report should be produced, which should include background information on the need for the project, a description of the methodology employed, and a full description and interpretation of results produced. It is not envisaged that the report is likely to be published, but it should be produced with sufficient care and attention to detail to be of academic use to future researchers.

9.3.2 Location plans should be produced at a scale which enables easy site identification and which depicts the full extent of the site investigated (a scale of 1:50,000 is not regarded as appropriate unless accompanied by a more detailed plan or plans). Site plans should be at an appropriate scale showing trench layout (as dug), features located and, where possible, predicted archaeological deposits. Upon completion of each evaluation trench all sections containing archaeological features will be drawn. Section drawings (at a minimum scale of 1:20) must include heights O.D. Plans (at a minimum scale of 1:50) must include O.D. spot heights for all principal strata and any features. Where no archaeological deposits are encountered at least one long section of each trench will be drawn.

9.3.3 Artefact analysis is to include the production of a descriptive catalogue, quantification by context and discussion/interpretation if warranted, with finds critical for dating and interpretation illustrated.

9.3.4 Environmental analysis is to include identification of the remains, quantification by context, discussion/interpretation if warranted, and a description of the processing methodology. Radiocarbon results must be presented in full (laboratory sample number, conventional radiocarbon age, delta C13 value, calibration programme). Copies of the laboratory-issued dating certificates must be included as an appendix to the report.

9.3.5 Details of the style and format of the report are to be determined by the archaeological contractor, but should include a full bibliography, a quantified index to the site archive, and as an appendix, a copy of this specification.

9.4 Summary for Publication

9.4.1 The attached summary sheet should be completed and submitted to the WYAAS for inclusion in the summary of archaeological work in West Yorkshire to be published on WYAAS' website.

9.5 Publicity

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

10. Report Submission and Deposition with the HER

10.1 A copy of the report is to be supplied **directly** to the WYAAS within a period of **two months** following completion of fieldwork, unless specialist reports are awaited.

In the latter case a revised date should be agreed with the WYAAS. Completion of this project and advice from WYAAS on an appropriate mitigation strategy are dependant upon receipt by WYAAS of a satisfactory report which has been prepared in accordance with this specification. 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.

10.2 The report will be supplied on the understanding that it will be added to the West Yorkshire Historic Environment Record where it will be publicly accessible once deposited unless confidentiality is explicitly requested, in which case it will become publicly accessible six months after deposition.

10.3 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.

10.4 A copy of the final report shall also be supplied to English Heritage's Regional Science Advisor (Dr Andy Hammon, English Heritage, 37 Tanner Row, YorkY01 6WP).

10.5 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.

11. General Considerations

11.1 Authorised Alterations to Specification by Contractor

11.1.1 It should be noted that this specification is based upon records available in the West Yorkshire Historic Environment Record and on a brief examination of the site by the WYAAS. Archaeological contractors submitting tenders should carry out an inspection of the site prior to submission. If, on first 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, and/or

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 the 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.

11.2 Unauthorised Alterations to Specification by Contractor

11.2.1 It is the archaeological contractor's responsibility to ensure that they have obtained WYAAS' 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 Officer based on the archaeological information available and are therefore made solely at the risk of the contractor.

11.3 Technical Queries

Similarly, any technical queries arising from the specification detailed above, should be addressed to WYAAS without delay.

11.4 Valid Period of Specification

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.

**West Yorkshire Archaeology Advisory Service
Rebecca Remmer**

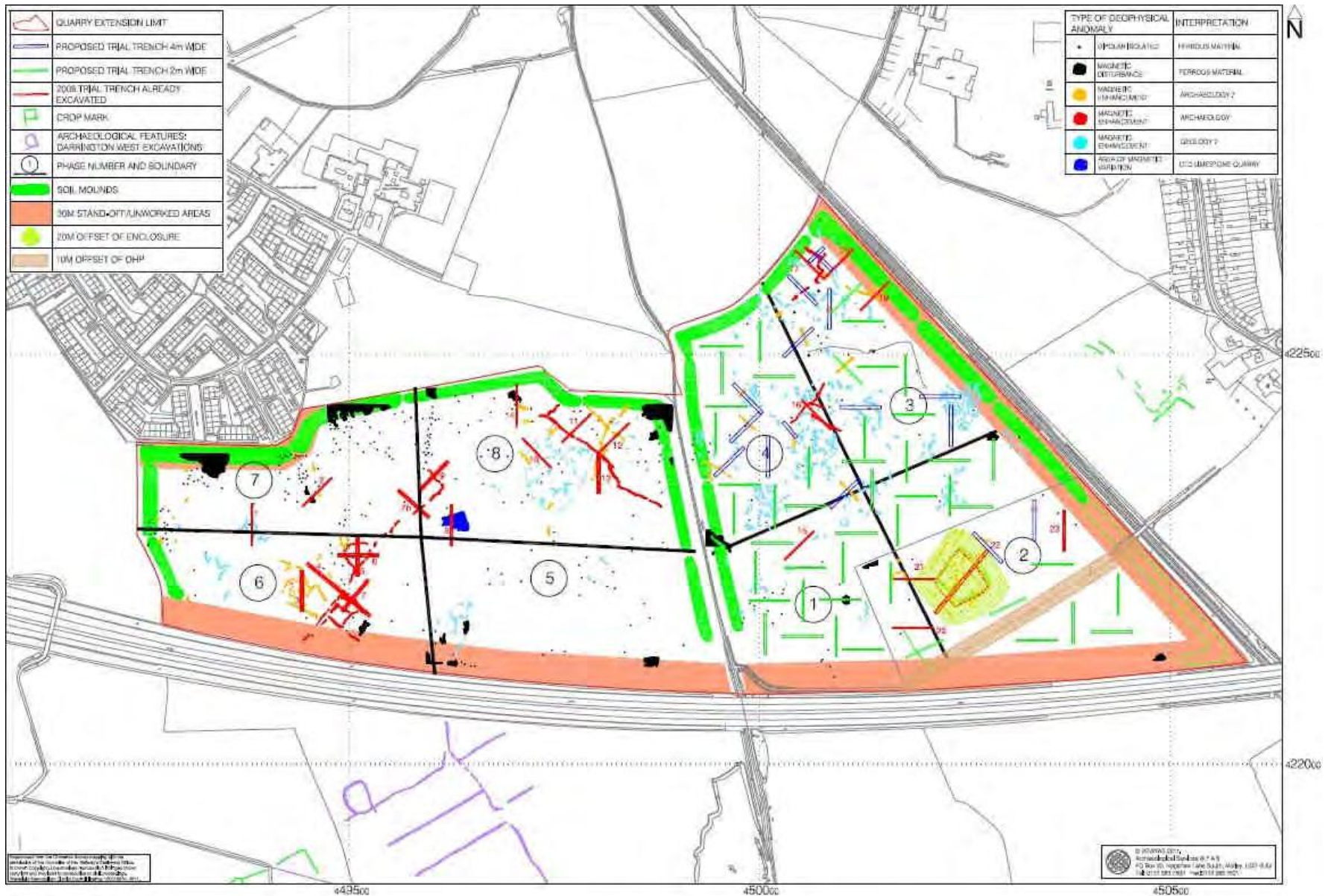
August 2011

**Historic Environment Record
West Yorkshire Archaeology Advisory Service
Registry of Deeds
Newstead Road
Wakefield
WF1 2DE**

**Telephone: (01924) 305992
Fax: (01924) 306810
E-mail: rremmer@wyjs.org.uk**

	QUARRY EXTENSION LIMIT
	PROPOSED TRIAL TRENCH 4m WIDE
	PROPOSED TRIAL TRENCH 2m WIDE
	2008 TRIAL TRENCH ALREADY EXCAVATED
	CROP MARK
	ARCHAEOLOGICAL FEATURES: BARRINGTON WEST EXCAVATIONS
	PHASE NUMBER AND BOUNDARY
	SOIL MOUNDS
	30M STAND-OFF/UNWORKED AREAS
	20M OFFSET OF ENCLOSURE
	10M OFFSET OF OHP

TYPE OF GEOPHYSICAL ANOMALY	INTERPRETATION
	FERROUS MATERIAL
	FERROUS MATERIAL
	ARCHAEOLOGY ?
	ARCHAEOLOGY
	GEOLOGY ?
	SOIL OF UNIDENTIFIED ORIGIN



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