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WYAS

Kirkhamgate to Selby Water Pipeline

Archaeological Investigations

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Kirkhamgate to Selby Water Pipeline

Archaeological Investigations

Contents

Volume 1

Summary
1 Introduction
2 Topography and Geology
3 Archaeological Background
4 Method
5 Catalogue of archaeological sites
6 Site 16 Lofthouse Hill, Lofthouse
7 Site 18 Coney Warren Lane, Lee Moor
8 Site 43 Grim's Ditch, Swillmgton Bridge
9 Site 46 Cockpit Round, Swillmgton Bridge
10 Site 62 Kippax Deer Park, Kippax
11 Sites 65 Roman Road, Kippax Mill
12 Sites 69 and 71 Crispm Quarry/Back Newton Lane, Ledston
13 Site 84 Lumby
Bibliography
Acknowledgements
Appendix I Archive Inventory
Appendix II Context Descriptions
Appendix III Fmds
Appendix IV Specification
Appendix V Aerial Photographic Rectification

Summary

The construction of the Kirkhamgate to Selby Water Pipeline impacted upon a number of archaeological sites identified through Desk-based Assessment and a walkover field survey of the pipeline corridor Recommendations for archaeological mitigation were subsequently put forward by the respective Sites and Monuments Record offices for North and West Yorkshire

Excavations showed the continuation of nearby cropmark complexes across the area of the easement at many sites along the route and evidence for late Iron Age/Romano-British iron-working was identified near Ledston

The results of previous work suggested that construction of the pipeline would intersect the southern end of Grim's Ditch near Swillington Bridge This feature did not, however, appear to extend into the line of the easement

1 Introduction

1 1 The route of the proposed water main extended from Jaw Hill Reservoir (SE 2926 2330), Kirkhamgate, West Yorkshire to Brayton Reservoir (SE 5842 3038), Selby, North Yorkshire in a 35km linear corridor (Fig 1) The likely impact upon sites and areas of known archaeological interest was assessed by Keith and Roberts (1997)

1 2 Archaeological Services (WYAS) were commissioned by Yorkshire Water Services Limited to undertake a walkover field survey during December 1995 The results of this work were used by the respective county Sites and Monuments Record (SMR) offices as a basis to prepare recommendations for archaeological mitigation (Appendix IV)

1 3 The requirement for further work was carried out between December 1995 and March 1996 by up to 7 officers of WYAS, and varied from summary written statements to detailed excavation

2 Topography and Geology

2 1 The pipeline ran from Kirkhamgate in the west to Brayton Barff reservoir in the east on the edge of the Vale of York at Thorpe Willoughby, a distance of about 35km The open land along the corridor is mainly used for pasture and arable farming, but also includes areas of industrial activity

2 2 To the west of Ledston, the geology mainly comprises Coal Measures sandstones with localised areas of boulder clay, sands and gravels to the south of Oulton Park Deposits of glacial/alluvial material are centred along the route of the River Aire (Ordnance Survey (O S) 1962) To the east of Kippax, deposits of Magnesian Limestone predominate, with a

localised area of Middle Permian Marl around Ledsham These give way to silts, clays and sands to the east of Monk Fryston

3 Archaeological Background

3 1 The Desk-based Assessment prepared by Keith and Roberts (1997) collated information from SMR base maps, local archives and aerial photograph collections to produce a catalogue of known and potential archaeological sites within the vicinity of the pipeline corridor

3 2 The Assessment notes sites of the Romano-British, Anglo-Saxon, medieval and industrial periods Of the 104 sites listed (Figs 2-6), 23 sites required further consideration as a direct result of the pipe-laying operation A background summary of each of the sites investigated is presented in the catalogue of Section 5 Further background detail of the more significant sites is given in Sections 6 to 13

4 Method

4 1 The method of investigation was largely determined by the recommendations of the county SMRs and by the nature of threat to each site Details of excavation and recording requirements are set out m Appendix IV

4 2 The pipeline was re-routed where possible in order to avoid areas of interest Where this was not possible, or where the extent of archaeological activity could not be determined, sites of interest were evaluated prior to the initial construction work

4 3 In general, the pipeline construction contractors used 360° excavators and bulldozers to remove topsoil down to the level of natural geology Under archaeological supervision, machining was undertaken by a 360° excavator, equipped with a toothless bucket, in spits down to either the first archaeological horizon or the underlying geology The width of the investigated area varied between the width of the easement (20m) and the pipe trench (1 5m)

4 4 Excavation and recording were undertaken in accordance with the West Yorkshire Archaeology Service Site Recording Manual (Boucher 1995)

4 5 Sites of limited archaeological significance were summarily recorded and photographed The catalogue of Section 5 outlines the nature of mitigation for each site Sites which required more detailed recording, and the methodologies adopted, are described in more depth in Sections 6 to 13

5 Catalogue of Archaeological sites

West Yorkshire

5 1 Site 7 Coglands Wood, East Ardsley SE 303 243

Background A possible sub-rectangular enclosure is visible as a cropmark to the east of Coglands Wood and to the north of the M1 (Fig 2)

Mitigation The area was stripped along the line of the easement adjacent to the enclosure prior to construction (Fig 7) Any potential archaeological features uncovered were excavated and recorded

Results A number of features were investigated The features were irregular in plan and profile with clean compacted fills, containing abundant coal fragments, suggesting natural formation processes The features were not recorded

5 2 Site 10 Lingwell Gate, Outwood SE 322 256

Background The wood at Outwood (Fig 2) is part of the extensive demesne of Wakefield Manor mentioned in the Domesday Book The pipeline was thought to cut through the park pale/boundary enclosing the wood at Lingwell Gate

Mitigation An earthwork survey was required if the park pale was still extant If necessary, further detailed recording entailed a watching brief and the recording of a cross-section through the earthworks where they intercepted with the easement

Results A field inspection of the site produced no evidence of an extant park pale No further work was undertaken on the site

5 3 Site 16 Lofthouse Hill, Lofthouse SE 336 256

Background Aerial reconnaissance and cartographic research identified a number of cropmarks and features to the north and east of Lofthouse Hill (Fig 2) Lofthouse Park Farm is visible on O S maps from *c* 1970, but no buildings are depicted in this location on earlier editions

Mitigation An archaeological excavation was recommended on the site

Results See Section 6

5 4 Site 18 Coney Warren Lane, Lee Moor SE 3423 2570

Background Cropmarks and landscape features (of unknown date), interpreted

as a possible enclosure and field system, were identified within the immediate vicinity of the pipeline easement (Fig 2) An extensive large dark area was also noted to the north-west of the site which coincides with the location of the Lee Moor sandstone quarry on the 1851 edition O S

Mitigation An archaeological excavation was recommended on the site

Results See Section 7

5 5 Site 32 Mill Field, Oulton SE 367 280

Background The site of a 'Corn Mill' is situated to the east of Oulton (O S 1854), Fig 3 A field named 'Mill Field' is located immediately to the east of the mill site (Oulton with Woodlesford Tithe n d)

Mitigation A field inspection prior to construction produced no evidence of archaeological features No further work was undertaken on the site

5 6 Site 33 Oulton Hall, Oulton SE 367 280

Background Aerial photographs show a variety of cropmarks and earthworks to the east of Oulton Hall (Fig 3) The area encompasses north-south orientated ridge and furrow earthworks, of possible medieval date, and east-west aligned linear features, of possible alluvial origin, to the east, cut by a circular feature interpreted as a pond

A narrow copse containing a ditch up to 2m deep was noted to the east which ran parallel to the road The ditch has been interpreted as a boundary or park pale for Oulton Hall The cropmark of a possible two sided enclosure was located north of the ditch One metre deep curved terracing was also noted on site

Mitigation A field inspection undertaken prior to construction produced no evidence of archaeological features No further work was undertaken on the site

5 7 Site 34 Tintercroft, Oulton SE 366 282

Background The field to the east of Greenland Farm, Fig 3, was described as 'Tinter Croft' in the Oulton with Woodlesford Tithe (n d) A tenter field, or croft, indicates that fulling was carried out nearby This suggests that the field was used by textile workers to dry and stretch cloth on tenterhooks in the open air

Method A field inspection undertaken prior to construction produced no evidence of archaeological features No further work was undertaken on the site

5 8 **Site 35 Methley Lane, Oulton** **SE 369 281**

Background A possible north-east to south-west orientated ditched lane or trackway has been identified to the east of Oulton and the north of Methley Lane (Fig 3) through aerial reconnaissance Cropmarks and earthworks were also observed to the south and south-west of the site

Method A field inspection undertaken prior to construction produced no evidence of archaeological features No further work was undertaken on the site

5 9 **Site 43 Grim's Ditch, Swillington Bridge SE 374 295**

Background The scheduled monument known as Grim's Ditch formed a north-south orientated bank and ditch earthwork which, although traditionally thought to be of post-Roman 'Dark Age' date, has recently produced evidence of the late Iron Age/Romano-British period (Wheelhouse 1997) The course of the ditch is thought to extend northwards from the River Aire, (roughly) followmg the line of Bullerthorpe Lane

Observations by Wilmott (1993) suggested that the south end of Grim's Ditch would be exposed immediately north of the River Aire at Site 43, Fig 3

Mitigation A watching brief was recommended on the site

Results See Section 8

5 10 **Site 46 Cockpit Round, Swillington Bridge SE 376 296**

Background A series of linear earthworks incorporating (probable) medieval ridge and furrow ploughing were observed during the walkover survey to the north of Cockpit Round, south of Wakefield Road, Fig 3

Mitigation A rapid earthwork survey, annotated by field notes, was undertaken

Results See Section 9

5 11 **Site 47 Swillington Park** **SE 377 296**

Background An earthwork dam of unknown date was observed to the west and north-west of Garden Cottage and north-east of Cockpit Round, Fig 3 A 'Chapel pond' was noted to the south of the dam (O S 1850 sheet 219) The pond was situated within the park/garden of Swillington House

Method The easement in the vicinity of the site was examined during pipeline construction, but no further evidence of archaeological activity was observed

5 12 Site 55 Peasecroft Wood, Great Preston SE 394 299

Background A possible sub-rectangular enclosure (which utilised a ditched lane on one side) has been identified through aerial reconnaissance to the west of Great Preston and Peasecroft Wood (Fig 3)

Mitigation The pipelme route was altered slightly prior to work commencing An advance strip section along the new route was recommended

Results The observed linear features proved to be land-drams on excavation and were not recorded No further features or deposits of archaeological interest were seen

5 13 Site 62 Kippax Deer Park SE 415 297

Background The pipeline route intercepted the extant section of the ditch and bank earthwork which once formed the westem boundary of Kippax Deer Park (1850 edition O S), see Fig 4 It is possible that modem nearby sites of open cast mimng have destroyed part of the earthwork

Mitigation The affected part of the earthwork was photographed, described and subject to a rapid earthwork survey A watching brief and record of the earthworks in cross-section were recommended during subsequent pipe-laying works This work was, however, effected without archaeological supervision

Under the conditions of the specification the earthworks were to be reinstated after the completion of site works

Results See Section 10

5 14 Site 65 Roman Ridge Road, Kippax Mill SE 428 297

Background The pipeline intersected the line of Roman Road 28b (Margary 1967) between Castleford and Aberford (Fig 4)

Mitigation The pipeline was inserted beneath the road m a manner such that the modem road surface was not disturbed The areas to either side of the road were stripped and trenches/reception pits excavated prior to the arrival of archaeologists on site Visible features were recorded following the partial backfilling of the pits and trenches

Results See Section 11

5 15 **Site 69 Crispin Quarry, Ledston** **SE 436 297**

Background Aerial photographs revealed extensive cropmarks (covering over 20ha) of enclosure complexes with trackways, field boundaries, pits and possible hut circles or barrows in this location (Fig 4) The pipeline was routed to the south of the main area of visible activity

A small excavation was undertaken in 1976, centred at SE 4339 2954, immediately north of the pipeline easement This produced evidence of a possible hut circle and granary structures with domestic and burial activity of probable Iron Age/Romano-British date

Mitigation A geophysical survey was initially undertaken in order to identify any potential archaeological features that were not visible on aerial photographs The easement to the west and east of Spartal Lane (forming Sites 69A and 69B respectively) was then subject to an archaeological excavation in advance of pipe-laying works

Results See Section 12

5 16 **Site 71 Back Newton Lane, Ledston** **SE 439 295**

Background Aerial photographs show linear cropmarks and a possible enclosure to the west of Park House Farm and to the north of Back Newton Lane (Fig 4)

Mitigation A geophysical survey was imtially carried out along the easement to identify possible features in this area The easement to the east Site 69B and the north of Back Newton Lane was then subject to archaeological excavation

Results See Section 12

5 17 **Site 79 Ledsham (1)** **SE 458 292**

Background Aerial reconnaissance identified a rectilinear enclosure abutting the north side of an east-west trackway and a rectilinear field system to the south of Ledsham (Fig 4) The enclosure appeared to be divided by a series of irregular ditches into compartments containmg areas of pitting It was possible that this activity extended into the pipe corridor area

Mitigation The line of the easement was subject to a field inspection and scaiming by fluxgate gradiometer survey

Results No features were identified and, consequently, no further work was undertaken One pottery sherd, of probable Iron Age/Romano-British date was recovered from the topsoil during field inspection

5 18 **Site 81 Ledsham (2)** **SE 461 295**

Background Aerial photographs revealed cropmarks representing possible trackways, ditches and enclosures to the west and south-west of the Sewage Works to the south-east of Ledsham (Fig 4)

Mitigation The easement was scanned by fluxgate gradiometer in order to identify areas of possible archaeological interest and stripped under archaeological supervision

Results No features or deposits of archaeological interest were detected and no further work was undertaken

5 19 **Site 82 Street Close Plantation, Lumby** **SE 469 300**

Background A field identified by the field name 'Street Close Plantation' is situated immediately to the north-east of the junction of the A1 and the A63 (towards Selby) and may relate to a Roman road in the area (Fig 4)

Mitigation The line of the easement was subject to a field inspection and scanning by fluxgate gradiometer

Results No features consistent with a Roman road were detected and no further work was undertaken

North Yorkshire

5 20 **Site 84 Lumby** **SE 495 301**

Background Aerial reconnaissance identified an extensive complex of cropmarks, consisting of trackways, ring ditches, enclosures and field boundaries to the north-east and east of Lumby (Fig 5)

Mitigation The line of the easement was initially scanned by gradiometer to identify possible archaeological features in this area, although no anomalies were detected The easement was subsequently stripped and excavated under archaeological control

Results See Section 13

5 21 **Site 88 Deer Park, Monk Fryston** **SE 506 303**

Background The pipeline crossed the possible line of a park pale at the northern boundary of Monk Fryston Deer Park (Fig 5)

Mitigation The line of the easement was subject to a field inspection which produced no evidence of the park pale No further work was

undertaken

5 22 ***Site 93 Stocking Lane, Hambleton*** **SE 544 303**

Background Aerial photographs show a possible sub-rectangular enclosure or field boundary to the west of Stocking Lane (Fig 6)

Mitigation The easement was stripped under archaeological control and a watching brief undertaken

Result The observed linear features proved to be land-drams upon excavation and were not recorded No further features or deposits of archaeological interest were observed

5 23 ***Site 98 Field Lane, Hambleton*** **SE 562 303**

Background Linear and curvilinear cropmarks of possible field boundaries to the north and north-west of Field Lane were identified through aerial reconnaissance (Fig 6)

Mitigation The line of the easement was subject to a field inspection

Results The park pale was not observed during the field inspection and no further work was undertaken

5 24 ***Site 104 Brayton Barff, Thorpe Willoughby*** **SE 585 305**

Background The pipeline rims across a prominent hill to the south-east of Thorpe Willoughby (Fig 6), named as 'Braitunberh' and 'Braytonbergh' in the 14th century, a name originating from the Old English 'Beorgh' meaning hill or mound (Smith 1961)

Brayton Barff appears to have been exploited in Palaeolithic and Mesolithic times when the land formed an island in the glacial flood plains of the Vale of York (Faull and Moorhouse 1981) Several Mesolithic flints, including scrapers, cores, blades and microliths have been recovered in the past

Mitigation The North Yorkshire SMR requested that a watching brief be carried out in this area m order to try and identify former shore lines that may have made attractive habitats for hunter-gatherer communities However, works on both the pipe-laying operation and the construction of the new pumping station were carried out without notification to the archaeological contractors

6 Sites 16 Lofthouse Hill, Lofthouse

6 1 Introduction

6 1 1 Extensive cropmark features have been identified through aerial reconnaissance at Site 16 (see Section 5 3) between the M62 and Lofthouse Park Farm (SE 336 256, Fig 8) The site is situated on pasture above the 80m contour, which slopes down gently to the east, above a geological base of Middle Coal Measures sandstones

6 1 2 Sites 16 and 18 (see Section 7) were simultaneously excavated on the 24th and 25th February 1996 with 5 WYAS officers present on site

6 2 Archaeological Background

6 2 1 The cropmarks appear to represent a sub-rectangular ditched complex, of at least two phases, which extends over 90m from east to west, and 130m from north to south The enclosures seem to have been sub-divided internally and enclosed externally by what is probably a later system of larger scale land division It is the latter part of the complex, to the south of the main enclosures, which was investigated at the present site

6 2 2 The visible extent of the entire complex covers an area of *c* 4 3 ha The date of the cropmark enclosures is unknown, but would typically be attributed the Iron Age or Romano-British periods

6 3 Method

6 3 1 An archaeological trench was opened by mechanical stripping along the line of the pipe trench The resulting trench was 210m by 1 5m in plan, but was widened to 7m in areas where archaeology was located

6 3 2 Due to time limitations, large features were machine excavated under constant archaeological supervision down to the primary fills, which were thereafter excavated by hand All other features were hand excavated

6 3 3 The features were planned using a Geotronics Geodimeter 600 Total Station instrument, related to temporary site bench marks Recording was otherwise undertaken by hand

6 4 Results (Fig 9)

6 4 1 Two north-south orientated ditches, some 43m apart, were recorded Ditch 201, to the west was machine excavated to show an irregular V-shaped profile of 2m width and 0 55m depth containing a single light orangey brown sandy silt fill, 202 The section was subsequently cut back *c* 0 5m by hand in an attempt to retrieve datable evidence, none was recovered

6 4 2 Ditch 204 showed a more concave profile, of 1 1m width and 0 36m depth, containing a single mid-brown sandy silt fill, 204 No finds were recovered

6 4 3 Immediately east of ditch 204, a spread of coal fragments over 42m wide was observed The deposit appears to relate to possible farm buildings, the brick foundations of which were exposed to the east end of the trench

6 5 Discussion

6 5 1 The parallel nature of the two ditches suggests that they co-existed for a period of time The rectified aerial photograph evidence (Fig 8) indicates that these features form part of the field complex to the north of the easement No finds were recovered from the excavated fills, however, and it is not possible to interpret the date or function of these features with any certainty

6 5 2 The brick foundations to the east of the site were coincident with the mapped location of farm buildings visible on O S editions after *c* 1970 The area of concentrated coal fragments to the west of these buildings is interpreted as a coal waste dump of a probable modem date

7. Site 18 Coney Warren Lane, Lee Moor

7 1 Introduction

7 1 1 Extensive cropmark features were identified through aerial reconnaissance between the M62 and Coney Warren Lane (SE 3423 2570, see Section 5 4), Fig 10 The site is situated on gently sloping pasture above the 50m contour, sloping gently dovmwards to the north and east, above a geological base of Middle Coal Measures sandstones

7 1 2 Sites 16 and 18 (see Section 7) were simultaneously excavated on the 24th and 25th February 1996 with 5 WYAS officers present on site

7 2 Archaeological Background

7 2 1 The cropmarks seem to portray a series or succession of small enclosures (no more than 30m wide) arranged along a principal north-east to south-west orientated axis The cropmarks are visible over an area of *c* 200m by 60m

7 2 2 Partly destroyed by the construction of houses along Coney Warren Lane, it is difficult to form an impression of the likely date or function of the complex

7 3 Method

7 3 1 The topsoil was mechanically stripped using a toothed bucket and bulldozer prior to the notification of the archaeological contractor A 3m wide and 165m long area was subsequently cleaned along the line of the pipe trench under archaeological supervision

7 3 2 Due to time limitations, large features were machine excavated under constant archaeological supervision down to the primary fills, which were thereafter excavated by hand All other features were hand excavated

7 3 3 The features were planned using a Geotromcs Geodimeter 600 Total Station instrument, related to temporary site bench marks Recording was otherwise undertaken by hand

7 4 Results (Fig 11)

7 4 1 Five linear features were uncovered, of which four were grouped towards the east end of the site Features 006 and 008 were 1m apart on the same north-east to south-west orientation and were, respectively 0 35m and 0 6m wide, and *c* 0 1m deep The north-west to south-east orientated feature, 004, was of similar dimensions and profile but showed a more irregular base

7 4 2 The excavated segment of feature 012 showed a U-shaped profile with two fills The feature lay *c* 9m to the west of ditch 004 on a comparable orientation and measured 0 8m wide and 0 34m deep The fills were characterised by a dense packing of sandstone fragments, particularly towards the base

7 4 3 A small, circular feature, 001, initially interpreted as a post-hole, was observed *c* 4m to the north-east of feature 012 The feature, *c* 0 5m m diameter and 0 25m deep, showed a charcoal rich primary fill and reddened edges upon excavation, demonstrating *in situ* burning, and suggesting a more likely interpretation as a hearth

7 4 4 Feature 013, situated *c* 100m to the west of the above group, was orientated north-east to south-west, with a U-shaped profile of 1 4m width and 0 5m depth Much of the area between these features comprised a landfill site containing unknown industrial waste Feature 013 was therefore recorded by context and an unlevelled sketch section to limit time in the area

7 5 Discussion

7 5 1 The shallow depth and profiles of features 004, 006 and 008 suggest that they might be the result of scoring of the sub-surface by heavy ploughing In contrast, the more substantial features, 010 and 013, suggest boundary ditches The similar alignment of 'plough-marks' and the larger ditches indicates a likely contemporaneity No finds were recovered, however, and it is not possible to attribute a likely date for the origin of these features

7 5 2 The orientation of the larger ditches may indicate that they were part of the same field system and feature 013, in particular, corresponds well with the rectified cropmarks of Fig 10 The date and function of the plotted cropmark complex remains unknown

7 5 3 The recorded area of quarrying/landfill would appear to verify the location of the Lee Moor sandstone quarry visible on the 1854 edition O S

8. Site 43. Grim's Ditch, Swillington Bridge

8 1 Introduction

8 1 1 The pipeline route was thought to intersect the possible southern extent of Grim's Ditch (see Section 5 1) to the north-east of the River Aire, and to the south of the A642 at SE 3738 2948 (Fig 12)

8 1 2 A watching brief of the area within the flood plain of the Aire and the Aire and Calder Navigation was undertaken The site comprises pasture and parkland associated with Swillington Park, which rises to the north and east to 18m AOD The geology consists of alluvium over Middle Coal Measures sandstones with frequent faulting

8 1 3 Archaeological investigation of the site was carried out as necessary between 12th February and 13th March 1996 with up to two WYAS officers on site

8 2 Archaeological Background

8 2 1 The line of Grim's Ditch has been verified by excavation and various remote methods from Whinmoor in the north-east to Gamblethorpe Farm in the south-west where it was noted as a surviving earthwork (Wilmott 1993), 1km to the north of Site 43

8 2 2 A possible continuation of Grim's Ditch was noted during the excavation of the Garforth to Kirkhamgate Trunk Main in 1977 to the east of the River Aire, some 20m to the north of the present easement (at SE 37375 29475) During construction of the trunk main, a sunken feature, of 18m width, was observed which was subsequently interpreted as part of the Grim's Ditch monument (Wilmott 1993, 61), see Fig 12

8 3 Method

8 3 1 The easement was stripped of topsoil prior to the arrival of the archaeologists Three areas of the site were subsequently examined Trench A (280m long and 2m wide) was mechamcally excavated under archaeological control to the east of the River Aire To the west of the river, the pipe-trench was backfilled (above the main) prior to the arrival of the archaeologists on site Two sections remained open and are designated as Trenches B and C, both of 12m length and 2m width (Fig 12)

8 3 2 Where the excavated trenches exceeded 1 2m in depth, the sections were recorded and photographed from the top of the trench After the watching brief was completed, the officers of WYAS commissioned the immediate backfilling of Trench A

8 4 Results

8 4 1 Trench A

A complex build up of deposits was noted in Trench A, comprising a dark bluish-grey, organic-rich waterlogged clay, overlain by layers of redeposited mid-orange clay and laminated sand and silt, suggesting water formation processes The base of the sequence, at 1 2m depth, was formed by a series of naturally stepped gravels

A deliberate deposit of cobbles, see Fig 12 (insert), was identified to the east of the site, at a depth of 1m below the stripped surface The feature appeared to comprise discrete layers of small cobbles, 002 and 003, and a central area of larger cobbles, 001

A further possible track, Trackway 2, situated 3m to the east of Trackway 1, was observed directly beneath the topsoil Trackway 2 was constructed of rubble, modem pottery and glass

A layer of modem brick, stone, glass and pottery covered most of the westem half of the site to a depth of 0 2m to 0 5m The debris has been attributed to the constmction and subsequent levelling of the Garforth to Kirkhamgate Tmnk Mam

8 4 2 Trench B

A possible feature was noted in the north facing section of Trench B, 10m to the west of the River Aire (Fig 12) The validity of the feature could not be adequately established as the 'edge' to the west was obscured by backfill Two 'fills' were recorded, comprising a basal grey silt overlain by an orange gravel

8 4 3 Trench C

The trench contained accumulated riverme flood deposits

8 5 Discussion

8 5 1 No evidence of the Grim's Ditch monument was recovered within the limits of the pipelme easement The observed deposits in Trench A were interpreted as a natural accumulation of riverine flood deposits The similarity between these deposits and the 'fill' of the possible feature to the west of the river m Trench B indicates that the latter was also formed naturally The deposits in Trench C were clearly derived from riverine flooding

8 5 2 Previous excavations have shown that the monument varies markedly in size and constmction due to the incorporation of existing natural relief and scarps Excavated segments show profiles of up to 9m width and 1m

-2 6m depth, depending upon factors such as ploughing and erosion (Wilmott 1993, Morris 1997, Wheelhouse 1997) It is therefore unlikely that the monument would have been entirely eroded in this area The implication would seem to be that the monument terminates or turns to the north of the site

8 5 3 The feature uncovered during the pipeline work in 1977, was observed to contain a fine, soft silt (Wilmott 1993) Similar features and deposits, observed during the present project were interpreted as the result of water formation processes, such as erosion and flooding The feature uncovered during the earher work may therefore be equally interpreted as part of a water-formed palaeo-channel

8 5 4 The feature described as Trackway 1 correlates with a trackway first shown on the 1908 edition O S The construction of the trackway can therefore be placed in the late 19th century The subsequent build-up of material above the trackway appears to be of relatively recent date, perhaps immediately prior to the construction of Trackway 2, first shown on O S plans of the 1960s

9 Site 46. Cockpit Round, Swillington Bridge

9 1 Introduction

9 1 1 A series of earthworks were observed between the A642 and the Leeds Country Way at SE 377 296 (see Section 5 10), Fig 13

9 1 2 The site lay on gently sloping pasture land rising to the north around the 29m contour The geology consists of alluvium over Middle Coal Measures sandstones with frequent faulting

9 1 3 Investigations were carried out on site in January 1996 with 2 officers of WYAS on site

9 2 Archaeological Background

9 2 1 Ridge and furrow earthworks were identified during the walkover survey to the east of Blacksmith's Cottage (Keith and Roberts 1997) Medieval ridge and furrow was a form of farming practice in which large fields (furlongs) were divided into thin strips of land (selions) which were individually farmed The selions were usually ploughed in a clockwise direction causmg a characteristically reversed S-shaped ridge to be formed over a period of time and were commonly orientated down the gradient to aid drainage

9 2 2 The movement of the plough transferred a small amount of soil forward which was deposited at the end of the strip when the plough turned, thus forming a bank or headland (Hall 1982, 6) In areas where the ground undulated sigmficantly the number of furlongs increased (Moorhouse 1981, 658)

9 2 3 Although 19th-century steam ploughing produced a similar effect to medieval ridge and furrow, the ridges were usually quite narrow, very straight, parallel to more recent hedgelines and did not necessarily follow the natural topography (Hall 1982, 11)

9 3 Method

9 3 1 The earthworks were subject to a rapid earthwork survey using a Geotronics Geodimeter 600 total station instrument in advance of stripping by the pipeline contractors The survey data was tied into the local field boundaries

9 3 2 Generally the peak and trough of each earthwork strip was surveyed

9 4 Results

9 4 1 The resulting survey plot is shown in Fig 13 Topographical features, denoted ***a-d*** on the plot, are described as follows -

a The earthworks were orientated east north-east to west south-west following the slope of the land to the south-east of Blacksmith's Cottage, west of the irregular linear feature, ***d*** The selions were observed over an area of 40m by 20m, and, with a regular spacing (between 'ridges') of *c* 5-6m

b To the east of feature ***d***, north-south orientated earthworks were recorded following the slope of the land The selions, which were more pronounced than at ***a***, abutted bank *c* to the north and Leeds Country Way to the south The earthworks were observed over an area of 45m by 48m in plan, with a regular spacing of *c* 5-6m

c The east-west orientated bank at *c*, appears to define the northernmost extent of furlong ***b*** The earthwork was over 50m m length and 3m wide and was almost certainly produced by the build up of soil as the plough turned (known as a 'headland')

d A large irregular depression, over 170m long and 30m wide, was noted running north-south within the fields to either side of the A642 and to the south of the Leeds Coimtry Way, where it became more ephemeral The irregular plan of the feature indicates a naturally formed feature utilised in the later agricultural field system

9 5 Discussion

9 5 1 The survey recorded the layout of a regime of strip ploughing that probably took place withm three or more distinct fields The date of this regime is unknown, but the form of the earthworks is not dissimilar to known medieval examples The easement passed mainly to the south of the earthworks, along Leeds Country Way, and did not reveal any further finds or features of interest

10. Site 62 Kippax Deer Park

10 1 Introduction

10 1 1 The park pale and ditch of Kippax Hall Deer Park (O S 1850, see Section 5 13), still extant on the western side, was intersected by the pipeline route to the south of Kippax at SE 415 297, Fig 14 Modern open-cast mining methods have destroyed the earthworks to the east

10 1 2 The site lay on gently sloping park land rising to the north-east up to the 40m contour The underlying geology comprises Middle Coal Measures sandstones, which dip beneath alluvial deposits below the 25m contour to the south

10 1 3 Archaeological work was carried out on site in January 1996 with 2 officers of WYAS on site

10 2 Archaeological Background

10 2 1 The honour of Pontefract formed one of the largest estates within the county during the Middle Ages, and was too large to be run from one central point Domesday Book shows that the Lacy estates in the North Part of the honour of Pontefract appear to have been concentrated upon Ledston and Kippax, with a probable centre at Kippax, given the classic ringwork-and-bailey earthwork to the north of the church During the 13th century, the administrative centre of the North Part appears to have been removed to Barwick, although the honorial court was still retained at Kippax (Moorhouse 1981, 735)

10 2 2 The origins of the Hall at Kippax are obscure, but almost certainly date from the late medieval period It is known for example that a new building, 'New Lodge', was commissioned in Kippax Park in 1405 for £8 4s 5d (Public Record Office DL 29/ 730/ 12006) In the post-medieval period, Kippax Park extended into the north of Allerton Bywater township, the Sheffield Beck, which ran through the park, being the boundary between the two townships (Michelmore 1981, 420)

10 2 3 Kippax Park was bought by Thomas Bland of Castleford in 1595 The Elizabethan house of nine bays and three floors was expanded over the succeeding centuries, so that, at 600 feet, it boasted one of the longest house frontages in the country John Davison Bland was the last member of the family to live at the house and died without heir in 1928 The contents of the house were sold in 1929, and the park given over to open-cast mining in 1953 (Waterson and Meadows 1998)

10 3 Method

10 3 1 The site was photographed, described and a topographic survey undertaken using a Geotronics Geodimeter 600 total station instrument

The southern part of the earthwork was sketched by hand, due to a late re-route of the easement

10 3 2 A watching brief (and any necessary recording work) was recommended during the cutting of the earthwork by pipeline contractors However, this work was subsequently effected without an archaeological presence

10 4 Results

10 4 1 The earthworks were photographed (see Plates 1 and 2) and a hachured survey plot, showing perpendicular profiles is given in Fig 15 Topographical features are denoted ***a***-c on the hachured plot, and are described as follows -

a A north-west to south-east orientated bank of *c* Im height The bank was over 28m in length and 5m in width, and rose to *c* 0 7m height above the level of the scarp, becoming more ephemeral to the north The remains of a limestone wall was located on top of the bank up to 5 courses high

b A north-west to south-east orientated ditch between banks ***a*** and c, at least 2m wide with a visible depth of over 0 4m from the field to the east, becoming shallower at both ends of the recorded section The base of the ditch was filled with plant litter and collapsed fragments from the stone wall along the bank top (***a***)

c A smaller north-west to south-east bank was located to the east of the ditch It was 2 6m wide and survived intermittently to a height of up to 0 55m above the level of the field to the east, becoming markedly more ephemeral towards the south

10 4 2 A field inspection, undertaken on 29th September 1997, established that the profile of the park pale had been reinstated by the pipeline contractors

10 5 Discussion

10 5 1 The topographical survey shows that the earthwork m this area was enhanced by being situated along the edge of a natural terrace The preservation of the earthwork and wall is particularly good in this area, but peters out to the south The opportunity to investigate the fills of the ditch and the make-up of the bank did not arise

11 Site 65: Roman Ridge Road, Kippax Mill

11 1 Introduction

11 1 1 The pipeline route intersected the A656 immediately north of the intersection with the B6137, south of Kippax Mill, at SE 428 297 (Fig 16) The modern road preserves the line of Roman Road 28b (Margary 1967, see Section 5 14) from Castleford to Aberford

11 1 2 The pipe was inserted beneath the road by 'pipe-jacking' i e the surface of the road was not disturbed Large reception pits were, however, required at each side of the road The topography here comprised gently sloping arable land around the 70m contour The site lay upon a geological base of faulted Lower Magnesian Limestone

11 1 3 Archaeological work was carried out between 23rd and 24th February 1996 with two WYAS officers on site

11 2 Method

11 2 1 Three trenches were available for investigation (Trenches 1-3) The trenches to either side of the A656 road (Trenches 1 and 3) were notably larger due to the nature of the boring operation beneath the road

11 2 2 The exposed sections were recorded photographically and by scaled annotated sketch sections due to the limited safe access available

11 3 Results (Fig 17)

11 3 1 Trench 1

Two features were identified in section, in Trench 1, to the west of the road The extent of the features could not be established in plan due to damage by plant traffic on the easement

Feature 101 was observed in both north and south facing sections of Trench 1, becoming shallower to the north The recorded section showed a U-shaped profile 1 5-2 06m wide and 0 65-1 4m deep Feature 105, to the west, was interpreted as a natural deformation of the limestone sub-surface

11 3 2 Trench 2

Feature 201, in Trench 2, possessed a straight-sided profile, 1 14m deep and was in excess 5m in width The fill comprised a mid-reddish brown sandy silt, similar to the subsoil

11 3 3 Trench 3

Section 4, in Trench 3, revealed a layer, 301, of densely packed pebbles and limestone fragments, 3 7m wide and 0 21m deep, within a matrix of yellowish brown silt, deposited directly above bedrock The deposit was sealed by a layer of topsoil and a buried turf-line, 300, immediately beneath the tarmac and hard-core of the modern road

11 4 Discussion

11 4 1 Recent excavations of the same Roman road were carried out by Archaeological Services (WYAS) *c* 5km to the north, at Hookmoor (O'Neill and Burgess 1997, O'Neill 1998) The excavations revealed a substantial agger of *c* 6m width and 0 8m depth, constmcted of altemate layers of crushed limestone and silt over buried soil Although a large number of quarrying pits were recorded at each side of the road (Brown 1997), no evidence for roadside ditches was recovered

11 4 2 The evidence from the exposed sections at Site 65 does not give a clear indication of the expected road deposits The pebble/stone deposit (301) in the base of Trench 3 may represent a possible remnant of the agger, but is otherwise inconsistent with the evidence from Hookmoor Quarrying appears to be indicated in Trench 2 and it is possible that feature 101 in Trench 1 may be a ditch or quarry pit

11 4 3 The difficulty of establishing the extent of the observed features in plan, and the absence of recovered finds prohibits further meaningful interpretation It remains a possibility that the Roman road survives undemeath, or has been eroded by the modern road

12 Sites 69 and 71 Crispin Quarry/Back Newton Lane, Ledston

12 1 Introduction

12 1 1 An extensive archaeological landscape, covering over 20 ha (Plate 3 and Fig 18), and incorporating numerous enclosures, trackways and possible hut circles or barrows has been identified to the north of Back Newton Lane and Crispin Quarry at SE 436 297 Although it is likely that numerous phases of activity are represented, a small excavation to the southern end of the complex, undertaken in 1976, recovered a significant quantity of pottery suggesting occupation during the Iron Age This material is being reassessed by Archaeological Services (WYAS) for potential future publication

12 1 2 Following consultation with the West Yorkshire SMR, the pipeline was routed to the south of the main area of visible activity (Fig 20) Geophysical survey and excavation were also recommended over the section of the easement immediately adjacent to the cropmark site For the purposes of investigation, this area was divided into Site 69A, to the west of Spartal Lane, Site 69B, between Spartal Lane and the small ridge of woodland along the eastern edge of North Park, and, Site 71, to the east of the latter ridge

12 1 3 The sites lay on gently sloping arable land above the 50m contour upon a geological base of faulted Lower Magnesian Limestone The topography rises towards a small ridge, above 62m AOD, between Sites 69B and 71 The geology to the east of this ridge gives way to Middle Permian Marl above the limestone The land also rises to the south, to around 56m AOD at Ledston Hall, *c* 0 8 km to the south-east the latter was reputedly partly built of stone from Crispin Quarry (O S Geological Survey of England and Wales 1901)

12 1 4 Deposits of colluvium/marl were observed across the site, but formed an increasing depth of overburden (over 1m deep) to the western end of Site 69B, near Spartal Lane The east end of Site 69B was marked by a sharp rise in the underlying limestone, which showed a heavily ploughed and fractured surface

12 1 5 The sites were investigated by gradiometry in December 1995 Excavations were carried out in January 1996 with up to 7 archaeologists present on site

12 2 Archaeological Background

12 2 1 The cropmarks obviously represent multiple phases of archaeological activity, although it would appear likely that the two principal components of it - the elongated irregular field limits to either side of the central trackway (or double-ditched boundary) are contemporary It

appears likely that the discrete enclosures pre-date the establishment of the larger land division, and may even have dictated the alignment of the ditches This certainly seems to be the case with the internal sub-divisions of the larger field units

12 2 2 The discrete enclosures have both sub-rectangular and D-shaped plans The two D-shaped enclosures occur at the southern end of the complex, where there also appears to have been intense pit-digging at some time in the past The excavation undertaken in 1976, centred at SE 4339 2954, targeted the southernmost D-shaped enclosure and the area of pitting immediately north of the pipeline easement This produced evidence of a possible hut circle and granary structures with domestic and burial activity of probable Iron Age date Finds included a beehive quern, pottery and flint

12 2 3 The cropmark evidence also suggests the westward convergence of perhaps two double-ditched boundaries towards a point to the north of Crispin Quarry These features were investigated at Site 69A (see Section 12 5)

12 3 Method

12 3 1 Fluxgate gradiometer surveys were initially undertaken along the line of the easement in order to inform the watching brief phase The survey areas comprised 60m by 20m at Site 69A, 420m by 20m at Site 69B, and, 120m by 20m at Site 71 The results of this work, discussed in Section 12 4, were used as a basis to determine the extent of subsequent stripping and excavation requirements

12 3 2 Sections of the easement, *c* 10 wide, were stripped over a total length of approximately 720m in advance of construction Machine stripping was carried out in two stages to allow vehicular access across the site during archaeological works The stripped area was subsequently widened to *c* 20m at Site 69A and towards the eastern end of Sites 69B and 71, to examine areas of complex archaeological features

12 3 3 Due to time limitations, large features were excavated by machine down to the level of primary fills, which were thereafter excavated by hand The features were planned using a Geotronics Geodimeter 600 total station instrument, with features overlaid by hand as necessary

12 3 4 Master numbers, prefixed by 'M' (M1-M8), have been attributed to ditches where more than one segment has been excavated

12 4 Geophysical Survey Results

12 4 1 Site 69A

Three positive linear anomalies were identified by geophysical survey, denoted as ***a***, ***b*** and ***c*** on the geophysical plot of Fig 19 The anomalies are described as follows -

a A curvilinear anomaly orientated east-west, curving southwards to the east The anomaly was roughly 50m long and 4-5m wide and appeared to terminate 4m to the west of anomaly ***c***, suggesting contemporaneity between these features

b A curvilinear anomaly orientated approximately east-west veering south-eastwards at its eastern end The anomaly, ***c*** 40m long and 1m wide, ran at an oblique angle 4m to the east of anomaly ***a*** The eastern part of the anomaly was parallel with anomaly ***c***, 6m to the east

c A curvilinear anomaly orientated north-west to south-east to the eastern end of the survey area The anomaly was visible over a distance of 36m and was between 2-4m wide

Anomalies ***a***, ***b*** and ***c*** exhibited responses typical of archaeological ditches with a higher magnetic susceptibility of the in-fill compared to the underlying geology and were later correlated with the archaeological features M1, 183 and 198 respectively

12 4 2 *Site 69B*

A number of positive linear anomalies were identified by gradiometer survey, denoted ***d***, ***e***, ***f*** and ***g*** on the plot (Fig 19) The anomalies may be described as follows -

d A single linear anomaly, 23m long and 1m wide orientated north-east to south-west, at right angles to and immediately to the west of anomaly ***e***

e Two linear anomalies orientated north-west to south-east 110m to the west of anomaly ***g*** The anomalies were 25m long, up to 1 5m wide and between 1 5 and 3m apart The two anomalies to the west gave weaker readings

f A single curvilinear anomaly, 20m long and 1 5m wide, orientated north-south and turning to the north-east at the northern end, 20m to the west of anomaly ***g***

g Two parallel linear features, 20m long and 1 5m wide, orientated north-east to south-west, ***c*** 60m from the eastern end of the survey area The anomalies were 10m apart with a possible weaker

parallel anomaly between them

h This feature indicates an elongated area of slightly enhanced magnetic susceptibility, orientated north-east to south-west, with a small but well-defined negative anomaly to the north

The western end of the survey area produced evidence of a series of weak positive parallel linear anomalies aligned north-east to south-west, parallel to the modern boundary immediately to the north (see Fig 19) The anomalies were up to 45m long, 1-2m wide and roughly 4-7m apart and were interpreted as probable medieval ridge and furrow plough strips

Anomalies ***d*** and ***e*** exhibited responses typical of archaeological ditches, and were subsequently found to correspond with feature 107 (anomaly ***d***) and the group of parallel features comprising 132, 110 and 112 (anomaly ***e***) The anomalies described at ***g*** also exhibited typical ditch responses, but did not correspond to features identified during the subsequent excavation Anomaly ***h*** appears to indicate a diffuse area of enhanced susceptibility, possibly the remains of a ditch which has been heavily disturbed by ploughing Anomaly ***f*** exhibited a strongly dipolar response indicative of a modern feature

12 4 3 Site 71

12 4 4 A number of positive linear anomalies were identified by geophysical survey, denoted as ***j***, ***k*** and ***l*** on the geophysical plot of Fig 19 The anomalies are described as follows -

j Two parallel linear anomalies, *c* 1m wide and 1 5m apart, orientated east-west, were identified to the south-west corner of the survey area

k A linear anomaly, orientated north-north-east to south-south-west, was observed some 40m to the east of anomaly ***j*** The anomaly was observed across the width of the survey area and appeared to be parallel to anomaly ***l***, some 50m to the east

l A linear anomaly, orientated north-north-east to south-south-west, was identified some 16m from the eastern limit of the survey area The anomaly appeared to be similar and parallel to anomaly ***k***, although less well-defined

12 4 5 A series of weak, positive, parallel linear anomalies, aligned north-east to south-west was evident across much of the site (see Fig 19) The anomalies were up to 105m long, 1-2m wide and roughly 5m apart and

were interpreted as plough-marks, probably arising from medieval ridge and furrow ploughings

12 4 6 Anomalies *h*, *j* and *k* exhibited responses typical of archaeological ditches, which were subsequently found to correspond with the archaeological features 132, 126 and 119 respectively

12 5 Site 69 A Excavation Results (Figs 21-24, Appendix II)

12 5 1 A number of overlying linear ditches were observed, principally orientated upon an east to west bearing, equivalent to that of anomaly *a* in Fig 19 (see Plate 4) The form of, and relationships between, these features suggested at least four main phases of ditch construction, along a traditional boundary line (Fig 21) One feature, a possible pit, pointed to a later (probably medieval) fifth phase of activity

12 5 2 A number of discrete, isolated features and ditches were also observed Where possible these have been phased according to their morphology or finds recovered

12 5 3 Phase I

Ditch 145 The small curvilinear ditch, 145, to the west end of the site, appears to be the earliest within the available recorded sequence The feature showed a U-shaped profile of 0 41m width and 0 26m depth which was cut by ditch M6, to the west, and the linear feature, M4, to the east

Ditch 183 Some 10m to the west of ditch 198, a small ditch, 183, was recorded The latter was of an irregular curvilinear form in plan, orientated approximately east-west The excavated segment showed a U-shaped profile in section, Im wide and 0 38m depth Given the similarity in orientation, dimensions and curvilinear form between ditches 145 and 183, the latter has been tentatively attributed to this phase

12 5 4 Phase II

Ditch M6 Ditch M6 showed a segmented structure, or a possible entrance, with terminals of *c* 7m separation The excavated segments of the terminals revealed a U-shaped profile to the west and a stepped V-shape profile to the east, 2 3m wide and 0 97m deep (largest recorded dimensions)

The more substantial form of these features indicated a marked change in the use of the site from the preceding phase The features in this phase appear to form or to consolidate an east-west boundary, a trend which was continued throughout the remaining ditched phases The segmentation of the ditches suggested an entrance of *c* 7m width

12 5 5 Phase III

Ditch M3 and Ditch M5 The segmented ditch, M6, appears to have been infilled by the time that ditches M3 and M5 cut it There was no clear relationship between ditches M3 and M5, but both are attributed to this phase as a consequence of their common relationship with M6 (Phase II)

Ditch M5, although largely truncated by ditch M1, was over 3 8m wide and 0 8m deep, suggesting that it was a substantial boundary feature The southern edge of ditch M5 appears to have been entirely truncated by the northern edge of ditch M1, and the latter was interpreted as a recut of the former

Ditch M2 and Ditch M4 These features appeared to be continuous and were probably contemporary Also, the similarity between the U-shaped profiles, typically *c* 1m wide and 0 5m deep, and east-west alignments suggests that ditches M2/M4 and ditch M3 might be contemporary It should also be noted that ditch M2, which turned sharply south-eastwards to the south, appears to align with ditch M3 which was observed to turn sharply north-westwards to the north This perceived alignment of features is reinforced by the results of aerial photographic rectification, which revealed a north-west to south-east orientated linear feature crossing the site in this location (see Figs 18 and 20)

Finds A large quantity of slag and furnace material, of typical Iron Age origin (see Appendix III), was recovered from excavated segments in ditches M2/4 and M3 giving further cause to suspect that these features co-existed Hearth bases, furnace and tap slag, and thick slag-attacked clay amongst the assemblage would seem to be direct evidence of smelting in the vicinity A number of smithing slag lumps were also retrieved from ditches M3 and M4, and plate hammerscale, typical of the smithing process, was also common amongst the finds from ditch M3

Slag deposits were also recovered from ditches M5 and M1 (Phases III and IV respectively), see below However, the absence of slag from the fill of earlier ditches would seem to indicate that smelting and smithing activities did not occur before this phase

12 5 6 Phase IV

Ditch M1 This feature, which appeared to be a recut of ditch M5 and which also cut the fill of ditch M2, possessed a broad U-shaped profile and measured *c* 3 4m wide and 1m in deep, with a more steeply defined edge to the north and a moderately flat base

Ditch 198 Ditch 198, orientated north-west to south-east to the eastern end of site, also possessed a broad U-shaped profile, but was 4 2m wide and 1 57m deep The size and profile of this feature corresponds closely

with ditch M1, and is, therefore, most appropriately attributed to this phase It should be noted, however, that the geophysical plot (Fig 19, ***a*** and *c*) indicates a gap between these features, perhaps representmg a gateway

Finds The fill of ditch M1 produced a significant quantity of slag, mainly comprising a smithing assemblage of smithing slag and plate hammerscale, although evidence of smelting was also apparent, from the recovery of hearth fragments (of typical Iron Age form), abraded tap slag and thick slag-attacked clay In addition to slag finds, deposit 161 also contained small quantities of ammal bone and pottery of Iron Age/Romano-British date (see Appendix III)

12 5 7 Phase V

Pit 189 Successive layers of colluvium were uncovered to the east end of the site and towards Spartal Lane, the uppermost layers of which were removed by machine in order to expose ditch 198 and feature 189 The latter feature appeared to form a circular pit at least 1 2m wide and 0 5m deep, and was observed to cut the infill of ditches M2 and M1 The shape and extent of feature 189 could not be established due to its position against the edge of the easement

Finds Three sherds of post-medieval pottery were recovered from the fill (188, see Appendix III), mdicating a distinct later phase of archaeological activity

12 5 8 Other Features

Ditch 207 Ditch 207 (Fig 16), lay approximately 150m to the west of Site 69A, and possessed a substantial U-shaped profile, being 2 62m wide and 0 75m deep, and appeared to lie almost parallel with the existing north-south orientated trackway, 3m to the west The excavated segment produced a single sherd of pottery, of probable Iron Age/Romano-British date (fill 206, Appendix III) The orientation of the feature, however, may also suggest a possible relationship with the group of cropmarks, *c* 100m to the north-west, at Site 68

12 6 Site 69B Excavation Results (Fig 25)

12 6 I A number of discrete archaeological features were uncovered some 350m to the east of Site 69A, approximately to the centre of the stripped area, comprising four linear features and a double pit arrangement At the east end of the site, two sub-rectangular features were observed across the 20m width of the easement

12 6 2 In general, there was a good correlation between the features uncovered in the excavation and those located by the geophysical survey - although no features were identified in the location of anomaly ***g***, which was

situated some 20m to the west of the stmctural features M7 and M8

12 6 3 A build-up of soil deposits was noted at the base of the slope to the westem end of the site (*c* 80m to the south-east of Site 69A) which was mvestigated by a machine slot, Test Slot 1 (Fig 25) The exposed section revealed a 0 5m deep deposit of orange-red silty clay at the base of the sequence which appeared to be cut by a series of small, irregular features, of approximately 0 2m depth The fills comprised indistinct light brown to yellowish brown silt sand deposits The irregular form and homogeneous fill of these features suggests a natural/geological origm

12 6 4 The Central Area of the Site (Fig 25, sections referenced below)

Ditch 107 (Section 4) Some 30m to the west of the other features in this area, the east to west orrentated linear feature, 107, was excavated It proved to have a broad U-shaped profile of 1 4m wide and 0 54m deep (Ditch 107 appears to correspond with anomaly *d* in Fig 19)

Ditches 132, 110 and 112 (Sections 13, 5 and 6) The three parallel ditches represented by these contexts, *c* 2-2 5m apart, were orientated approximately north to south Features 110 and 112 were irregular m plan and section, with dimensions varying between 1 35m and 1 9m in width and 0 15m and 0 32m in depth Both features were found to contain one homogeneous fill Feature 132 was of a more substantial form, *c* Im wide and 0 6m deep, with stepped sides and multiple fills (These features appeared to correspond with anomaly *e* withm the geophysical survey data in Fig 19)

These features (132, 110 and 112) suggest subsequent phases of the same boundary or, possibly, a ditched trackway, and appear to be on the same alignment as a linear cropmark observed to the north and east during aerial reconnaissance

Pits 114 and 116 (Section 7) Two pits were located *c* 17m to the east of ditch 112 Only the shallow concave bases appeared to survive The pits were *c* 0 9m in diameter and 0 11m and 0 18m deep respectively

Feature 102 The linear feature, 102 (Fig 25), was observed *c* 140m from the eastem end of site orrentated north-east to south-west The feature appeared to correspond with anomaly *f* withm the geophysical survey data, and proved to be a field drain upon investigation

12 6 5 The Eastem End of the Site (Fig 25)

Two sub-rectangular ditched features, M7 and M8, to the east end of the site were partially exposed across the width of the easement The features appeared to be identical m plan, *c* 6 6m wide, with regular straight-sided edges and rounded comers Feature M7, the most fully exposed in plan, was over 10 5m in length No further features were identified, either intemally or extemally

The constmction ditches of M7 appeared to be segmented, suggesting possible entrances along the west and east sides, 3m and 4m wide respectively The small gullies and pits within the 'entrances' would seem to indicate gates or accesses of some kind

In profile, the ditches appeared to be regular with flat bases and moderately steep sides, 0 65m-0 87m, though all appeared to have been truncated to between 0 09m and 0 25m depth No finds were recovered from any of these features

Features M7 and M8 appeared to be coincident with anomaly ***h*** in the geophysical survey data (see Fig 19) The spread of this anomaly, which appeared to indicate disturbance by modem ploughing, may therefore be indicative of a more general enhancement of the soil susceptibility due to occupation (although soil movement by the plough is also suggested)

12 7 Site 71 Excavation Results (Fig 26, Appendix II)

12 7 1 A number of linear features were observed across this area which may be readily divided into regularly spaced east-west 'plough' features and a number of linear ditches, more generally aligned north-south Both groups of features were visible within the geophysical survey data A large number of possible pits were also recorded in plan, although later, many were discounted as being natural in origin Only one pit (124), therefore, is included in the following discussion No datable finds were recovered

12 7 2 ?Ploughing Features

The three parallel linear features to the west of the site, including feature 128, were coincident with the linear striations observed within the geophysical data at *j* (Fig 19), feature 128, which possessed a profile 0 52m wide and 0 08m deep, cut the fill of ditch 130 (see below) The feature recorded as a possible pit, 120, was later interpreted as a continuation of feature 128

These features lie roughly at right angles to the present westem field boundary at intervals of *c* 2m, and may be effects of modem ploughing

12 7 3 Other Features

The parallel alignment of linear features in the stripped area suggested at least two phases of rectilinear field systems The features discussed below are grouped in terms of their respective alignments

Ditches 126 and 119 (Sections 11 and 8) The linear ditches, 126 and 119 (see Plate 5), both of *c* 1 1m width and 0 5m depth, were aligned north-north-east to south-south-west, 51m apart The ditches both possessed U-shaped profiles in section, and tallied with anomalies observed during the geophysical survey (Fig 19, ***k*** and ***l***) The similar alignment of ditches

126 and 119 may also indicate contemporary usage

Ditches 130 and 122 (Sections 32 and 10) These narrow, parallel linear features, which measured between 0 29m and 0 8m wide and 0 42m and 0 52m deep, were aligned north-west to south-east The ditches, *c* 34m apart, were V-shaped in profile, ditch 130 appears to coincide with a 'possible cut' feature in the rectified aerial photograph detail of Fig 26

Pit 124 (Section 10) This shallow, amorphous feature, apparently cut by ditch 122 to the west, displayed the flat base of a possible pit, *c* 1 8m wide and 0 15m deep

Ditch 103 (Section 1) Towards the eastem end of the site (*c* 70m to the east of ditch 122), continued across the entire width of easement (20m) veering southwards to that side This feature possessed a shallow (probably truncated) flat-based profile, 0 46m wide and 0 11m deep

Finds Although no datable evidence was recovered, the north-west to south-east orientated field system appeared to pre-date remnants of medieval ridge and furiow ploughing

12 8 Discussion

12 8 1 The features uncovered during the present watching brief form (an outlying) part of the large landscape complex at Ledston, previously identified through aerial photography The small excavation, in 1976, of part of this complex produced a significant domestic pottery assemblage of Late Bronze Age to Iron Age date with no Roman component (Runnacles and Buckland in Evans 1998) Other than flint, and a single bone tool, few other finds were recovered

12 8 2 In this context, the large slag assemblage recovered from the Crispin Quarry site would seem to be enigmatic Petrological analysis of the pottery from the earlier work, however, showed the presence of a crushed iron slag temper in a small number of sherds, and, as the pottery is likely to have been made locally, this would seem to be evidence of contemporary pottery and iron-making activities It is also notable that limestone geologies have fostered the growth of iron production sites in many places (Buckland *et al* in Evans 1998, and see Cowgill, Appendix III)

12 8 3 The low frequency of pottery finds amongst the pipeline assemblage may be readily explained by the deliberate separation of domestic and iron-working areas The evidence from Site 69A, however, points to an early phase of land use and occupation (Phases I-II) in which there was little iron-working, at least in this part of the site

12 8 4 The rectified plot from aerial photographs shown in Fig 18 (and see Appendix V) indicates a possible double-ditched trackway running north-south along the westem edge of the complex but veering westwards to the south, towards the features recorded at Site 69A If this view is correct, the trackway would perhaps most closely correspond with the

Phase III ditches M2/4 and M3 (see Fig 21)

12 8 5 The use of this trackway would clearly have been curtailed by the time that ditch M1 was excavated (in Phase IV) and possibly earlier, by the excavation of Ditch M5 At this time, the function and use of the trackway (if such) appears to have been overridden by the need to define a clear land boundary Nonetheless, iron-working activities appeared to have continued into this period, perhaps with a shift of emphasis from smelting to smithing (see Appendix III)

12 8 6 At Site 69B, the features denoted as anomaly *e* in the geophysical survey plot of Fig 19, and as contexts 132, 110 and 112 during the watching brief may relate to the possible trackway immediately to the north of the southemmost D-shaped or 'fungal' enclosure visible from aerial photographs (see Fig 18 and Appendix V) Only one further alignment is worthy of attention between feature 130 and the narrow linear feature to the south of a possible small enclosure at Site 71

12 8 7 The sub-rectangular stmctures, M7 and M8, to the eastem end of Site 69B, appear to denote contemporary buildings Although the date and function of these features remain uncertain, a number of authors have pointed to the use of small rectangular buildings in the Romano-British period e g at Whm Fields (Wilson *et al* 1984, 32), and at Studland (Dark and Dark 1997)

13 Site 84. Lumby

13 1 Introduction

13 1 1 Extensive cropmarks (see Section 5 20) have been identified to the north of Lumby and Monk Fryston, Fig 28 The present site lay *c* 0 9km to the east of Lumby and *c* 1 2km to the south of Milford, and straddled the A162 from Ferrybridge to Sherburn in Elmet (SE 495 301)

13 1 2 The site lay on gently sloping arable land between the 20m and 30m contours over a geological base of Middle Permian mudstones and marls

13 1 3 The site was excavated in January 1996 with 5 archaeologists present on site

13 2 Method

13 2 1 The line of the easement was initially scanned by fluxgate gradiometer in an attempt to locate any anomalies No anomalies were detected

13 2 2 The easement was subsequently mechamcally stripped under archaeological control Archaeological features were then sampled and recorded

13 3 Results

13 3 1 Three linear features were observed To the east of the A162 road, features 001 and 004 showed an east-west orientation, although somewhat irregular in plan The recorded sections showed profiles of 0 83m-1 4m width and 0 06m-0 3m depth

13 3 2 To the west of the A162 road, a further linear feature, 005, was recorded This feature showed a north-east to south-west orientation with a V-shaped profile, 0 85m wide and 0 52m deep, with distinct fills comprising a basal clay deposit, 007, beneath a sandy silt, 006 No finds were recovered

13 3 3 No finds were recovered during the excavation, and it is not possible to date these features with any degree of certainty

13 4 Discussion

13 4 1 The irregular plan, profile and fills of features 001 and 004 indicate that they were formed by natural formation processes Ditch 005 was interpreted as a possible boundary ditch The features remain undated, and it is unclear if any relate to the known cropmark complex, over 300m to the north

Bibliography

Boucher, A , 1995, 'Site Recording Manual', West Yorkshire Archaeological Service

Brown, K , 1997, 'M1-A1 Link Road (Lofthouse to Bramham) Known Archaeology Area 17 C/D, Assessment Report' WYAS Report 473

Brown, J , 1995, 'Traditional Metalworking in Kenya' m *Cambridge Monographs in African Archaeology* 38, Oxbow Monograph 44

Buckland, P C , Runnacles, R B , Wardle, P A , and Warren, S E , 1998, 'Thin-Section Analysis' in Evans, J (ed), 'The Prehistoric and Romano-British Pottery' Unpublished Report undertaken for WYAS

Dark, K and Dark, P , 1997, *The Landscape of Roman Britain*

Faull, M L and Moorhouse, S A (eds), 1981, *West Yorkshire An Archaeological Survey to AD1500* 1-4

Gregory, A , 1983, 'Rescue excavation on Long Meadow Housing Estate, September 1983', Archive Report in Norwich Castle Museum

Hall, D , 1982, *Medieval Fields*

Keith, K and Roberts, I , 1997, 'Kirkhamgate to Brayton Barff Water Pipeline Archaeological Desk-based Assessment' WYAS Report 523

Margary, I D , 1967, *Roman Roads in Britain*

Michelmore, D J H , 1981, 'Township Gazatteer' in Faull and Moorhouse (1981), 2

Moorhouse, S A , 1981, 'The Rural Medieval Landscape' in Faull and Moorhouse (1981), 3

Morris, C , 1997, 'M1-A1 Link Road (Lofthouse to Bramham) Known Archaeology Area 3 (Bank)', Supplement to Assessment report

O'Neill, R and Burgess, A , 1997, 'M1-A1 Link Road (Lofthouse to Bramham) Known Archaeology Area 17 A/B, Assessment report' WYAS Report 472

O'Neill, R , 1998, 'M1-A1 Link Road (Lofthouse to Bramham) Known Archaeology Area 17 (M1-A1 Roman Road Plug), Assessment report' WYAS Report 600

Runnacles, R B , and Buckland, P C , 1998, 'Ledston Iron Age Pottery' in Evans, J (ed), 'The Prehistoric and Romano-British Pottery' Unpublished Report undertaken for WYAS

Smith, A H , 1961, *Place-names of the West Riding of Yorkshire*, 4

Vyner, B E , 1996, 'Excavations at Catterick The Pottery' Draft report for WYAS

Waterson, E , and Meadows, P , 1998, *Lost Houses of the West Riding*

Wheelhouse, P , 1997, 'M1-A1 Link Road (Lofthouse to Bramham) Known Archaeology Area 7, Assessment report' WYAS Report 443

Wilmott, T , 1993, 'Excavation and Survey on the line of Grim's Ditch, West Yorkshire 1977-83' in *Yorkshire Archaeological Journal*, 65, 55-74

Wilson, P R , Jones, R F J , and Evans, D M (eds), 1984, *Settlement and Society in the Roman North* School of Archaeological Sciences, Umversity of Bradford and Roman Antiquities Section, Yorkshire Archaeological Society

Maps Consulted

Ordnance Survey, 1850, 1st edition six inches to the mile series, Sheet 219

Ordnance Survey, 1854, 1st edition six inches to the mile series, Sheet 233

Ordnance Survey, 1901 and 1932 (revised), 'Geological Survey of England and Wales', six inch edition

Ordnance Survey, 1962, 'Geological Survey of Great Britain (England and Wales)', Drift, Sheet 78

Oulton with Woodlesford Tithe map, n d , Leeds City Archives RD/RT262, part copy m SMR files

Aerial Photographs Consulted

WYAS SMR AP 44 42 39 47 (Site 69, Ledston)

Acknowledgements

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Appendix I Archive Inventory

* denotes text on both sides of the sheet

File	Contents	No of sheets
Loose	Archive Inventory	1 copy
	Primary Archive	
1	Context File	
	Concordance table of sites	1
	Site 16 Context register	1
	Site 16 Context sheets	4*
	Site 18 Context register	1
	Site 18 Context sheets	16*
	Site 16 and 18 Drawing register	1
	Site 43 Context register	1
	Site 43 Context sheets	3*
	Site 43 Field notes	3*
	Site 65 Context register	1
	Site 65 Context sheets	12*
	Site 65 Drawing register	1
	Site 69 and 71 Context register	7
	Site 69A Context register	5
	Site 69A Context sheets	85*
	Site 69 and 71 Drawing register	3
	Site 69 Group number register sheet	1
	Site 69 Group number sheets	8*
	Site 69B Context register	2
	Site 69B Context sheets	22*
	Site 71 Context register	1
	Site 71 Context sheets	21*
	Site 84 Context register	1
	Site 84 Context sheets	7*
	Site 84 Drawing register	1
	Sites 62, 65 and 104 Field notes	3*
2	Survey data	
	Concordance table of sites	1

File	Contents	No of sheets
	Site 46 Survey data	19
	Site 62 Survey data	9
	Site 69 Survey data	40
	Site 71 Survey data	22
	Site 84 Survey data	5
	General Survey mformation	12
3	Geodimeter plans and sections	
	Concordance table of sites	1
	Site 7 Location plan	1
	Site 16 Sections	2
	Site 16 Geodimeter plans	3
	Site 18 Sections	3
	Site 18 Geodimeter plans	2
	Site 43 Pre-excavation section of trackway	1
	Site 43 Plan of site showmg location of trackways	1
	Site 43 1908 O S map mdicatmg lme of trackway	1
	Site 46 Geodimeter plans	3
	Site 46 Sketch plan	1
	Site 62 Contour survey	2
	Site 62 Geodimeter profile	1
	Site 65 Plan of site	1
	Site 69A Geodimeter plans, mterpretative plans, sketch plans	6
	Site 69B Geodimeter plans, geodimeter notes	7
	Sites 69 and 71 Gradiometer survey plots	3
	Site 71 Geodimeter plans	2
	Site 84 Sections	2
	Site 84 Geodumeter plans	3
4	Films	
	Concordance table of sites	1
	Catalogue of films	15
	Colour transparencies record sheets for sites 16, 18, 43, 46, 60, 69, 71, 84,	6
	Colour transparencies 3301, 3302, 3303, 3313, 3314, 3318, 3319, 3385, 3397, 3398	6
	Black and white prmt record sheets for sites 16, 18, 43, 62, 65, 69, 71, 84	6

File	Contents	No of sheets
	Black and white prints 3265, 3299, 3300, 3311, 3315, 3316, 3345, 3346, 3347, 3384, 3395	6
	Slides Site 46 Film 3315, Frame 27 Ridge and furrow	1
	Site 65 Film 3345, Frame 18	1
	Sites 69 and 71 All of film 3301	40
	Site 69A Film 3382	26
	Site 69A Film 3346, Frame 34	1
	Site 69A Film 3382, Frame 26	1
	Site 69 Aerial photograph	1
	Site 71 Film 3346, Frame 8	1
	Site 84 General shots	3
	Site 84 Film 3319, Frame 32	1
	Prints Site 60 Fibn 3345	1
	Site 69A Film 3346	1
	Site 69B Fibn 3315	1
	Site 71 Film 3346	1
Loose	Sheets of plans and sections of sites 65, 69 and 71	10
	Finds	
	Pottery Site 69A context 146 (Medieval)	1
	Site 69A context 161 (Iron Age)	1
	Site 69A context 188 (Medieval)	1
	Site 69A context 206 (Iron Age)	1
	Site 69B context u/s (Medieval)	2
	Site 79 context u/s at SE 4562 2939	1
	Bone Site 69A context 161	7
	Site 69A context 210	1
	Site 69B context 108	3
	Site 71 context 118	2
	Flint Site 69A context u/s	1
	Site 69B context 108	1
	Slag Site 69A context u/s	1
	Site 69A context 148	1 bag
	Site 69A context 152	1 bag
	Site 69A context 157	24
	Site 69A context 158	6

File	Contents	No of sheets
	Site 69A context 160	2
	Site 69A context 161	1 bag
	Site 69A context 186	1
	Site 69A context 209	1 bag

Secondary Archive

5	Reports	
	Kirkhamgate to Selby Archaeological Desk-based assessment report	1 report
	Kirkhamgate to Selby Archaeological Investigations report	1 report
	Specification for the archaeological assessment of the proposed pipeline route	1 report
	List of sites affected by the proposed pipeline	2
	Finds list	1
	Iron Age pottery report by B Vyner	1 report
	Medieval pottery report by C Cumberpatch	1 report
	Animal bone report by J Richardson	1 report
	Iron working debris report by J Cowgill	1 report + disc
6	Preliminary Reports	
	Concordance table of sites	1
	Site 7 Preliminary report	1 report
	Site 16 and 18 Preliminary report	1 report
	Site 16 and 18 copies of aerial photographs	6
	Site 32 Preliminary report and 2 associated plans	3
	Site 43 Preliminary report	1 report
	Site 43 Extract from SMR township file	1
	Sites 55, 69B, 81 and 84 Preliminary report	1 report
	Site 65 Preliminary report	1 report
	Site 65 Hand drawn location plan	1
	Site 69A Preliminary report	1 report
	Site 69 Copies of aerial photographs and aerial photograph interpretations	11

Appendix II Context Descriptions

Context	Description
Site 16	
201	Cut of N-S linear ditch Broad V-shaped stepped profile with sides slopmg between 30°-50° m top half to 45°-80° m bottom half leadmg to rounded base Length 9 00m (exc 2 00m), width 2 00m, depth 0 55m Filled by 202, cut natural deposits
202	Light orangey brown sandy silt fill with frequent limestone fragments 0 005m-0 15m Length excavated 2 00m, width 2 00m, depth 0 55m Below U/S, fill of 201
203	Mid-brown sandy silt fill occasional stones <0 06m Length 2 00m (exc 0 50m), width 1 10m, depth 0 36m Below U/S, fill of 204
204	Cut of N-S linear ditch Lopsided broad V-shaped profile with sides slopmg 60° to east and 25° to west leading to rounded base towards eastern side Length excavated 0 50m, width 1 10m, depth 0 36m Filled by 203, cut natural deposits
Site 18	
001	Cut of sub-circular post-hole U-shaped profile with sides slopmg 60°-80° leadmg to flat base The natural deposits through which the post-hole was cut were heat affected Length 0 50m, width 0 50m, depth 0 25m Filled by 002 and primary fill 003, cut natural deposits
002	Light brown sandy silt fill with occasional heat affected stones <0 06m Length 0 50m, with 0 50m, depth 0 11m Below U/S, above 003, upper fill of 001
003	Mixed red and black sandy silt with 90% charcoal make-up Length excavated 0 25m, width 0 36m, depth 0 15m Below 002, primary fill of 001
004	Cut of N-S linear natural fissure with irregular lopsided V-shaped profile, east side slopmg 45° and west side sloping 90° leading to irregular base Length excavated 0 80m, width 0 38m, depth 0 16in Filled by 005, cut natural deposits
005	Light brown sandy fill with moderate sandstone fragments Length excavated 0 80m, width 0 38m, depth 0 16m Below U/S, fill of 004
006	Cut of N-S linear plough scar Shallow U-shaped profile with sides slopmg 20°-45° leadmg to curved base Length 4 00m (exc 0 50m), width 0 35m, depth 0 10m Filled by 007, cut natural deposits
007	Greyish brown sand fill with occasional pea grit and small stones Length 4 00m (exc 0 50m), width 0 35m, depth 0 10m, Below U/S, fill of 006
008	Cut of N-S linear plough scar Shallow U-shaped profile with sides slopmg 20°-45° leadmg to curved base Length 4 00m (exc 0 50m), width 0 60m, depth 0 12m Filled by 009, cut natural deposits
009	Greyish brown sand fill with occasional pea grit and small stones Length 4 00m (exc 0 50m), widdi 0 60m, depth 0 12m Below U/S, filled 008
010	Mid-brown sandy silt fill with slight clay content, moderate sandstone <0 07m and occasional red and black stones (possible burnt) Length 4 00m (exc 0 90m), width 0 80m, depth 0 12m Below 016, above 011, fill of 012
011	Mid-yellowish brown silty clay fill with irregularly densely packed sandstone <0 12m Length excavated 0 90m, width 0 80m, depth 0 22m Below 010, primary fill of 012

Context	Description
012	Cut of slightly curved NW-SE linear feature Stepped U-shaped profile with top half of sides sloping 45°, bottom half sloping 60°-80° leading to flat base Length 4 00m (exc 0 90m), width 0 80m, depth 0 34m Filled by 016, 010 and primary fill 011, cut natural deposits
013	Cut of N-S linear feature U-shaped profile with sides sloping 45°-60° leading to curved base Length *c* 5 80m (exc 0 55m), width 3 40m (oblique angle), depth 0 90m, Filled by 014 and primary fill 015, cut natural deposits
014	Pale grey sandy silt fill with moderate small stones and pea grit Length excavated 0 55m, width not known, depth not known Below U/S, above 015, upper fill of 013
015	Pale brown sand fill with frequent small stones and occasional large stones Length excavated 0 55m, width 3 40m (oblique angle), depth 0 90m Below 014, primary fill of 013
016	Dark brown sandy silt with frequent fire cracked pebbles and stone <0 10m It could be fill of a pit but more probably it was a dump of stones Length 1 00m, width 0 20m, depth 0 10m Below U/S, above 010, upper fill of 012
Site 43	
001	Large densely packed angular stones 0 10m-0 35m set into the underlying soil Part of trackway Length excavated 2 10m, width 1 20m, depth of stones <0 20m Below U/S, above natural deposits, contemporary with 002 and 003, part of Trackway 1
002	Densely packed small stones (average size 0 01m) set mto underlymg soil to SW of 001 Possible cart rut Length excavated 2 10m, width 0 80m, depth of stones <0 10m Below U/S, above natural deposits, contemporary with 001 and 003, part of Trackway 1
003	Densely packed stones 0 01m-0 15m set into underlying soil to NE of 001 Possible cart mt Length excavated 2 10m, width 0 50m, depth of stones <0 10m Below U/S, above natural deposits, contemporary with 001 and 002, part of Trackway 2
Site 65	
Trench 1	
100	A reddish brown sandy silt subsoil Length not known, width *c* 4m, depth 0 57m Below hard-core, above 102
101	Cut of possible N-S ditch U-shaped profile with sides slopmg 45-60° leading to curved base Length >4 00m, width 2 00m, depth 1 40m Filled by 102, 103 and primary fill 104, cut 106
102	Mid-reddish brown sandy silt fill with occasional lenses of limestone Length >4 00m, width 2 00m, depth 0 76m Below 100, above 103, fill of 101
103	Redeposited natural fill Length not known, width 0 80m, depth 0 70m Below 102, above 104, fill of 101
104	Dark reddish brown sandy silt fill with no significant inclusions Length >4 00m, width 1 30m, depth 0 60m Below 103, primary fill of 101
105	Cut of natural feature Irregular U-shaped profile Length not known, width 1 20m, depth 0 30m Filled by 106, cut natural deposits
106	Reddish brown sandy silt fill of natural feature Length not known, width 1 20m, depth 0 30m Cut by 101, fill of 105
Trench 2	
200	Reddish brown sandy silt subsoil Length not known, width 6 00m, depth 0 50m Below hard-core, above 202

Context	Description
201	Cut of probable N-S quarry pit U-shaped profile with sides slopmg 80° leadmg to flat base Length >2 00m, width >5 30m, depth I 14m Filled by 202, cut natural deposits
202	Reddish brown sandy silt fill with no significant inclusions Length >2 00m, width 5 30m, depth 1 14m Below 200, smgle fill of 201
Trench 3	
300	Dark grey sandy silt clay buried topsoil becommg lighter towards base of fill Length not known, width >6 40m, depth 0 26m Below tarmac, above 301
301	Mid-yellowish brown silt deposit with frequent pebbles and sub-angular limestone fragments (<0 10m) Length not known, width 3 70m, depth 0 21m Below 300, above undisturbed natural

Context	Description	Phase
Site 69A	[Note For contexts 100-144, see Site 69B]	
145	Cut of E-W curvilmear ditch U-shaped profile with sloping 45° sides leadmg to curved base Length not known, width 0 40m, depth 0 25m Filled by 146, cut natural deposits, same fill as 147 and so stratigraphic relationship not established	I
146	Orangey brown clay fill with moderate small limestone fragments Length not known, width 0 40m, depth 0 25m Below U/S, smgle fill of 145	I
147	Cut of E-W irregular Imear ditch U-shaped profile with 45° sides, stepped near the bottom leadmg to a flat irregular base Length not known, width 1 35m, depth 0 60m Filled by 148, cut natural deposits, same fill as F145 and so stratigraphic relationship not established Group number M4	III
148	Orangey brown clay fill with moderate limestone <0 10m, frequent near cut Length not known, width 1 35m, depth 0 60m Below U/S, smgle fill of 147, M4	III
149	Cut of E-W curvilmear ditch U-shaped profile with 45° sides leadmg to curved base Length not known, width 0 70m, depth 0 20m Filled by 150, cut natural deposits Group number M3	III
150	Mid-orangey brown silty clay with occasional stones <0 03m and charcoal flecks Length not known, width 0 70m, depth 0 20m Smgle fill of 149	III
151	Cut of probable natural feature U-shaped profile with stepped 30-45° sides leadmg to a flat base Length not known, width 0 85m, depth 0 24m Filled by 152, cut by 149	Natural
152	Mid-orangey brown silty clay fill with occasional stones <0 03m and moderate stones 0 10m Length not known, width 0 85m, depth 0 24m Below U/S, smgle fill of 151, natural feature	Natural
153	Cut of NE-SW Imear ditch V-shaped profile with sides slopmg 45-60° Length not known, width 1 30m, depth 0 50m Filled by 158, cut 157, same as 147 Group number M4	III
154	Cut of NW-SE Imear ditch curvmg to east to become 156 Shallow U-shaped profile with 60° sides leadmg to flattish base Length not known, width 0 90m, depth 0 20m Filled by 157, cut natural deposits, same as 156 Group number M2	III

Context	Description	Phase
155	Cut of NE-SW partially excavated ditch U-shaped profile with south side sloping 30-45° Length not known, width >2 00m, depth >1 00m, Filled by 160, cuts natural deposits Group Number M1	IV
156	Cut of NE-SW curvilmear ditch curvmg to south to become 154 U-shaped profile with sides slopmg 60° leadmg to curved base Length not known, width 0 70m, depth 0 50m Filled by 159, seemed to be cut by 160, same as 154 and 217 Group number M2	III
157	Mid-orangey brown silt fill with frequent lunestone <0 10m Length not known, width 1 10m, depth 0 17m Below U/S, smgle fill of 154, M2	III
158	Dark reddish brown silt fill with frequent limestone <0 10m, and occasional limestone <0 20m Length not known, width 1 30m, depth 0 50m Below U/S, smgle fill of 153, M4	III
159	Pale reddish brown silt fill with frequent limestone flecks and moderate limestone <0 50m Length not known, width 1 85m, depth 0 60m Below U/S, single fill of 156	III
160	Soil description not available Length not known, width >2 00m, depth >1 00m Possibly cuts 156, single excavated fill of F155, M4	IV
161	Group number for finds from machined segments through ditches M1 and M5	III/IV
162	Re-cut of NE-SW linear ditch, discounted m the post-excavation process	
163	Mid-brown sandy silty clay fill with occasional stones <0 01m Length not known, width 2 40m, depth 0 55m Below 164, above 165, fill of 169 (Group number M6)	II
164	Light brown sandy silty clay fill with occasional stones <0 01m Length not known, width 1 08m, depth 0 20m Below U/S, probable smgle fill of ditch M3	III
165	Light brown sandy silty clay fill with moderate stones <0 06m Length not known, width 0 60m, depth 0 50m Below 163, cut by 166, above 168, fill of 169 (Group number M6)	II
166	Re-cut of NE-SW linear ditch Lopsided U-shaped profile with SE side sloping 60-70° and NW side sloping 45-60° Length not known, width 2 90m, depth 0 82m Filled by 167, 176, 170 and prmiary fill 171, cut 165 (Group number M5)	III
167	Mid-brown sandy silty clay fill with rare stone <0 01-0 05m Length not known, width 1 24m, depth 0 45m Below U/S, above 170, fill of 166 (Group number M5)	III
168	Pale greyish sandy silty clay fill with frequent stone <0 05m Length not known, width 1 23m, depth 0 40m Below 165, primary fill of 169 (Group number M6)	II
169	Cut of NE-SW mnnmg linear ditch U-shaped profile with 45-55° shghtly stepped sides leadmg to flattish base Length not known, width 1 23m, depth 0 97m Filled by 165 and primary fill, 165, cut natural deposits (Group number M6)	II
170	Mid-brown sandy silty clay fill with moderate stone <0 02m and occasional stones <0 10m Length not known, width 1 55m, depth 0 35m Below 167 and 176, above 171, fill of 166 (Group number M5)	III
171	Pale greyish brown silty clay fill with moderate to frequent stones <0 03m and occasional stones <0 10m Length not known, width 1 35m, depth	III

Context	Description	Phase
	0 70m Below 170, primary fill of 166 Also attributed to fill of 175, 2 7m wide and 0 9m deep (Group number M5)	
172	Mid-brown sandy silty clay fill with frequent stones <0 03m and occasional stones <0 10m Length not known, width 0 75m, depth 0 50m Below 178, above 174, fill of ditch 173/177 (Group number M1)	IV
173	Cut of NE-SW linear ditch U-shaped profile with 60° sides leading to flattish base Length not known, width 2 70m, depth 1 00m Filled by 178, 172 and primary fill 174, cut 176 (Group number M1)	IV
174	Light brown sandy silty clay fill with moderate stones <0 03m and occasional stones <0 08m Length not known, width 1 80m, depth 0 50m Below 172, primary fill of 173/177 (Group number M1)	IV
175	NE-SW orientated linear ditch cut, 2 7m wide and 0 9m deep, filled by 171 Group no M5 (recut by ditch 208, M1)	III
176	Mid-brown firm sandy silty clay fill with occasional stones <0 03m Length not known, width 1 40m, depth 0 40m Cut by 177, above 170, fill of 166 (Group number M5)	III
177	Cut of NE-SW linear ditch Originally interpreted as a re-cut but later re-attributed to part of ditch 173 i e equivalent to 173 Length not known, width 2 70m, depth 1 00m Filled by 178, 172 and primary fill 174, cut 176 (Group number M1)	IV
178	Mid-brown sandy silty clay fill with moderate stones <0 03m, and occasional stones <0 07m Length not known, width 0 80m, depth 0 83m Cut by 179, above 172, fill of 173/177 (Group number M1)	IV
179	Originally attributed as a possible re-cut of ditch M1, but not seen elsewhere Later discounted, ie void	n a
180	Dark brown sandy silty clay with frequent stones <0 03m mainly near to cut Length not known, width 1 95m, depth 0 35m Below 181, fill of 177 Group number M1	IV
181	Mid-brown sandy silty clay fill with rare to occasional stones <0 05m Length not known, width 0 73m, depth 0 20m Below U/S, above 180, fill of 177 Group number M1	IV
182	Mid-orangey brown sandy silt fill with frequent angular stones <0 20m, mainly <0 10m and densely packed in the middle Length excavated 0 70m, width 1 00m, depth 0 38m Below U/S, single fill of 183	Not phased
183	Cut of NW-SE butt ended linear ditch U-shaped profile with 45°-60°sides leading to flattish bottom, slightly irregular, stepped northern side Length excavated 0 70m, width 1 00m, depth 0 38m Filled by 182, cut natural deposits	Not phased
184	Cut of NE-SW linear ditch U-shaped profile with 45° sides and a flat base Length not known, width 2 30m, depth 0 80m Filled by 185, cut natural deposits Group number M6	II
185	Light reddish brown firm silt with moderate stones <0 01m and occasional stones 0 40m concentrated near the cut Length not known, width 2 30m, depth 0 80m Cut by 194, single fill of 184	II
186	Mid-orangey brown silty clay fill with frequent limestone flecks and moderate limestone <0 10-0 15m Length excavated 0 80m, width 0 60-	II

Context	Description	Phase
	0 80m, depth 0 45m Possibly cut by 189, single fill of 187, M2, same as 192	
187	Cut of E-W linear ditch U-shaped profile with 45°-60° sides leadmg to flattish base Length excavated 0 80m, width 0 60-0 80m, depth 0 45m Filled by 186, cut natural deposits (Group number M2)	III
188	Mid-orangey brown silty clay with slightly grey tinge, moderate to frequent limestone flecks, occasional to moderate limestone <0 05m, and pottery Length excavated 1 00m, width 1-80m, depth 0 50m Below U/S, above 190, fill of possible pit, 189	V
189	Cut of E-W orientated possible butt ended feamre or pit with uregular plan and profile Length excavated 0 95m, width I 20m, depth 0 50m Filled by 188, cut 190	V
190	Mid-orangey brown plastic silty clay fill with moderate limestone flecks and larger stones <0 08m Length excavated 1 00m, width excavated 0 80m, depth excavated 0 30m Below 188, primary fill of 191 (Group number M1)	IV
191	Cut of partially excavated E-W linear ditch U-shaped profile with 45°-60° south side leadmg to flattish irregular base Length excavated 1 00m, width excavated 0 80-1 30m, depth excavated 0 66m Filled by 188 and primary fill 190, cut natural deposits (Group number M1)	IV
192	Mid-reddish/orangey brown silty clay with frequent limestone <0 007m and moderate limestone 0 04-0 07m Length excavated 0 60m, width 0 63m, depth 0 17m Below U/S, single fill of 193, same as 186 (Group number M2)	III
193	Cut of E-W linear ditch U-shaped profile with 45°-60° sides leadmg to flattish base Length excavated 0 60m, width 0 63in, depth 0 17m Filled by192, cut natural deposits, same as 187 (Group number M2)	III
194	Cut of partially excavated NE-SW linear ditch with *c* 30° side Length not known, width excavated 2 30m, depth 0 50m Filled by 195, cut 185 (Group number M5)	III
195	Mid-reddish brown silt fill with frequent evenly spaced limestone <0 01m and moderate limestone <0 03-0 06m concentrated around cut Length not known, width 2 30m, depth 0 50m Below U/S, single fill of 194 (Group number M5)	III
196	Pale whitish orange clay silt fill with occasional limestone <0 005-0 01m Length excavated 3 00m, width 2 60m, depth 0 43m Cut by 205, above 199, fill of 198	Not phased
197	Dark reddish brown silty clay fill with occasional limestone *c* 0 005-0 025m Length excavated 3 00m, width 0 60m, depth 0 19m Below U/S, single fill of 205	Not phased
198	Cut of curvilmear ditch runnmg from N-W and curvmg to south Rounded V-shaped profile with 45°- 60° sides, stepped half way down and leadmg to curved base Length excavated 3 00m, width 4 20m, depth 1 57m Filled by 196, 199, 200 and primary fill 201, cut 202	Not phased
199	Dark reddish brown silty clay fill with frequent small limestone fragments Length not known, width 3 80m, depth *c* 0 48m Below 196, above 200, fill	Not phased

Context	Description	Phase
	of 198	
200	Dark reddish brown silty clay fill with frequent large limestone <0 20m Length not known, width 1 70m, depth 0 40m Below 199, above 201, fill of 198	Not phased
201	Mid-orangey brown silty clay fill with moderate small and large limestone <0 15m Length not known, width 3 75m, depth c 0 43m Below 200, primary fill of 198	Not phased
202	Dark reddish brown silty clay layer with moderate small and medium lmiestone Natural colluvial deposit Length not known, width excavated 3 60m, depth 0 40m Cut by 198, above 203	Natural
203	Mid-reddish brown silty sand layer with no significant mclusions Natural colluvial deposit Length not known, width excavated 3 45m, depth 0 42m Below 202, above 204	Natural
204	Mid-orangey brown sandy clay layer with no significant mclusions Natural colluvial deposit Length not known, width excavated 3 35m, depth 0 20m Below 203, above natural	Natural
205	Cut of possible N-S ditch Broad V-shaped profile with 45° sides In the post-exc process it was decided that this was not a cut Length not known, width 0 60m, depth 0 20m Filled by 197, cut 196	n a
206	Mid-brown sandy silt fill with 5% limestone <0 02m, occasional stones 0 08m and occasional degraded anunal bone Length not known, width 2 42m, depth 0 45m Below U/S, above 218, fill of 207	Not phased
207	Cut of N-S Imear ditch Lopsided U-shaped profile with W side slopmg *c* 45°-60°, E side slopmg *c* 30°-45° and base slopmg down to west Length not known, width 2 62m, depth 0 75m Filled by 206 and primary fill 218, cut natural	Not phased
208	Cut of NE-SW Imear ditch U-shaped profile with sides slopmg *c* 45° leadmg to flat base Length not known, width 3 47m, depth 1 05m Filled by 210, 211, 212 and prmiary fill 209, cut 213 (Group number M1)	IV
209	Specific soil description not given, but probably the same as 174 ie a light brown sandy silty clay fill with moderate stones <0 03m and occasional stones <0 08m, 2 4m wide and 0 25m deep (Group number M1)	IV
210	Specific soil description not given, but probably the same as 180 ie a dark brown sandy silty clay with frequent stones <0 03m mamly near to cut, with occasional stones <0 08m Length not known, width 2 4m, depth 0 45m Below 212, above 211, fill of 208 Primary fill of 208 (Group number M1)	IV
211	Lens of silt with frequent charcoal flecks/ lumps <0 05m and occasional limestone <0 05m Length not known, width 0 90m, depth 0 06m Below 210, above 209, fill of 208 (Group number M1)	IV
212	Specific soil description not given, but probably the same as 181, i e a mid-brown sandy silty clay fill with rare to occasional stones <0 05m Length not known, width 2 4m, depth 0 30m Below U/S, above 210, fill of 208 (Group number M1)	IV
213	No soil description for fill due to tune limitations, rare limestone <0 05m Length not known, width 1 30m, depth 0 20m Cut by 208, above 214, fill of 217 (Group number M2)	III
214	No soil description for fill due to time limitations, occasional	III

Context	Description	Phase
	limestone<0 10m Length not known, width 1 65m, depth 0 50m Below 213, above 215, fill of 217 (Group number M2)	
215	Fill made up of densely packed crushed and degraded limestone Length not known, width 0 45m, depth 0 02m Below 214, above 216, fill of 217 (Group number M2)	III
216	No soil description for fill due to time limitations, rare limestone <0 10m Length not known, width 0 35m, depth 0 13m Below 215, primary fill of 217 (Group number M2)	III
217	Cut of NE-SW linear ditch U-shaped profile with 45° sides, N side stepped at bottom then almost vertical leading to flattish base Length not known, width 1 65m, depth 0 68m Filled by 213, 214, 215, and primary fill 216, cut natural, same as 156 (Group number M2)	III
218	Light brown sandy silt fill with 20% limestone and pebbles, 30% larger limestone fragments and pea gravel and occasional burnt or coloured stones Length not known, width 1 43m, depth 0 35m Below 206, primary fill of 207	Not phased
219	Dark brown silty clay fill with occasional limestone <0 10m Length not known, width 3 30m, depth 1 00m Below U/S, single fill of 220 (Group number M1)	IV
220	Cut of NE-SW running ditch Lopsided U-shaped profile with SE side sloping 45° and NW side sloping 60° and flat base closer to NW side Length not known, width 3 30m, depth 1 00m Filled by 219, cut 221 (Group number M1)	IV
221	Dark brown silty clay fill with very occasional limestone fragments <0 05m Length not known, width 3 20m, depth 0 30m Cut by 220, above 222, fill of 225 (Group number M5)	III
222	Mid-brown silty clay fill with frequent limestone fragments <90 10m Length not known, width 1 75m, depth 0 55m Below 221, above 223 and 224, fill of 225 (Group number M5)	III
223	Light to mid-brown silty clay fill with very occasional limestone fragments <0 12m Length not known, width 0 80m, depth 0 58m Below 222, primary fill of 225 (Group number M5)	III
224	Light to mid-brown silty clay fill with occasional limestone fragments <0 05m Length not known, width 0 90m, depth 0 28m Below 222, primary fill of 225 (Group number M5)	III
225	Cut of NE-SW running ditch U-shaped profile with NW side sloping 40 - 45° and flat base, SE side cut by 225 Length not known, width 3 80m, depth 0 80m Filled by 221, 222, and primary fills 223 and 224, cut 226 (Group number M5)	III
226	Mid-brown silty clay fill with moderate limestone fragments <0 12m Length not known, width 1 40m, depth 0 50m Cut by 225, single fill of ditch 227, no difference between 226 and 228 (Group number M6)	II
227	Cut of NE-SW running ditch butt ending to the SW Bowl-shaped profile to SW and stepped V-shaped profile to NE Length not known, width 1 40m, depth 0 50m-0 95m Filled by 226, cut natural deposits (Group number M6)	II
228	Mid to dark brown silty clay fill with occasional limestone fragments	III

Context	Description	Phase
	<0 10m Length not known, width 0 70m, depth 0 30m Below U/S, smgle fill of ditch 229, no difference between 228 and 226 (Group number M3)	
229	Cut of NE-SW runnmg ditch U-shaped profile Length not known, width 0 70m, depth 0 30m Filled by 228, relationship with 227 could not be established due to similarity m fills of 2 ditches (Group number M3)	III

Context	Description
Site 69B	
100	Mid-orangey brown sandy clay fill with moderate limestone <0 01m and occasional stone <0 15m Length 8 00m (exc 0 50m), width 0 60m, depth 0 22m Below U/S, smgle fill of 101, M7
101	Cut of N-S lmear ditch with southem end curvmg slightly to S-W U-shaped profile with sides slopmg 60° leadmg to fiat base Length 8 00m (exc 0 50m), width 0 60m, depth 0 22m Filled by 100, cut natural deposits Group number M7
102	Cut of NW-SE field dram V-shaped profile constmcted of lunestone slabs tapermg towards the base and capped with randomly positioned mbble Length 28 00m, width 0 70m, depth 0 85m Below U/S, cut natural deposits
107	Cut of E-W lmear ditch V-shaped profile with sides slopmg 45°to the east and 60°to the west leadmg to a slightly rounded base Length 5 50m (1 10m excavated), width 1 40m, depth 0 54m Filled by 108 and primary fill 109, cut natural deposits
108	Mid-orangey brown sandy clay fill with moderate limestone <0 08m, occasional heat affected stones <0 15m 1 fragment of flint and 2 fragments of animal bone Length excavated 1 10m, width 1 40m, depth 0 54m Below U/S, above 109, upper fill of 107
109	Mid to light brown sandy clay fill with frequent stone <0 02m mixed with natural deposits The fill was probable formed by collapse and erosion Length excavated 1 10m, width not available, depth 0 04m Below 108, primary fill of 107
110	Cut of N-S shallow irregular lmear feature Broad U-shaped profile Length not known, width 1 90m, depth 0 10m-0 15m Filled by 111, cut natural deposits
111	Homogeneous light brown clay loam fill with occasional lunestone Length not known, width 1 90m, depth 0 10m-0 15m Below U/S, smgle fill of 110
112	Cut of N-S lmear ditch Shallow lopsided U-shaped profile with sides slopmg 30° leadmg to slightly rounded base Length 5 50m, (exc 0 65m), width 1 35m, depth 0 32m Filled by 113, cut natural deposits
113	Mid-brown sandy clay fill with occasional stones <0 10m Length excavated 0 65m, width 1 35m, depth 0 32m Below U/S, smgle fill of 112
114	Cut of circular feature Shallow U-shaped profile with sides slopmg *c* 30° leadmg to flat base Length not known, width 0 76m, depth 0 11m Filled by 115, cut natural deposits Pit may be contemporary with F116
115	Mid-orangey brown sandy clay fill with occasional stones <0 05m Length not known, width 0 76m, depth 0 11m Below U/S, smgle fill of 114
116	Cut of curcular feature Shallow U-shaped profile with sides slopmg c 30° leadmg to slightly rounded base Length not known, width 0 76m, depth 0 18m Filled by 117, cut natural deposits Pit may be contemporary with 114

Context	Description
117	Mid-orangey brown sandy clay fill with occasional stones <0 03m Length not known, width 0 76m, depth 0 18m Below U/S, single fill of 116
132	Cut of N-S linear ditch V-shaped profile with slightly stepped sides sloping 45°-70° leading to flat base Length not known, width 1 00m, depth 0 56m Filled by 133, 135 and primary fills 134 and 136, cut natural deposits
133	Pale white/yellow redeposited limestone and sand fill noted in south facing section of segment Length not known, width not known, depth not known Below U/S, above 134, fill of 132
134	Mid-brown sandy silty clay fill noted in south facing section of segment with frequent large and small stones Length not known, width not known, depth not known Below 133, primary fill of 132
135	Mid-brown sandy silty clay fill noted m north facing section of segment with occasional small stones and pea grit Length not known, width not known, depth not known Below U/S, above 136, fill of 132
136	Pale brown sandy silt fill noted m north facing section of segment with moderate pea grit Length not known, width not known, depth not known Below 135, primary fill of 132
137	Cut of E-W linear ditch Shallow U-shaped profile with sides sloping 30°-45° leading to flat base Length not known, width 0 75m, depth 0 15m Filled by 139, cut natural deposits Group number M7
138	Cut of E-W linear ditch Slightly irregular U-shaped profile with sides sloping 30°-45° at top and 45°-60° at bottom leading to mainly flat base Length not known, width 0 87m, depth 0 25m Filled by 140, cut natural deposits Group number M8
139	No soil description due to time limitations, although it contained rare stones <0 05m Length not known, width 0 75m, depth 0 15m Below U/S, single fill of 137, M7
140	No soil description due to tune limitations, although it contained moderate stones <0 05m Length not known, width 0 87m, depth 0 25m Below U/S, single fill of 138, M8
141	Cut of linear N-S ditch Irregular U-shaped profile with sides sloping 40° and irregular flat base Length not known, width 0 87m, depth 0 11m Filled by 142, cut natural deposits
142	Mid-orangey brown silt fill with frequent limestone flecking and occasional lunestone fragments <0 15m Below U/S, single fill of 141
143	Cut of N-S to E-W linear ditch corner U-shaped profile with sides sloping 60°-70° leading to flat base, slight shallow stepping to east caused by root action Length not known, width 0 70m, depth 0 30m Filled by 144, cut natural deposits
144	Mid-brown sandy silty clay fill with occasional stone Length not known, width 0 70m, depth 0 30m Below U/S, single fill of 143

Site 71

103	Cut of curvilinear N-S ditch, S-shaped m plan, U-shaped in profile with vertical sides and slightly irregular, flat base Length not known, width 0 46m, depth 0 11m Filled by 104, cut natural deposits
104	Dark brown sandy silt with very occasional gravel inclusions Length not known, width 0 46m, depth 0 11m Below U/S, single fill of 103

Context	Description
105	Cut of linear NW-SE ditch U-shaped profile with vertical sides and flat base Length 20 00m, width 0 42m, depth 0 43m Filled by 106, cut natural deposits
106	Mixed yellow and dark brown sandy silt fill with very occasional small stones Length 20 00m, width 0 42m, depth 0 43m Below U/S, single fill of 105
118	Mid-brown sandy clay fill with moderate stone <0 30m, half of which was reddened, presumably indicating heat affection, frequent limestone flecking, occasional snail shells and very occasional charcoal flecks Length 8 00m (1 00m excavated), width 1 10m, depth 0 50m Below U/S, single fill of 119
119	Cut of linear NNE -SSW ditch Stepped U-shaped profile with sides sloping up to 60°with a flat base Length 8 00m, width 1 10m, depth 0 50m Filled by 118, cut natural deposits
120	Cut of oval pit U-shaped profile with shallow sloping sides leading to flat base Length not known, width 1 40m, depth 0 30m Filled by 121, cut natural deposits
121	Reddish-brown compacted clay fill with no significant inclusions except for occasional stone fragments around the edge of the cut Length not known, width 1 40m, depth 0 30m Below U/S, single fill of F120
122	Cut of linear NW-SE ditch Stepped V-shaped profile with top half of cut sloping 60° then 30° with bottom half sloping 70°-80° with rounded base Length not known, width 0 80m, depth 0 52m Filled by 123, cut 125
123	Mid-brown sandy clay fill with occasional limestone fragments and bioturbation Length not known, width 0 80m, depth 0 52m Below U/S, single fill of 122
124	Cut of amorphous natural pit Bowl shaped profile with sides sloping 20° and rounded base Length 1 80m, width 0 84m, depth not known Filled by 125, cut natural deposits
125	Orangey brown natural clay fill with occasional lunestone fragments Length 1 80m, width 0 84m, depth not known Cut by 122, single fill of 124
126	Cut of linear NNE-SSW ditch U-shaped profile with sides sloping 45° with flat base Length not known, width 1 10m, depth 0 50m Filled by 127, cut natural deposits
127	Mid-brown silty clay fill with moderate limestone flecks and limestone fragments 0 07m-0 37m Length not known, width 1 10m, depth 0 50m Below U/S, single fill of 126
128	Cut of NE-SW linear ditch Shallow U-shaped profile Length not known, width >0 52m, depth 0 08m Filled by 129, cut 131
129	Reddish brown silt fill with moderate limestone and occasional charcoal flecks Length not known, width >0 52m, depth 0 08m Below U/S, single fill of 128
130	Cut of NW-SE linear gully V-shaped profile with sides sloping 80°-90° leading to curved base Length not known, width 0 29m, depth 0 42m Filled by 131 and primary fill 230, cut natural deposits
131	Brown silt fill with no significant inclusions Length not known, width 0 29m, depth 0 09m Cut by F128, above 230, upper fill of 130
230	No soil description due to tune limitations Length not known, width 0 24m, depth 0 36m Below 131, primary fill of F130
Site 84	
001	Cut of irregular linear NW-SE possible ditch becoming shallower to NW U-shaped profile with sides sloping 45° leading to irregular rounded base Length not known, width 0 83m, depth 0 24m Filled by 002, cut natural deposits

Context	Description
002	Orangey brown sandy silt fill with occasional lunestone flecks Length not known, width 0 83m, depth 0 24m Below U/S, single fill of 001
003	Mid-orangey brown silty clay with occasional lunestone fragments <0 05m and two sherds of pottery Length >17 00m, width 1 40m, depth 0 06-0 30m Below U/S, fill of 004
004	Cut of irregular linear NE-SW ditch which could be natural Irregular U-shaped profile which varied along the length of the feature Length 17 00m, width 0 60m-1 40m, depth 0 06m-0 30m Filled by 003, cut natural deposits
005	Cut of linear N-S ditch V-shaped profile with sides sloping 60° leading to curved base Length not known, width 0 85m, depth 0 52m Filled by 006 and primary fill 007, cut natural deposits
006	Mid-brown sandy silt fill with very occasional limestone fragments Length not known, width not known, depth not known Below U/S, above 007, fill of 005
007	Mid-brown clay fill with 2 small stones at base <0 08m Length not known, width not known, depth not known Below 006, primary fill of 005

Appendix III Finds

Finds from Site 69A included possible Iron Age and medieval ceramics, iron-working slag and animal bone The respective types and quantities are listed in the tables alongside relevant specialist reports

Site	Context	Type	Quantity
69A	U/S (ploughed field next to quarry)	Flint nodule	1
	U/S (ploughed field next to quarry)	Slag	1
	146 (Phase I)	Pottery	1
	148 (M4, phase III)	Slag	1 bag
	152 (M3, phase III)	Slag	1 bag
	157 (M2, phase III)	Slag	
	158 (M4, phase III)	Slag	
	160 (M4, phase III)	Slag	
	161 (Group number)	Pottery	2
	161 (Group number)	Ammal bone	7
	161 (Group number)	Slag	1 bag
	186 (M2, phase III)	Slag	1
	188 (Phase V)	Pottery	3
	206 (Unphased)	Pottery	1
	209 (M1 phase IV)	Slag	1 bag
	210 (M1 phase IV)	Animal bone	1 bag
69B	U/S (m colluvium)	Pottery	2
	108	Ammal bone	3
	108	Unworked flint	1
71	118	Ammal bone	2

Animal bone identification by J E Richardson

Site	Context	Species	Element	No	Side	Comment
69A	161	unidentified	umdentified	15		
	210	cow	metacarpal	1	right	Distal epiphysis fused
69B	108	unidentified	umdentified	3		incl tooth
71	118	cow	metatarsal	2	right	fragments of same bone

Prehistoric Pottery Report by B Vyner

In the fabric descriptions and general discussion below, hyphenated colours indicate the variation in the colour expected from poorly controlled firing conditions, the first colour being the most in evidence Grit sizes are small (>3mm) No thm section analysis has been done and identification was carried out by eye

It would be unwise to place too much emphasise on such fragmentary evidence, but these sherds at least mdicate an Iron Age or Romano-British component to the cropmark complex

Context	Analysis
161	One sherd with a buff-brown exterior surface, an interior which was spalled and missing and a dark grey fabric with numerous small milky quartz sands The pot is probably of Iron Age or native Roman date and is comparable with Fabric 6 at Catterick (Vyner 1996), where it was a tiny component in the assemblage From a grouped context
161	One sherd with a grey brown exterior surface, a buff-brown interior and a grey-brown fabric with numerous small calcite fragments Additional small cavities suggest the former presence of organic grits, now leached out The vessel is hand made and has extemal rilling or combing marks and an average wall thickness of 5mm From a grouped context In the absence of any supporting assemblage or detailed contextual information, it is difficult to establish a firm diagnosis on the basis of such a small sherd (approximately 20 x 25mm) Two additional specialists have been consulted and the conclusion is that this does not appear to be either Roman, early medieval or medieval in date As it derives from a grouped context, it may be sensible to regard it as Iron

Context	Analysis
	Age It may, however, be residual in its context
206	One sherd of a jar with a dark brown-grey exterior surface, a dark grey interior surface and a dark grey fabric with sparse quartz grits and very small cavities where calcite or orgamc grits have leached out This is a sherd from close to the jar base, the likely average wall thickness being 12nim The pot is probably of Iron Age or native Roman date From linear feature 207

Site 69 Medieval Pottery Report by C Cumberpatch

The pottery from Site 69A indicates later medieval and early post-medieval activity on or around the site The nature of this activity is difficult to ascertain from the small quantities of pottery recovered

Site	Context	Analysis
69A	146	One sherd of post-medieval red ware Probably 17th-century date
	188	Two sherds of unglazed oxidised sandy ware, probably of post-medieval date
		One sherd from a 16th-century pancheon, intemal green glaze
69B	U/S in colluvium	One abraded Humberware body sherd with a patch of extemal green glaze Probably of 13th /14th century date

Report on the Iron-working debris from Site 69A by J Cowgill

Recording Methodology

The iron production and smithing assemblage from the site has been identified and recorded on *pro forma* recording sheets This information was entered into a Microsoft Access database and consists of the following encoded fields Context, Type, Quantity, Weight, Comments The slag was visually exammed and identified solely on morphological grounds, sometimes with the aid of a x10 binocular microscope (For more detailed information see the glossary in Appendix 1 and catalogue in Appendix 2) A note of probable fuel type has been recorded when fragments were incorporated within the slags or imprints identifiable

The slags and associated debris

A total of 8120g of material were submitted for recording (112 pieces) These can be sub-divided into the following categories

TYPE	QUANTITY	WEIGHT(g)
Fired clay	3	19
Fumace slag	4	515
Hammerscale	*	*
Hearth Bottoms	9	1963
Unspecified slag	54	2766
Smithing slag lumps	18	1290
Stone#	3	279
Tap slag	10	398
Thick slag-attacked clay	7	983
Vitrified clay	5	98
Vitrified hearth limng	1	6

* Present but not recorded

2 are natural

Iron Age slags, particularly those associated with smithing, can be difficult to classify because they often do not have many of the morphological characteristics that occur on the more common Romano-British and medieval slags The Iron Age

smithing slags can be very dense and may have the raked or flowed appearance that is often a key indicator of a smelting slag This is certainly a problem with this small assemblage Smelting and smithing slags seem to be present but it is very odd because the most common type of smelting slag (tap slag), which usually totally dominates a smelting assemblage, is represented here by a very few pieces

The evidence for the smelting of iron

There is conclusive evidence for iron smelting near the site in the form of tap slags, furnace slag and 'thick slag-attacked clay' Only ten pieces of probable tap slag were recovered, although a few other pieces could just be included in this category (for example the 34g hearth bottom from 177 (=175) and 173 (=208) M1/M5)

Other smelting slags include the four pieces of furnace slag (slag that has cooled in the base of the furnace) from 154 M2 and 153 M4 and possibly the 442g hearth bottom from 147 M4 which may also actually belong to this category A characteristic feature of furnace slags is the large imprints of charcoal within the slag or the size of pieces that have become incorporated within it, residues of the fuel used for smelting This is clearly the case here where pieces measuring 25x25x20inm were not uncommon Additional pieces of furnace slag may be represented by some of the pieces just recorded as 'slag' but also have large charcoal imprints and a high iron content (recorded as rnsty) Two possible fragments are from 147 M4 with a further probable piece from the same context (weight 18g), and a few additional examples from some other contexts Unlike the tap slags, however, these pieces are all similar to Iron Age smithing slags

A further category associated with smelting is the 'thick slag-attacked clays' It is uncertain how or where (in the context of iron furnaces) these were generated but the high temperatures required to produce them and the degree of slag attack argues for smelting, rather than smithing, as a source The hottest parts of the furnace will be around the air hole in the side of the furnace (where the bloom forms) and perhaps around the tapping arch where the slag gathers before being tapped off The key piece is from 153 M4 and has a straight rim-shaped edge 45mm thick The outer edge of the rim appears to be constrncted with a coil but it is uncertain whether this is a repair or part of the origmal constrnction (One piece has clearly been repaired at least twice) Three of the other pieces are 55mm thick which is oddly consistent and all the larger pieces have a flat, rather than curved, back The shape of these pieces suggests that they are probably a part of the furnace arch although the degree of slag attack seems particularly deep for this area If this is indeed the corıect explanation then it would suggest that the furnaces were flat or straight fronted and not curved as is generally expected Parallels do exist for this, for example the well-preserved furnace found in Scole (Norfolk) in 1983 (Gregory 1983) Regional variations in furnace type have long been suggested but the lack of excavated sites have not allowed this theory to be proven (pers comrn J G McDonnell)

One additional piece of slag from 154 M2 may aid with furnace reconstrnction It is exceedingly dense slag and has a piece of limestone attached to one side (60x20x?mm) over which the slag seems to have rim The stone appears to have a smooth regular curved upper hp 20mm thick over which the slag had flowed and

behind it the slag had dammed up, the shape of the base following the curved profile of part of the furnace base The piece of slag with the attached stone is fragmentary and, for example, the diameter of the curve in the stone cannot be reconstructed The stone could be part of a stone tuyere but the density of the slag suggests that it had formed in the base of the furuace rather than around the air hole If the stone is from the base of the tapping arch this is unusual because normally the base of the arch slopes down wards towards the tapping pit to encourage the fast removal of the slag whereas the stone would impede the flow

The evidence for the smithing of iron

Although the standard terms have been used to record this assemblage, they do not really apply because there were few true hearth bottoms or smithing slag lurups The only true hearth bottom is from 153 M4 (weight 106g) with a probable layered hearth bottom from the same context The other identified hearth bottoms are mainly incomplete, often fast cooled and have a dense structure with few voids The smithmg slag lumps were unusually large, dense and had irregular surfaces which appeared to have completely melted and thus 'flowed' Both types of slag sometimes have pale grey-green silica rich areas and a few have clay inclusions from the hearth wall but none had *in situ* hearth limng indicating where they had been attached to the tuyere or hearth wall Small charcoal imprints and inclusions were commonly found on the smithing slags

The most conclusive form of evidence for smithing was the presence of plate hammerscale in the soil found in the bags contaimng the slag Although often crushed it was in great enough quantity to suggest smithing was occurung near 151 M3, 153 M4, 154 M2, 161 and/or 173 and 208 M1 No spheroidal scale (which is associated with primary smithmg and welding) was observed, but the sample tested was very small

Related forms of evidence

The fuel type used for all the processes was undoubtedly charcoal It has been postulated that only large pieces are suitable for smelting (pers comm P Crew) and although these slags contain the imprints of a wide range of sizes from small (*c* 3mm) to large (30mm +), the larger pieces are generally associated with the smelting slags as would be expected There may also be some mineralised wood inclusions m the slag from 151 but unfortunately this is not provable (pers comm R Gale)

The vitrified clays have iron slag on their surfaces and could have been produced by either process The fired clays are more nebulous and could have been associated with a wide range of activities The rounded river pebble, if alien to the local geology, could have been selected for use as an anvil or hammerstone, the later is perhaps more likely Hammerstones were used in the smelting process to crush the roasted ore into small fragments, known as fines, which were then fed into the furuace Hammerstones are not generally thought to be suitable for smithing but there are ethnographic examples (for example in Kenya, Brown 1995) It is more likely that the stone was a fragmented fire cracked pebble

The distribution of slag

The quantity of iron-working debris from the excavated sections across the ditches

Context	Ditch Cut	Group No	Phase	Quantity	Weight
157	154	M2	III	35	3019
186	187	M2	III	1	194
152	151	M3	III	14	717
148	147	M4	III	9	1957
158	153	M4	III	8	1105
160	155	M1	IV	1	6
209	208	M1	IV	11	197
161	177/173	M1/M5	III/IV	36	1204

The size of the excavated sections across the ditches was very variable and the majority of these sections were located in the south-westem part of the site because that was where the ditches concentrated It is uncertain how sigmficant these factors are in biasing the results

There was no iron-working debris recovered from Phase I or II features but little of these features were excavated The majority of the slags and associated material were from Phase III features and it is very likely that it was during this period that both smelting and smithing were occurring nearby (see table above) The few pieces from Phase IV comprise a small piece of vitrified hearth lining from ditch 155 M1 which could be the product of a range of industrial practises There are also 36 pieces from the machine cut trench through ditches 169, 177 and 173 and it is not known if the slag came from all the ditches or just one No slag was recovered from the corresponding terminal of ditch 184, associated with 169, whereas slag was found in the primary fill of the continuation of M1 in 208 (fill 209), suggesting that the finds (from 161) are attributable to the later ditches M1 and M5 (i e 177 (= 208) and 173 (=175)) It is notable that both assemblages are similar in composition and are probably smithing assemblages, containing hammerscale, with a single piece of abraded smelting slag from 208 The fact that the assemblage from 208 was only recovered from the primary fill suggests that smithing and perhaps smelting continued near the site possibly just after the ditch was dug but then stopped

There was a single piece of 'thick slag-attacked clay' from the four sections excavated in the north-eastern part of the site This may indicate that the metal-working was concentrated close to the southem area but may purely be a matter of

chance or a reflection of the excavation strategy and the fact that most of the ditches were in the south

Discussion

Evidence of both the smelting of iron ores and the smithing of iron was found during the watching brief The smithing slags are composed of unusual forms which is to be expected at this date The presence of hammerscale in four of the ditches suggests that the smithing was occurring nearby The lack of tap slag is more surprising The presence of some tap slag indicates that there was smelting nearby, and this is reinforced by the quantity of furnace slag and 'thick slag-attacked clays' Some of the tap slag recorded was abraded and this suggests that perhaps the smelting site was some distance away with only a few pieces reaching the area of Crispin Quarry (Site 69A) The presence of the more fragile (in slag terms) and generally rarer furnace slag seems to contradict this theory

The main activity occurring near the site could have been primary or secondary smithing, or both It is common to find virtually no finds, apart from slags, on an iron production site where smelting and primary smithing is undertaken Secondary smithing, however, usually occurs close to or within a settlement The presence of the Iron Age roundhouses nearby allows for either interpretation but the lack of dating information it is not known whether the sites are contemporary and therefore a conclusion cannot be drawn

Conclusions

The site has produced important evidence for Iron Age smelting and smithing of iron Few of these sites have been excavated or adequately recorded and therefore this site will add valuable information to the National Corpus It is hoped that in the future it will be possible to examine this data to look for potential regional trends The sigmficance of the site should be highlighted on the SMR in case any future work is proposed in the area

The Crispin limestone quarry may of course have destroyed the key area of the site In Lincolnshire a surprising number of smelting sites seem to have been destroyed by limestone quarrying

List of Slag

Key

FLAY	Fired clay	HAMMS	Hammerscale
HB	Hearth bottom	SLAG	Unspecified slag
SSL	Smithing slag lumps	STONE	Stone
TAP	Tap slag	TSAC	Thick slag-attacked clay
TH	Thickness	VCLAY	Vitrified clay
FURN	Fumace lming		

Context	Material	No	Wgt	Comments
148 (M4)	HB	1	442	Fumace base? rounded base, mass small + large clay inclusions, dense
148 (M4)	HB	1	594	Large, small charcoal imprmts on base
148 (M4)	SLAG	1	18	Fum? Iron rich and msty, large charcoal inclusions and imprints
148 (M4)	SLAG	1	85	Large charcoal imprints, frequent clay inclusions, SSL or Fum
148 (M4)	SLAG	2	50	SSL? Charcoal imprints + frequent clay mcl inclusions + 1x large inclusion
148 (M4)	SSL	1	253	Some fast cooled, some glassy patches, few inclusions
148 (M4)	TAP	1	178	Part glassy, formed on tap ?
148 (M4)	TSAC	1	337	TH 55mm, flat back, 2 ,layers
152 (M3)	HAMMS	0	0	Plate
152 (M3)	HB	1	103	Silica rich patches, large msty area
152 (M3)	SLAG	1	41	SSL? 3 very large charcoal miprints, rest flowed, dense
152 (M3)	SLAG	2	7	
152 (M3)	SLAG	3	192	SSL? medium-large charcoal imprints, flowed, dense
152 (M3)	SSL	1	64	Many small voids, silica rich areas, medium charcoal imprints
152 (M3)	SSL	1	117	Very dense, fast cooled, all surfaces flowed
152 (M3)	TAP	4	110	Very dense, 1x classic flowed top, 3x very

Context	Material	No	Wgt	Comments
				dense SSL?
152 (M3)	TSAC	1	83	Very odd shape, flat face
157 (M2)	FURN	1	159	V large charcoal imprints 20x25x25mm and 325mm long, +clay
157 (M2)	HAMMS	0	0	Cmshed, all plate? some prills
157 (M2)	HB	1	335	Smashed, small charcoal imprints on base
157 (M2)	SLAG	2	63	Probably smithing slag, SSL? not dense, small charcoal imprmts
157 (M2)	SLAG	2	1628	Furn? V dense, large charcoal imprints, 75mm, large limestone on ?side 60x25x?mm, tapping arch base?
157 (M2)	SLAG	3	137	Probably furn, all probably from one piece, large white inclusions 32x26x?rim
157 (M2)	SLAG	15	56	Probably the rest of the HB
157 (M2)	SSL	1	26	Occasional sand inclusions
157 (M2)	SSL	3	340	Large pieces, raked slag? but not dense, 1 may be small HB?
157 (M2)	TAP	4	80	Pale grey and glassy, classic tap
157 (M2)	TSAC	3	195	Thickness 55mm, flat back
158 (M4)	FURN	3	356	All one piece? V Frequent charcoal inclusions and imprints - several 25mm long, + clay
158 (M4)	HAMMS	0	0	Cmshed, all plate, few prills
158 (M4)	HB	1	106	Rusty, mass small charcoal imprints
158 (M4)	SLAG	1	402	Layered (3) HB, msty, crystalline, lots small charcoal imprints, no HL, H 55mm
158 (M4)	SSL	1	37	Not dense
158 (M4)	TAP	1	30	Narrow glassy flow
158 (M4)	TSAC	1	174	Thickness 45mm, straight 'rim' edge, clay coil along edge? organic temper visible, furnace arch?
160 (M4)	VHL	1	6	
161	FCLAY	1	7	Rounded edge
161	FCLAY	1	10	

Context	Material	No	Wgt	Comments
161	HAMMS	0	0	Plate
161	HB	1	34	Tap? Very dense, small charcoal imprints on base
161	HB	1	53	Dense, small-medium charcoal imprints on base
161	HB	1	119	Dense, most fast cooled
161	HB	1	177	Dense
161	SLAG	6	30	Most fast cooled, 2x msty
161	SLAG	9	37	Droplets, 3x msty
161	SSL	4	107	Flowed slag, dense
161	SSL	4	282	Medium + large charcoal imprints and inclusions
161	STONE	1	184	Fragment rounded river pebble, Hammerstone? Anvil fragment?
161	STONE	2	95	Natural Quartz conglomerate
161	VCLAY	4	69	2x slag attacked
186 (M2)	TSAC	1	194	Medium charcoal imprints, TH 55mm, very slag attacked, mass sand + stone inclusions
209 (M1)	FCLAY	1	2	
209 (M1)	HAMMS	0	0	Plate
209 (M1)	SLAG	6	20	Dense, heavy
209 (M2)	SSL	1	18	Light
209 (M2)	SSL	1	46	Small charcoal imprints
209 (M2)	TAP?	1	82	Dense, abraded
209 (M2)	VCLAY	1	29	Slightly slagged

Appendix IV Specification

NORTH AND WEST YORKSHIRE ARCHAEOLOGY SERVICES - SPECIFICATION FOR AN ARCHAEOLOGICAL ASSESSMENT OF A PROPOSED PIPELINE ROUTE

A specification of work to determine the archaeological sensitivity of a proposed new water main pipeline from Brayton (in North Yorkshire) to Kirkhamgate, West Yorkshire

Specification prepared for Yorkshire Water

1 0 Summary

1 1 A desk-based assessment and route walkover is proposed to establish the archaeological sensitivity of the proposed route The report produced will allow the formulation of an archaeological mitigation strategy by the North and West Yorkshire Sites and Monuments Records (hereafter, the SMRs) in discussion with Yorkshire Water Any work to be carried out as a result of the agreed mitigation strategy will be covered by further specifications of work drawn up by the SMRs separately for their own area of responsibility

1 2 This specification has been written by the curatorial branch of the West Yorkshire Archaeology Service, the holders of the West Yorkshire Sites and Monuments Record, in discussion and with the agreement of the Archaeology Section of North Yorkshire County Council, the holders of the North Yorkshire Sites and Monuments Record

2 0 Site Route and Details of Pipeline

2 1 The current proposed route runs from Brayton Reservoir (SE 5842 3038) for a distance of c 35km to Jaw Hill Reservoir, Kirkhamgate (SE 2926 2330) The SMRs have been supplied by Yorkshire Water with details of the proposed route on 9 sheets at 1 10,000 scale

Sheet 1 36276/WSD/BK/001 Rev P (N Yorks SE 53 SE)
Sheet 2 36276/WSD/BK/002 Rev P (N Yorks SE 53 SW)
Sheet 3 36276/WSD/BK/003 Rev P (N Yorks SE 43 SE)
Sheet 4 36276/WSD/BK/004 Rev P (N Yorks/W Yorks SE 42 NE)
Sheet 5 36276/WSD/BK/005 Rev P (W Yorks SE 42 NW)
Sheet 6 36276/WSD/BK/006 Rev P (W Yorks SE 32 NE)
Sheet 7 36276/WSD/BK/007 Rev P (W Yorks SE 32 NW)
Sheet 8 36276/WSD/BK/008 Rev P (W Yorks SE 32 SW)
Sheet 9 36276/WSD/BK/009 Rev P (W Yorks SE 22 SE)

2 2 The archaeological contractor should be issued with their own set of maps by Yorkshire Water, which should incorporate the latest revisions

2 3 The intention is to lay a new 800mm diameter water main This will generally entail the excavation of a trench approximately 2 5m wide at the surface, tapering to a width of c 1 5m at c 600 mm depth and with a variable total depth (generally 2 - 2 5m) The pipe will be laid within an easement 25m wide, which will have been fenced and from part of which the topsoil will have been stripped The easement will be used for soil dumps (usually a c 5m strip adjacent to one of the fences) and for the

movement of heavy plant Part of the route in both North and West Yorkshire involves laying the new main adjacent to existing water mains (see maps for details)

2 4 The archaeological contractor should also consider the siting of ancillary sites such as pipe dumps, temporary work areas etc These have not been identified on the plans available to the SMRs Access to the easement at the moment is believed to be restricted to existing highways and tracks

3 0 Background Information

3 1 Yorkshire Water has a statutory obligation under the Water Act, 1989 "to have regard to the desirability of protecting and conserving buildings, sites and objects of archaeological, architectural or historic interest, and to take into account any effect which the proposals would have on any such features, buildings, sites or objects" (Section 8 (1) (b) and (c))

3 2 The pipeline is necessary as part of Yorkshire Water's distribution strategy to help relieve the current water shortage and is a high priority scheme Work is likely to commence in the very near future (a date of January 6th 1996 has been mentioned)

4 0 Aim of the Specification

4 1 The purpose of the work is to produce a formal report to allow an informed archaeological mitigation strategy to be drawn up by the SMRs in discussion with Yorkshire Water The report should help identify areas where minor re-routes can achieve site avoidance, and also where local modifications to construction methods (e g reduced working widths, protection by temporary running tracks etc) may preserve deposits in-situ It should also allow the SMR to identify areas where additional archaeological field evaluation may be necessary prior to construction, as well as others where recording (either prior to or during construction) may be more appropriate, whether this be a summary record from a salvage excavation or watching brief, or a detailed record from an open area excavation The report itself should not make recommendations as to what appropriate course of action to adopt, but should be sufficiently detailed to allow the SMR to do so

5 0 Approach

5 1 The archaeological contractor should establish formal liaison and review procedures with each of the SMRs

5 2 A desk-based assessment is to be carried out on the proposed route and any associated ancillary working areas This is to involve the collation of secondary sources, including relevant written, cartographic and photographic information The assessment should also cover a distance of 100m either side of the pipeline to allow for informed decisions to be made regarding localised diversions should these be necessary, and for access routes for plant

5 3 The following is a list, not necessarily comprehensive, of

sources that are to be consulted

- The W Yorks SMR (details on known archaeological sites and findspots, the First Edition 6" mile O S maps, field names from estate maps and Tithe Awards, some oblique aerial photographs, listed buildings lists)
- Wakefield District Planning Office at Newton Bar, Wakefield to consult the vertical air photographs held from West Yorkshire County Council
- The N Yorks SMR (details on known archaeological sites and findspots, oblique and vertical aerial photographs, listed building lists, Scheduled monument lists, registers of historic parks and battlefields, O S cards)
- The N Yorks County Record Office (field names from Tithe and estate maps where available, First Edition O S maps)
- Yorkshire Water's own records regarding the detailed geology of the proposed route and any aerial photographs or other records that they may hold
- any other easily accessible local archive that the contractor is aware of which will produce information commensurate with the time spent extracting it

5 4 The entire route, including alternatives where indicated on the route plans, is to be the subject of a systematic walk-over after the desk-based assessment has been carried out The results of the desk-based assessment should inform the fieldwork The intention is to assess known archaeological sites, identify new ones and areas of potential archaeological sensitivity Concise but detailed field observations should be made, illustrated where appropriate by sketches or photography Note should be made of current landuse (see para 7 1 below)

6 0 Monitoring

6 1 The project will be monitored as necessary and practicable by the SMRs in their role as 'curators' of their County's archaeology The SMRs should receive as much notice as possible and certainly one week, of the intention to start the walkover survey

7 0 Results

7 1 A report is to be produced, two copies of which are to be supplied to each SMR, on the understanding that it will become a publicly accessible document after an appropriate period of time (generally not exceeding six months) It is not envisaged that the report will be published, but it should be produced with sufficient care and attention to detail to be of academic use to future researchers Details of style and format are to be determined by the archaeological contractor, but should include a catalogue of all identified or potential archaeological sites, each individually numbered, and located with as accurate a grid reference as possible The catalogue of sites should clearly separate sites in North Yorkshire from those in West Yorkshire Each site should have a sufficiently full description (with illustrations where possible and appropriate) to allow the SMR to recommend an appropriate course of action without requiring a field visit For sites within North Yorkshire only, the contractor should attempt to assess the relative archaeological

importance of each site, and include this assessment within their report Each site should be fully referenced, including the identity of the individual making the field observations The approximate extent and morphology of a site (where appropriate) should be represented on a map base and related to fixed structures or roads The geology, soils and current landuse to be shown on the map base, where the County boundary is also to be clearly identified The report should also possess appendices listing all sources consulted, a quantified index to the project archive, and a copy of this specification

7 2 Provision should be made to supply a draft copy of the report to each SMR prior to the production of the final report, both for speed of response in recommending further work and to allow the SMR to comment before the production of the final report

7 3 The contractor should make provision for a meeting with each SMR after supplying a copy of the draft report, to discuss the report and to aid the SMR in formulating appropriate further recommendations The meeting may take the form of a telephone discussion at the discretion of the SMR

7 4 The relevant part of the project archive, or a copy of it, is to be deposited with the appropriate County SMR on completion of the project The archive is to be fully indexed and to include any copies of plans or maps, any notes, including those made in the field, photographs and sketches

8 0 Queries

8 1 Any queries relating to this specification should be addressed to the appropriate County Sites and Monuments Record, either the West Yorkshire Archaeology Service, 14 St John's North, Wakefield WF1 3QA (Tel 01924 306801, Fax 01924 306810), or the Archaeology Section, North Yorkshire County Council, Planning Department, County Hall, Northallerton, DL7 8AQ (Tel 01609 780780 x2839, Fax 01609 777719)

IS & VF/12 12 1995

Specification Details for Potential Archaeological Sites within the Pipeline Corridor

1 The topsoil and recent overburden to be removed, down to the first significant archaeological horizon, in successive level spits The machine work must be carried out under direct archaeological supervision and the machine halted if archaeological deposits are encountered The top of the first significant archaeological horizon may be cleared by the machine, but must then be cleaned by hand and inspected for features The machine should be then be used to identify the full area of archaeological interest upto the boundaries of the pipeline easement Once the full area of archaeological interest has been identified the area should be cleaned and planned The nature of the archaeology (i e its condition, character and date) should then be established by excavation by hand If the area requiring excavation is relatively extensive and/or time-consuming, the WYAS SMR should be consulted and the agreement of the SMR obtained prior to excavation continuing NOTE It is likely that arrangements will need to be made to increase the resources available on site The intention of this specification is to identify areas of particular archaeological sensitivity which will require more detailed recording prior to destruction, whilst allowing the recording of minor archaeological features to be made if those are the only features present, so that the area can be handed over to the pipeline contractors The trenches to be recorded according to the normal principles of stratigraphic excavation The stratigraphy of any trench to be recorded even where no archaeological deposits have been identified

2 The actual areas of machine-stripping and any features of possible archaeological concern noted within the trenches, should be accurately located on a site plan and recorded by photographs, summary scale drawings and written descriptions as judged adequate by the archaeologist in charge of the exercise

3 The archaeological contractor will be responsible for ensuring that Health and Safety requirements are met, with regard to site personnel and to members of the public

4 Any human remains which are excavated must initially be left in-situ, covered and protected If removal is necessary this must comply with the relevant Home Office and local environmental health regulations

5 Any finds of gold and silver must be removed to a safe place and reported to the local coroner as required by the procedures relating to Treasure Trove 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

6 It is the responsibility of the archaeological contractor to endeavour to obtain the consent of the landowner in writing for the deposition of finds with the appropriate archaeolcgical store

7 The evaluation will be monitored as necessary and practicable by the County SMP in its role as 'curator' of the county's archaeology

8 On completion of the fieldwork, any samples taken shall be processed and all finds shall be cleaned, identified, assessed, spot-dated, marked (if appropriate) and properly packed and stored in accordance with the requirements of national guidelines A field archive shall be compiled consisting of all primary written documents, plans, sections and photographs The field archive or a copy of it will be deposited with the West Yorkshire SMR

9 A written report to be produced The report should include 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 Plans should be at an appropriate scale showing trench layout (as dug) and features located Artefact analysis to include the production of a descriptive catalogue with finds critical for dating and interpretation illustrated Details of the style and format of the report are to be determined by the archaeological contractor, but should include a full bibliography

10 A copy of the full report to be supplied to the County Sites and Monuments Record held by the WYAS within a period of two months unless specialist reports are awaited in the latter case a revised date should be agreed with the WYAS SMR The Report will be supplied on the understanding that it will become a public document after an appropriate period of time (generally not exceeding six months)

11 Any queries relating to this specification should be addressed to the County Sites and Monuments Record, West Yorkshire Archaeology Service, 14, St John's North, Wakefield WF1 3QA (tel (01924) 306801)

West Yorkshire Archaeology Service
IS/08 12 95

Appendix V: Aerial Photographic Rectification

by Alison Deegan BSc AIFA

Specification

The assessment specification required the mapping of levelled and upstanding archaeological features visible on the available aerial photographs to 1 2500 scale accuracy and detail

The specification defined the extent of this assessment as the following areas along the routes of the Kirkhamgate to Selby pipeline Sites 7, 16, 18, 69, 71 and 84

The Site 69 at Ledston on this pipeline route has previously been mapped for the M1-A1 Link aerial photographic assessment (Deegan 1998) This work was not duplicated for this assessment

Modern land use in the assessment area

All of the sites selected for aerial photographic assessment were under arable or pastoral regimes when photographed

Methodology

This assessment was undertaken according to guidelines set out m the Institute of Field Archaeologists Techmcal Paper *Uses of aerial photography in archaeological evaluations* (Palmer and Cox 1993)

Visible, levelled and upstanding archaeological features were mapped to 1 2500 scale accuracy and detail unless stated otherwise

All the available aerial photographs were examined under x2 magnification and the vertical photographs consulted were examined stereoscopically where possible Details of the relevant archaeological, natural and modem features and control points were transferred to acetate sheets overlain to appropriate aerial photographs

This information was recttfied to control points from the Ordnance Survey 1 2500 digital map data supplied for use by Archaeological Services WYAS Rectification was undertaken using the *Bradford Aerial Photographic Rectification Programme*, AERIAL4 2

AERIAL4 2 gives error readings for each control point, where 5 or more control points are used In all cases attempts were made to attain error readings of less than 3 metres for any one control point Where this was not possible or control information was insufficient other standard mapping techmques were employed mcluding Mobius Networks and deriving secondary control from vertical photographs In certain cases control was derived from photocopies of older map bases

In the absence of any detailed contour information no adjustment could be made for height variation With AERIAL4 2 this can be achieved by creating a Digital Terrain Model In practice this is a lengthy process and was not practicable for this assessment

The resultant files were exported to AutoCAD LT® 97 for assimilation and editing The data is presented as AutoCAD LT® 97 *dwg* files to be viewed up to 1 2500 scale

Summary information regarding each group of archaeological features recorded is given below

Data sources

Oblique aerial photographs held in the West Yorkshire Sites and Monuments Record (WY SMR), Newstead Road Wakefield were consulted for this assessment Selected vertical photographs held by the Map Office, Regeneration Department, Wakefield Metropolitan District Council (WMDC), Newton Bar, Wakefield were consulted

The aerial photographs consulted for this assessment are listed in Table I

Results (see text)

Site 7 Irregular linear features possibly not archaeological in origin

Site 16 Broad ditched enclosures within compound and associated field boundaries Possible Prehistoric or Romano-British farmstead

Site 18 Rectilinear enclosures and linear features

Site 69 Two D-shaped enclosures, parallel and perpendicular arrangement of parallel and single linear features with four rectilinear enclosures, four circular enclosures and a large cluster of pits

Interpretation prehistoric enclosures, late prehistoric to Romano-British trackways, field and farmstead enclosures, probable fungus rings and one possible hut-circle and pits and/or graves to tree boles Three of the four enclosures within this complex may not be of archaeological origin or may be the remains of more recent activities The context of the fourth example in this complex suggests that it contains domestic stmctures rather than fimerary monuments The crop responses along the trackways suggest wear depressions (from Deegan 1998)

Site 71 Rectilinear enclosure and dubious linear features which may be natural in origin

Site 84 This site is located in North Yorkshire, no aerial photographs pertaining to this site were available for consultation at WY SMR

TABLE 1 AERIAL PHOTOGRAPHS CONSULTED

Area	Site number	SMR code	Film/frame	Date
Kirkhamgate to	Site7	44 32 04 23	WY71/28-29	8/8/79
Selby Main	Site16	44 32 35 55	WY130/36	12/7/84
		44 32 35 55	WY276/19-21, 23	26/7/96
		44 32 35 55	WY134/14	23/7/84
	Site18	44 32 45 26	WY74/32-33	8/8/79
	Site 69	44 42 39 47	**	
	Site71	44 42 39 83	BVX85-87(CUCUP)	4/9/75

** see also Deegan 1998, 'AP Complex 204'

References

Deegan, A , 1998, 'M1-A1 Air photo assessment', unpublished report for WYAS

Palmer, R and Cox, C , 1993, *Uses of aerial photography in archaeological evaluations*, Institute of Field Archaeologists Technical Paper