

**Pannal to Nether Kellet
Natural Gas Pipeline**

**ARCHAEOLOGICAL SURVEYS, EVALUATIONS,
EXCAVATIONS AND WATCHING BRIEF**

**POST-EXCAVATION ASSESSMENT
VOLUME 2
APPENDICES**

NETWORK ARCHAEOLOGY LTD
for
ENTREPOSE INDUSTRIAL SERVICES LTD
on behalf of
NATIONAL GRID
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Appendix A

Metal-Detecting Survey

Introduction

This appendix presents the results of the metal-detecting survey carried out in late March 2006 along the part of the pipeline route within the area of the Yorkshire Dales National Park.

Aims of the metal detector Survey

The purpose of the metal detector survey was to locate hitherto unknown archaeology in order to assist the client in the planning and construction of the pipeline.

The specific objectives as stated in the written scheme of investigation were to:

- systematically recover metal artefacts from the topsoil
- identify and date artefacts
- provide artefact distribution and density data
- more accurately locate and assess any *known* sites identified by the desk-based assessment and field survey, and to identify any hitherto *unknown* sites
- determine any need for mitigation prior to construction
- compile an appropriate report or publication
- produce a paper and digital archive which will be deposited with the appropriate repositories.

The survey

The metal detector survey was carried out throughout the entire part of the pipeline length which lay within the Yorkshire Dales National Park. This amounted to 28 fields or plots, and 4.6km in length. All of the fields were under pasture at the time of the survey.

The topsoil was scanned in three parallel transects at 10m separation, one on the pipeline centre-line, the other two on either side by experienced, competent and reputable operators, using reliable and well-maintained metal detecting equipment. Metal finds retrieved were bagged and numbered, and each was located, to an accuracy of around 5-10m using an eTrex hand-held GPS.

Finds

The recovered artefacts are listed below, with the Ordnance Survey grid reference (NGR) as recorded by the GPS.

Table 1: Metal-detecting survey results by plot

Plot	Find no.	Description	NGR
16-1	5-033	Copper alloy rectangular object.	401177, 454167
	5-034	Post-medieval copper alloy shoe buckle	400981, 454182
	5-035	Lead fragment	400966, 454168

Plot	Find no.	Description	NGR
16-2	5-036	Iron nail	400799, 454144
	5-037	Post-medieval Irish copper halfpenny.	400790, 454141
16-3	5-038	Lead object	400742, 454150
	5-039	Lead object	400742, 454115
	5-040	Possible post-medieval copper alloy object.	400728, 454134
16-4	5-041	Metalworking waste	400685, 454136
	5-042	Undated rectangular lead sheet.	400686, 454099
	5-043	Possible lead weight	400588, 454124
	5-044	Iron knife fragment	400583, 454125
	5-045	Copper alloy fragment	400576, 454129
	5-046	Copper alloy button	400553, 454119
16-5	5-047	Possible lead weight	400513, 454111
	5-048	Copper alloy coin	400500, 454118
	5-049	Number void	N/A
	5-050	Musket ball	400499, 454114
	5-051	1912 halfpenny	400480, 454112
	5-052	1916 halfpenny	400451, 454109
	5-053	Late post-medieval/early modern copper alloy button	400428, 454097
	5-054	Late post-medieval/early modern copper alloy button	400464, 454096
16-6	5-055	13 th /14 th century silver penny.	400334, 454121
	5-056	1906 Edward VII penny.	400330, 454116
16-8	5-057	Copper alloy object	400235, 454120
	5-058	Number void	N/A
	5-059	Clipped coin	400217, 454087
	5-060	Iron object	400218, 454086
	5-061	Iron object	400273, 454076
17-2	5-062	18 th /19 th century copper alloy disc button.	399780, 454047
17-4	5-063	Unidentifiable metal object	399610, 454054
	5-064	Copper alloy coin	399612, 454089
17-6	5-065	1941 George VI halfpenny.	399194, 454030
17-8	5-066	Modern copper alloy carriage fitting.	398772, 453984
19-1	5-021	Fragment of slag	397437, 453766
19-3	5-022	Post-medieval copper alloy machine-cut object.	397237, 453789
	5-023	Iron object	397227, 453784
	5-024	Fragment of slag	397188, 453801
	5-025	Possible thimble	397243, 453795
	5-026	Iron clasp	397140, 453738
	5-027	Iron object	397144, 453788
	5-029	Horseshoe	397227, 453796
19-4	5-028	Iron object	396880, 453714
19-5	5-032	Ploughshare	396585, 453481

Plot	Find no.	Description	NGR
19-6	5-030	Horseshoe	396437, 453395
	5-031	Unidentifiable metal object	396490, 453429

After initial stabilisation and cleaning where appropriate, a brief appraisal of these finds was carried out to eliminate those that were clearly of no archaeological significance. The others were conserved and x-rayed where necessary and were included in the assessment reported here. Details can be found in Appendix C of this report.

Appendix B

The Watching Brief

Introduction

A watching brief was carried out during the 2006 and 2007 construction seasons on all ground-disturbing activities, including topsoil stripping of the pipeline easement, and of test-pits, trial holes, pipe dumps areas, compounds, car parks and any other similar areas. Trench excavation, and any other deep excavations, such as auger bore pits, were also monitored.

The main purpose of the watching brief was to record any archaeological remains that would be affected by the development, in order to gain a better understanding of the archaeology of the regions through which the pipelines passes.

- The specific objectives were to:
- provide a permanent-presence watching brief during all ground disturbing activities
- locate, recover, identify, and conserve, as appropriate, any archaeological artefacts
- locate, excavate and record archaeological remains
- locate, recover, assess and analyse, as appropriate, any palaeo-environmental, palaeo-economic and organic remains
- recommend measures for preservation in situ of archaeological, palaeo-environmental, palaeo-economic and organic remains, where feasible and desirable
- produce a suitable archive
- compile an appropriate report or publication
- produce a paper and digital archive which will be deposited with the appropriate repositories.

A permanent presence watching brief was maintained throughout all topsoil stripping and trenching operations. All stripped areas and spoil heaps were visually searched for archaeological remains. An excavation team was deployed whenever exposed archaeological deposits were sufficiently complex or extensive that they could not be dealt with by the watching brief archaeologists. These excavation sites are detailed in the main body of this assessment report.

Single archaeological features, or isolated small groups, were cleaned, excavated and recorded by the archaeologists undertaking the watching brief in the course of their normal duties. In general, these features or groups of features were not considered to be of sufficient archaeological significance to be accorded the status of *sites*, but may be of some very local archaeological interest and may be of particular significance for interpretation of future non-intrusive surveys. They are summarised in the table below.

Results of the watching brief

Plot	Description	NGR	
0-2	North-to-south aligned, modern land drains.	425132	450451
0-3a	Modern, north-to-south aligned buried culvert.	424872	450285
1-4	Hedgerow and modern trackway bounded the northern margin of the strip.	424149	450080
1-6	Undated pit.	424041	450041

Plot	Description	NGR	
1-8	Remnant of ridge and furrow.	423694	449801
2-3	A wide stone-faced embankment was located against the southern margin of the plot.	423365	448835
2-4	Modern drainage ditches bisected the strip.	423342	448716
2-9	Large, modern pit was located against the boundary with plot 3.1.	422974	448412
3-5	Earthen banks were located north and south of the strip. These banks may have represented terracing.	421928	448314
5-2	Earthen bank and ditch boundary.	421151	448572
5-6	Earthen bank and ditch boundary.	420482	448489
5-7	Earthen bank and ditch boundary.	420036	443764
6-7	Modern, east-to-west aligned drainage ditches.	418332	448898
6-9	Earthen boundary bank located west of the spread.	418000	449030
7-14	A tree line, which was once part of a field boundary, was located against the southern margin of the strip.	416240	441887
7-16	North-to-south aligned earthen boundary bank bisected the strip.	416123	449921
7-18	Stone foundations of a small building, including the truncated remains of a potential limekiln.	416032	450144
7-23	Modern, north-to-south aligned drainage ditch was located against the western strip margin.	415111	450484
8-5	Potential furnace debris. This plot was subject to an excavation, which revealed a medieval furnace and associated waste iron slag mound.	413450	450600
9-7	A partially silted up pond and earthen field boundary banks were located.	412401	450179
10-6	A partially collapsed stone wall bounded the northern margin of the strip.	411535	450320
11-6	Modern drainage ditch and farm track.	409732	450706
11-11	Two barns were located north and south of the strip respectively.	409052	450661
11-12	An earthen boundary bank.	408692	450286
12-4	Two undated kilns were located. This plot was subject to an excavation, revealing the kilns to be associated with lime and iron production.	408111	450522
13-4	Two earthen field boundary banks were located.	407567	450661
13-7	A modern farm track was located.	407296	450973
13-14	Modern quarry pits were located north and south of the spread.	406095	452205
13-19	The foundations of a stone-built structure. This plot was subject to an excavation, which revealed the foundations to be of a seventeenth century barn.	405556	452885
13-20	A north-east to south-west aligned hollow-way was located.	405204	453143
14-1	A north-east to south-west aligned ditched field system was revealed. In addition, the remnants of ridge and furrow were also present.	404814	453528
14-2	An earthen boundary bank and remnants of ridge and furrow.	404586	453490
14-5	North-to-south aligned earthen bank and ditch boundary bank and ditch.	404198	453513
14-6	A north-to-south aligned linear earthwork and two sub-rectangular, raised earthworks were located against the eastern strip margin.	404019	453564

Plot	Description	NGR	
15-2	Remnants of ridge and furrow.	403594	453952
15-7	A north-east to south-west aligned modern water channel.	402840	454247
15-8	Two undated kilns were located. This plot was subject to an excavation, which revealed the structures to be truncated limekilns of probable post-medieval or modern date.	402726	454023
15-10	North-to-south aligned earthen boundary bank and ditch.	402399	453997
15-15	A north-to-south aligned post-medieval ditch was located, which confirms the results of the geophysical survey of this plot.	401767	454030
16-1	A spread of demolition rubble and mortar was located against the southern strip margin.	400988	454154
16-2	Remnants of ridge and furrow.	400898	454195
16-5	Remnants of ridge and furrow.	400553	454119
17-2	An east-west aligned, undated ditch was located.	399816	454077
17-11	North-west to south-east aligned earthen boundary bank.	398450	453835
18-2	North-east to south-west aligned earthen boundary bank.	397928	453673
18-3	North-to-south aligned earthen boundary bank.	397698	453722
19-1	A possible ring gully was located against the southern boundary. Also present were the remains of ridge and furrow agriculture, a modern stone lined drain and a north-to-south aligned modern ditch [4065].	397452	453684
19-2	North-to-south aligned ridge and furrow agriculture. Each furrow was approximately 2.6m wide and 3m apart.	397153	453800
19-3	Earthen bank, 1.5m wide by 0.6m high with an associated ditch, which measured 1.1m wide by 0.5m deep. The remnant of north-to-south aligned ridge and furrow was also present.	396879	453695
19-4	Earthen bank, 1.5m wide by 0.6m high with an associated ditch, which measured 1.1m wide by 0.5m deep. The remnant of north-to-south aligned ridge and furrow was also present.	396895	453615
19-5	East-to-west aligned earthen bank, revetted on its north face, which measured 3.15m wide by 0.72m high, with an associated ditch on the northern side. The ditch measured 2.25m wide by 0.5m deep.	396657	453568
19-6	North-to-south aligned preserved ridge and furrow. Each furrow was approximately 1m wide by 0.2m deep and 2.3m apart. A north-west to south-east aligned, revetted, earthen bank and ditch boundary was also present. The bank measured 1.8m wide by 0.64m high, whilst the ditch measured 2.06m wide by 0.6m deep.	396573	453513
19-7	Two earthen banks and associated ditches. North-east to south-west aligned earthen bank, which measured 1.05m wide by 0.3m high. A ditch was adjacent to the west side of the bank and measured 1.1m wide by 0.2m deep. North-west to south-east aligned bank, which measured 3.6m wide by 0.5m high and a ditch, which measured 1.4m wide by 0.3m deep.	396138	453098
20-2	North-west to south-east aligned earthen bank, which measured 2.8m wide by 0.6m high. Remnant of ridge and furrow was also present.	395901	452898
20-3	East to west aligned, stone-covered bank, which measured 1.7m wide by 0.8m high, with a hedgerow immediately south of the bank.	395788	452649

Plot	Description	NGR	
20-4	North-west to south-east earthen bank, which measured 2m wide by 0.6m high, with an associated, silted-up drainage ditch, which measured 1m wide.	395717	452521
20-7	A modern quarry pit was located directly south of the spread.	395262	452247
20-8	North-east to south-west aligned earthen bank and the remnant of north-east to south-west aligned ridge and furrow agriculture.	394639	452062
20-9	Remnant of east to west aligned ridge and furrow agriculture.	394563	451983
20-10	A remnant of north-east to south-west aligned, ridge and furrow agriculture.	394345	451930
20-11	Ridge and furrow was located north of the spread.	394326	451934
20-15	Earthen bank, 2.8m wide by 0.8m high, with an associated boundary ditch 2m wide by 0.5m deep.	393857	451874
21-1	Ridge and furrow was located south of the spread	393712	451732
21-4	Two north-west to south-east aligned boundary banks and ditches.	392360	451545
21-7	East to west aligned ridge and furrow was located south of the spread	392186	451508
21-8	Several disused, modern quarry pits.	392465	451591
21-9	An east to west aligned earthen bank was located to the south of the strip. Two potential holloways were also present, aligned east to west along the northern and southern plot boundaries.	392255	451809
21-10	North-east to south-west aligned earthen bank, which measured 2.7m wide by 0.6m high. Directly east of the bank was a north-west to south-east aligned ditch, which measured 1.2m wide by 0.4m deep	391949	451894
21-13	North-east to south-west aligned earthen bank and associated ditch.	391331	451967
21-14	North to south aligned earthen bank and associated ditch, and the north to south aligned boundary to a modern canal.	390968	452033
21-15	A north to south-west curving boundary for a modern canal.	390953	452033
21-16	North to south aligned earthen bank and associated ditch.	390393	451988
21-18	An earthen bank and associated ditch. A large, north-east to south-west aligned ditch was located directly north of excavation site 21/18.	390040	452170
21-19	Ridge and furrow agriculture south of the plot.	389960	452114
21-20	A partially ploughed out earthen bank and associated ditch were located against the northern and southern boundaries. Remnants of ridge and furrow agriculture were also present.	389492	452315
21-21	North-east to south-west aligned bank, which measured 1.8m wide by 0.6m high, and ditch, which measured 0.8m wide. The remnant of ridge and furrow agriculture was also visible.	388944	452400
23-2	North-to-south aligned modern farm track and a backfilled natural pond.	388412	452575
23-8	The remnant of a former earthen bank and ditch boundary and traces of ridge and furrow agriculture.	386862	453007
23-9	Ridge and furrow agriculture was located south of the spread	386569	453141
24-1	The remnant of a former earthen bank and ditch boundary and traces of ridge and furrow agriculture.	386681	453272
24-3	North-east to south-west aligned earthen boundary bank and ditch and a modern, curving East-to-west aligned farm track.	386486	453611

Plot	Description	NGR	
24-4	Ridge and furrow agriculture was located north of the spread	386520	453765
24-5	Ridge and furrow agriculture.	385984	454019
24-6	A modern north-to-south aligned track.	385984	454019
24-7	Ridge and furrow agriculture.	385984	454019
25-1	Remnants of a modern, metalled track were located in the south-east corner of the plot.	385808	454046
25-3	North-east to south-west field boundary.	384822	454115
25-4	North-east to south-west field boundary.	384822	454115
25-5	Modern, north-east south-west cobbled trackway.	384833	454062
25-6	North-east to south-west aligned earthen bank and associated ditch.	384652	454052
25-7	Ridge and furrow agriculture was located south of the spread.	384559	454061
25-9	Modern, north-west to south-east aligned tarmac track.	384405	454012
25-10	An earthen boundary bank and ditch.	384251	454008
25-12	Remnant of ridge and furrow agriculture. A palaeochannel was also located south of the spread.	384033	454101
25-15	A modern north-to-south aligned track and a disused north-west south-east earthen boundary bank and ditch were located.	383751	454188
26-1	An undated north-to-south aligned ditch, and the remnants of ridge and furrow were located.	383492	454354
26-10	A modern, cobbled, north-to-south aligned track.	382248	455456
26-11	North-east to south-west earthen boundary bank and fence and the remnants of ridge and furrow were located.	382266	455725
26-11a	North-east to south-west aligned earthen boundary bank was located against the western field margin.	382271	455773
26-12	Earthen boundary banks against the western and eastern field margins.	382014	456067
26-15	Undated north-east to south-west aligned ditch was located.	381829	456657
26-16	North-east to south-west aligned ridge and furrow.	381594	456716
26-17	North-east to south-west aligned earthen boundary bank was located against the western field margin. The remnants of ridge and furrow were also present.	381850	456859
26-18	North-east to south-west aligned earthen boundary bank was located against the western field margin. The remnants of ridge and furrow were also present.	381695	456906
27-1	The remnants of ridge and furrow.	381610	457000
27-2	A ploughed out, north-east to south-west aligned former field boundary was located.	381485	457220
27-4	Ridge and furrow was located adjacent to the stripped area.	381412	457589
27-5	North-east to south-west aligned dry stone wall field boundaries at the western and eastern margins of the plot.	381403	457641
27-6	The remnants of ridge and furrow.	381445	457788
27-7	The remnants of ridge and furrow.	381033	457939

Plot	Description	NGR	
27-8	Earthen banks representing disused field boundaries were located in the centre of the plot.	381067	457871
27-9	A probable enclosure was located south-west of the spread. Pits were positioned west of the plot.	380580	458042
28-1	Probable pits associated with excavation area 28/1 were located in this plot	380400	458100
28-2	Four undated pits were located in the centre of this plot.	380259	458199
31-8	East-to-west aligned drove road known as 'Cocket Hoss Lane'.	379183	462180
31-11	North-west to south-east aligned metalled trackway.	377904	458639
32-8	A burnt spread of charcoal fragments and clay.	371368	459844
34-5	This plot contained a sandstone quarry, the foundations of a recent building and a large pit contained dumped modern demolition material.	378189	466002
35-8	A spread of burnt stone.	376466	466953
36-1	Disused stone-lined drains located throughout the plot.	375155	467192
36-3	North-west to south-east aligned earthen bank and ditch noted in the central part of the plot.	374949	467267
36-11	Modern household debris used to backfill a natural hollow.	373959	467867
38-1	A modern north-west to south-east aligned ditch was located	373537	469255
38-2	East-to-west aligned earthen boundary banks and ditches.	373616	469478
39-1	A north-to-south aligned earthen boundary bank and ditch.	373560	469912
39-4	North-east to south-west earthen bank and the remnant of ridge and furrow.	373180	470203
40-3	The remnant of ridge and furrow.	372874	470387
40-8	The remnant of ridge and furrow.	372070	470744
40-10	North-to-south aligned earthen boundary bank and ditch.	371771	470769
41-3	The remains of an area of hard standing probably related to the nearby railway line.	370354	471078
44-8	A modern, north-to-south aligned drainage channel.	369050	470906
44-9	A modern, north-to-south aligned drainage channel.	368958	470866
45-3	A dry pond was located against the north-east strip margin.	368614	471080
45-8	North-to-south aligned earthen bank bisected the striped area.	367292	471177
45-10	A burnt spread of charcoal and stone was located near the centre of the spread.	366975	471185
46-8	North-east to south-west aligned earthen bank bisected the striped area.	365963	471348
48-4	An undated posthole was located near the south-west corner of the stripped area.	364324	471380
50-2	A burnt spread was located against the south-west baulk of the stripped area.	361771	471158
51-3	A small, burnt spread was located near the southern margin of the spread.	360335	470627
51-7	A small, burnt spread was located near the south-west corner of the spread.	359666	470271
54-2	North-to-south aligned earthen bank bisected the striped area.	363003	471711

Plot	Description	NGR	
56-7	A burnt circular feature, which may represent a truncated potash kiln, was located near the southern margin of the spread.	363489	479027

Appendix C

Specialist Reports

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Part 1

The Flint Assessment

Tania Wilson

1 AN ASSESSMENT OF THE LITHIC ARTEFACTS (2006)

1.1 Introduction

A total of 54 lithic artefacts were recovered during the archaeological fieldwork carried out on the route of the Pannel to Nether Kellet gas pipeline. This group comprises some 36 struck flints and 18 pieces of struck chert. Three pieces of natural unmodified flint were also collected.

The artefacts were recovered from some 17 plots along the route. All of the artefacts were retrieved by hand.

1.2 Methodology

The assemblage has been catalogued in detail, with attributes including the identification, the raw material, condition, and technological features being noted. Pieces recorded as 'knapping debris' include irregular chunks of waste, and chips of less than 10mm in length. Cores have been classified following Clark and Higgs (1960, 216).

1.3 The Plot Assemblages

The composition of the assemblage from each plot is shown in Table 1.

1.3.1 Plot 3-5

The assemblage

Two blades and a flake were recovered from Plot 3-5. Both blades are incomplete but in a fresh condition; one blade has slight edge damage. The flake is complete but patinated.

One blade was collected during the evaluation of this area, and was recovered from a linear feature that also produced a fragment of samian ware. The remaining flints were recovered during the excavation of the area, from the natural silty clay deposits.

Where the raw material could be determined, a grey, opaque flint with inclusions and a black, semi-translucent flint are both represented. Cortex was not present on any of the artefacts.

Discussion

The recovery of the small assemblage from this plot suggests that limited prehistoric activity within the area is represented. Based on the good condition of the artefacts, it is likely that the flints have not been subject to a great deal of disturbance and were probably originally deposited within the immediate area. However, the paucity of artefacts recovered from this plot suggests very limited activity of prehistoric date: hence the assemblage does not appear to represent a focus for industrial or domestic activities.

None of the pieces collected from this plot are diagnostic in terms of dating. However, a Neolithic to Bronze Age date range is likely.

Recommendations for Further Work

Further analysis of the struck flint would not increase our understanding of this assemblage and would not therefore contribute considerably towards the understanding of the study area. Therefore no further work is recommended.

1.3.2 Plot 11-6

The assemblage

A single blade-like flake was recovered from Plot 11-6. The flake is incomplete, with edge damage, and is patinated.

The flake was recovered during the watching brief element of the fieldwork and is unstratified.

The raw material could not be determined, and no cortex was present.

Discussion

The recovery of one flint artefact from this plot suggests very limited prehistoric activity within the area. The poor condition of the artefact probably indicates that the flint has been subject to disturbance and, given that the plot was located on a slope, the object may have moved downslope.

Whilst this artefact may represent limited activity of prehistoric date within the vicinity, there is no evidence to indicate a focus for industrial or domestic activities. However, Neolithic and Bronze Age activity within the area is known at Middleton Moor and Upper Austby (Network Archaeology 2005, 23 & 25) and it is possible that these finds are associated.

The struck flint collected from Plot 11-6 is not diagnostic in terms of dating. However, based upon other discoveries within the area, a Neolithic to Bronze Age date range is suggested.

Recommendations for Further Work

Further analysis would not increase our understanding of the prehistoric activity within the area. Therefore no further work is recommended.

1.3.3 Plot 11-12

The assemblage

A single blade was recovered from Plot 11-12. The blade is patinated and has edge damage.

The blade was recovered from Trench 12 during the evaluation of this plot and is unstratified.

The raw material could not be determined, and no cortex was present.

Discussion

The recovery of one flint artefact from this plot suggests very limited prehistoric activity within the area. The patinated condition of the artefact and the evidence for post-depositional damage probably indicates that the flint has been subject to a degree of disturbance. Hence, whilst this artefact may represent limited activity of prehistoric date within the vicinity, there is no evidence to indicate a focus for industrial or domestic activities.

The blade is not diagnostic in terms of dating. However, a Neolithic to Bronze Age date range is suggested.

Recommendations for Further Work

Further analysis would not increase our understanding of the prehistoric activity within the area. Therefore no further work is recommended.

1.3.4 Plot 13-4

The assemblage

A single flake was recovered from Plot 13-4. The flake is in a fresh condition but has edge damage.

The flake was recovered during the watching brief element of the fieldwork, and is unstratified.

The raw material comprises a black, semi-translucent flint with inclusions and a grey, thin, worn cortex.

Discussion

The recovery of one struck flint from Plot 13-4 suggests very limited prehistoric activity within the area. The flake is fresh but has some evidence for post-depositional damage, which would be expected given that the flake is unstratified. Hence, whilst this artefact may represent limited activity of prehistoric date within the vicinity, there is no evidence to indicate a focus for industrial or domestic activities.

The flake is not diagnostic in terms of dating. However, a broad Neolithic to Bronze Age date range is suggested.

Recommendations for Further Work

Further analysis would not increase our understanding of the prehistoric activity within the area. Therefore no further work is recommended.

1.3.5 Plot 13-19

The assemblage

Some eight struck flint artefacts were recovered from Plot 13-19. All of the artefacts are in a fresh condition, but four are incomplete and a further three have edge damage.

One flake was recovered during the watching brief element of the fieldwork and is unstratified. Two blades, one flake and a core were recovered from subsoil deposits. The layer of rubble associated with the building produced one flake and a retouched flake. The final piece, a utilised blade, was recovered from the fill of the quarry pit. All the pieces are therefore residual.

A wide range of raw material is represented within this assemblage, comprising black, brown and grey-coloured flint, all varying between opaque and semi-translucent types. Examples with a buff-coloured, thick cortex and a grey, thin, hard cortex are present.

The core, the retouched flake and the utilised blade are all worthy of note. The core is bipolar, small and has two areas of stepping that appear to have caused it to be discarded. The retouched flake is incomplete, but has a curved area of retouch along its left-hand side. The probable utilised blade has chipping along both sides.

Discussion

Whilst this is a small assemblage, it is nevertheless interesting. The artefacts are in a fresh condition, but there is a high level of breakage and post-depositional damage. However given that all of the flints were unstratified, or recovered from features associated with the building, a high degree of damage would be expected. It is likely therefore that the flints were originally deposited within the immediate area.

Taking into consideration the small size of this assemblage and the absence of any features of prehistoric date, it can only be suggested that this assemblage represents small-scale activity. Therefore, this activity does not indicate a focus for industrial or domestic processes, but certainly represents prehistoric use of the area.

Flint does not occur naturally within the solid geology of the area and is, therefore, not readily available. However, the range of raw material types represented within this assemblage suggests that flint was collected from secondary deposits, such as those exposed in river beds.

Based upon the forms represented within this assemblage, a broad Neolithic to Bronze Age date range is suggested. No activity of this date has been previously recorded within this area. However, Neolithic and Bronze Age activity is well attested to the south-east of this plot in the areas of Middleton Moor and Upper Austby (Network Archaeology 2005, 23 & 25).

Recommendations for Further Work

Further analysis would not increase our understanding of the prehistoric activity within the area. However, as this represents a new discovery for activity of this date within the area, a short note paraphrasing the above may be worthy of publication. This could be supported by an illustration of the core.

1.3.6 Plot 15-1

The assemblage

One piece of natural, unmodified flint was recovered from this plot.

Recommendations for Further Work

No further work is recommended.

1.3.7 Plot 16-1

The assemblage

A single flake was recovered from Plot 16-1. The flake is fresh but is incomplete.

The flake was recovered from Test Pit 1 and is unstratified.

The raw material comprises a grey, semi-translucent flint with inclusions and a grey thin worn cortex.

Discussion

The recovery of one struck flint from Plot 16-1 suggests very limited prehistoric activity within the area. The flake is fresh but is incomplete. Hence, whilst this artefact may represent limited activity of prehistoric date within the vicinity, there is no evidence to indicate a focus for industrial or domestic activities.

The flake is not diagnostic in terms of dating. However, a broad Neolithic to Bronze Age date range is suggested.

Recommendations for Further Work

Further analysis would not increase our understanding of the prehistoric activity within the area. Therefore no further work is recommended.

1.3.8 Plot 19-1

The assemblage

Some seven struck flint artefacts and 15 pieces of struck chert were recovered from Plot 19-1. One flint flake has been burnt, but the remainder of the assemblage is in a fresh condition. Some five flint artefacts and five chert artefacts are incomplete, and one additional struck flint has edge damage.

The flint assemblage comprises six flakes and a utilised blade. One flake, recovered during the watching brief, and one other flake and the utilised blade are unstratified. The remainder of the struck flint was retrieved from deposits filling the curvilinear ditch.

The chert assemblage comprises one flake, three small chips, ten pieces of irregular knapping waste and a utilised blade. All of these artefacts were recovered from deposits filling the curvilinear ditch.

A wide range of raw material is represented within this assemblage, comprising black, brown, grey and honey-coloured flint, all varying between opaque and semi-translucent types. Where it could be observed the cortex is buff-coloured and hard. Two types of chert are represented, the first is black with a thick, hard, grey cortex and the second is a light grey chert with a thin, hard, grey cortex.

Two fragments of utilised blades were recovered. The first is made of a honey-coloured flint and has chipping along the right-hand side. The second is made of black chert and has chipping along both sides, with traces of gloss visible on its right-hand side.

Discussion

The lithic artefacts recovered from Plot 19-1 are in a fresh condition, which may therefore indicate that they were originally deposited within the area. However, the high level of breakage observed on these artefacts suggests that they have been subject to some disturbance, and may indicate that those pieces recovered from the curvilinear feature have been redeposited.

It is probable that the artefacts are associated with the activity represented at the site. However, given the small size of the assemblage, the evidence suggests that, if associated, the site does not represent an area where industrial or domestic activities were taking place.

Flint does not occur naturally within the solid geology of the area and, therefore, is not readily available. However, the range of raw material types represented within this assemblage suggests that the flint was collected from secondary deposits. The recovery of a number of artefacts made of chert demonstrates that locally occurring raw material was also utilised for the production of tools.

The assemblage recovered from Plot 19-1 is not particularly diagnostic in terms of dating. However, given that the features encountered at the site have yielded pottery dating to the Neolithic period, it is possible that the lithics are associated. However, the fact that they may be redeposited within the curvilinear feature suggest that the flints at least pre-date this feature.

Recommendations for Further Work

Further analysis would not increase our understanding of this assemblage. However, if this site is to be published, it is recommended that a brief description of the assemblage is included.

1.3.9 Plot 19-6

The assemblage

One piece of natural, unmodified flint was recovered from this plot.

Recommendations for Further Work

No further work is recommended.

1.3.10 Plot 21-10

The assemblage

Two flakes and a retouched blade were recovered from Plot 21-10. One flake is burnt and incomplete, and the second is fresh, with edge damage. The retouched blade is also fresh, but incomplete and damaged.

All of the artefacts were recovered from deposit 5259, which has been interpreted as the base material of a burnt mound.

Where the raw material could be determined, a grey opaque flint with inclusions and dark grey, opaque flint are both represented. The retouched blade has a buff, hard cortex, and one flake has grey, thin, hard cortex.

The retouched blade is the only piece worthy of note. This piece has continuous retouch along the right-hand side.

Discussion

This small assemblage may be associated with the use of the burnt mound. However, given that so few struck flints were recovered, and that they were all recovered from the same deposit, it could be the case that they became inadvertently incorporated in this deposit. Based upon the condition of the pieces, it is likely that they have been disturbed and redeposited.

Given the small size of the assemblage, the evidence from the struck flint suggests that activities such as flint working, or those associated with domestic tasks, are not represented at this site.

None of the pieces collected from this plot are diagnostic in terms of dating. However, based on provenance, a Bronze Age date is suggested.

Recommendations for Further Work

Further analysis would not increase our understanding of this assemblage. However, if this site is to be published, it is recommended that a brief description of the assemblage is included.

1.3.11 Plot 21-13

The assemblage

A single flake was recovered from Plot 21-13. The flake is complete and in a fresh condition.

The flake was recovered during the watching brief and is unstratified.

The raw material comprises a black, semi-translucent flint; no cortex remains.

Discussion

The recovery of one struck flint from Plot 21-13 suggests very limited prehistoric activity within the area. Whilst this artefact may represent limited activity of prehistoric date within the vicinity, there is no evidence to indicate a focus for industrial or domestic activities.

The flake is not diagnostic in terms of dating. However, a Neolithic to Bronze Age date range is suggested.

Recommendations for Further Work

Further analysis would not increase our understanding of the prehistoric activity within the area. Therefore, no further work is recommended.

1.3.12 Plot 21-18

The assemblage

Four struck flint artefacts and three pieces of struck chert were recovered from Plot 21-18. The flints comprise a blade and a damaged retouched piece, both of which are patinated, and a damaged flake and a scraper, both in a fresh condition. The chert artefacts comprise an irregular chunk of knapping waste, one retouched piece and one notched piece.

The retouched flint was recovered from a non-archaeological feature. The remaining flints and all of the chert artefacts were retrieved from deposits situated within the stone structure. The blade was recovered from the uppermost deposit filling a pit within the structure. The scraper, the flake and the chert artefacts were recovered from the buried soil.

Where it could be determined the flint comprised an orange-brown opaque flint and a black, semi-translucent flint with a white, thick, soft cortex. The chert collected from this site is exclusively black in colour with a grey, thin, hard cortex.

The retouched pieces are worthy of note. The retouched flint appears to be a fragment of a bifacially worked flake. The scraper has abrupt retouch at the distal end that extends along the right-hand side. The retouched fragment of chert appears to be a natural fragment with an area of retouch along one side. The notched piece is also a natural fragment of chert with one concave area of retouch, and another area of retouch situated on the opposing side.

Discussion

The assemblage recovered from Plot 21-18 is largely in a good condition. This factor may suggest that the artefacts were originally deposited within the buried soil.

Given that the majority of the artefacts were recovered from the buried soil, the assemblage almost certainly pre-dates the stone structure. It is likely that these artefacts have remained relatively in situ due to the survival of the buried soil in this locality. Hence, whilst this is a small assemblage, it is possible that it represents part of a larger assemblage now lost due to the erosion of the buried soil.

Therefore, given the fragmentary evidence that this assemblage presents, it is difficult to suggest the types of activities that are represented. Given that there is a proportionally high number of retouched pieces represented, it could be suggested that a settlement was once situated within the area.

Flint does not occur naturally within the solid geology of the area and, therefore, is not readily available. However, the range of raw material types represented within this assemblage suggests that the flint was collected from secondary deposits. The recovery of a number of

artefacts made of chert demonstrates that locally occurring raw material was also utilised for the production of tools.

None of the artefacts recovered from Plot 21-18 are diagnostic in terms of dating. However, based upon the range of retouched forms represented, a broad Neolithic to Bronze Age date range is suggested.

Recommendations for Further Work

Further analysis would not increase our understanding of this assemblage. However, if this site is to be published, it is recommended that a description of the assemblage is included. This could be supplemented by illustrations of the bifacially retouched piece, the notch and the scraper.

1.3.13 Plot 26-16

The assemblage

One piece of natural unmodified flint was recovered from this plot.

Recommendations for Further Work

No further work is recommended.

1.3.14 Plot 27-2

The assemblage

A single blade was recovered from Plot 27-2. The flake is incomplete and in a patinated condition.

The blade was recovered during the watching brief and is unstratified.

The raw material could not be observed, but the cortex is buff-coloured, thick and hard.

Discussion

The recovery of one struck flint from Plot 27-2 suggests very limited prehistoric activity within the area. Furthermore, the condition of the artefact may indicate that the blade has moved some distance from its original place of deposition.

The blade is not diagnostic in terms of dating. However, a broad Neolithic to Bronze Age date range is suggested.

Recommendations for Further Work

Further analysis would not increase our understanding of the prehistoric activity within the area. Therefore, no further work is recommended.

1.3.15 Plot 28-1

The assemblage

A single flake was recovered from Plot 28-1. The flake is incomplete, but in a fresh condition.

The flake was recovered from Trench 38 during the evaluation.

The raw material comprises a grey, opaque flint with inclusions; no cortex remains.

Discussion

The recovery of one struck flint from Plot 28-1 suggests very limited prehistoric activity within the area. Whilst this artefact may represent limited activity of prehistoric date within the vicinity, there is no evidence to indicate a focus for industrial or domestic activities.

The flake is not diagnostic in terms of dating. However a broad Neolithic to Bronze Age date range is suggested.

Recommendations for Further Work

Further analysis would not increase our understanding of the prehistoric activity within the area. Therefore no further work is recommended.

1.3.16 Plot 31-13

The assemblage

A single gunflint was recovered from Plot 31-13. The artefact is complete and in a fresh condition.

The gunflint was recovered from Trench 109 during the evaluation, and is unstratified.

The raw material comprises a black, semi-translucent flint; no cortex remains.

Discussion

The recovery of a gunflint from Plot 31-13 indicates post-medieval activity within the area.

Recommendations for Further Work

No further work is recommended.

1.3.17 Plot 36-3

The assemblage

Two flakes and a blade were recovered from Plot 36-3. All of the artefacts are in a fresh condition and are complete. All of the artefacts were unstratified.

The blade is made of a grey, cherty flint with a grey, thin, hard cortex, and the flakes are made of a black, cherty flint. Cortex was not present on these pieces.

3.17.2 Discussion

The recovery of this small group of flints from Plot 36-3 suggests very limited prehistoric activity within the area. The flints are in a good condition, and as such may represent limited activity of prehistoric date within the vicinity. However, there is no evidence to indicate a focus for industrial or domestic activities.

The artefacts recovered from this plot are not diagnostic in terms of dating. However, a broad Neolithic to Bronze Age date range is suggested.

Recommendations for Further Work

Further analysis would not increase our understanding of the prehistoric activity within the area. Therefore no further work is recommended.

2 AN ASSESSMENT OF THE FLINT ARTEFACTS (2007)

2.1 Introduction

A total of 39 struck flint artefacts were recovered during the archaeological fieldwork carried out on the route of the Pannel to Nether Kellet gas pipeline. The artefacts were recovered from some six plots along the route. Five plots produced as little as one struck flint per plot. However a small but significant assemblage was recovered from Plot 31-2.

2.2 Methodology

The assemblage has been catalogued in detail, with attributes including the identification, the raw material, condition, and technological features being noted. Cores have been classified according to Clark and Higgs (1960, 216).

All of the artefacts were retrieved by hand.

2.3 The Plot Assemblages

The composition of the assemblage from each plot is shown in Table 1.

Table 1: Assemblage composition.

	Plot					
	31-2	50-2	51-3	56-2	56-7	56-9
Blades	17	0	0	0	1	0
Cores & Struck Nodules	1	0	0	0	0	1
Flakes	11	0	0	1	0	0
Irregular Waste	1	0	0	0	0	0
Retouched & Utilised Pieces	4	1	1	0	0	0
Total	34	1	1	1	1	1

2.3.1 Plot 31-2

The assemblage

Some thirty-four struck flint artefacts were recovered from Plot 31-2. The assemblage is in a fresh condition, with the exception of four pieces that have been slightly burnt. Some 62% of the group is incomplete, and a further 9% exhibit edge damage.

A range of raw material types is represented within this assemblage, comprising black, grey and greyish-brown coloured flint. The grey flint occurs in both opaque and semi-translucent forms. The cortex is variable, with some examples bearing a soft, chalky cortex, and others where the cortex has become weathered.

The majority of this assemblage comprises debitage, of which a significant quantity represents blades. Overall, blades form some 50% of the total assemblage. A small quantity of waste flakes were also recovered, of which two are blade-like in form. Additionally, one flake appears to be an axe-sharpening flake. One core was retrieved: it is keeled and has several blade removals evident.

Two retouched and two utilised pieces were also recovered. The retouched pieces comprise one possible microlith and a truncated blade. Two flakes, one of which is blade-like, appear to have possible utilisation damage along their left-hand sides.

All of the artefacts were surface collected.

Discussion

The struck flint recovered from Plot 31-2 is in a fresh condition, but a relatively high degree of breakage is also evident. Based upon their overall condition, therefore, it is likely that the artefacts were originally deposited within the area, but that they have been subject to some disturbance. As no archaeological features were encountered within this plot, it is probable that the damage was caused by agricultural practices.

Given the small size of the assemblage, it is likely that activity of prehistoric date within the locality is relatively limited. However the recovery of a core and knapping waste suggests that some flint-working may have been taking place. The microlith and the truncated blade (for similar example see Healy 1988, Fig.40 L23) are typically associated with Mesolithic assemblages. Furthermore, the axe-sharpening flake is indicative of the production of Tranchet axes. Hence, based upon the assemblage composition and the typological forms represented, a Mesolithic date is suggested. Given this dating, the assemblage could potentially be of local or regional significance, if activity of this date has not yet been identified within the area.

Recommendations for Further Work

It is recommended that a short note is published on this assemblage: four illustrations would be required.

2.3.2 Plot 50-2

The assemblage

A single flint artefact was recovered from Plot 50-2. The artefact is a complete scale-flaked knife in a fresh condition.

The knife was recovered from a deposit within a burnt mound.

Discussion

The recovery of this artefact from a deposit within a burnt mound may be of some significance. Given that the knife is in a complete and fresh condition, it is suggested that the knife may have been deliberately placed within this deposit.

Scale-flaked knives are relatively common forms generally associated with activity of late Neolithic/early Bronze Age date (Healy 1998, 46).

Recommendations for Further Work

A short note describing this object, accompanied by an illustration, would be required.

2.3.3 Plot 51-3

The assemblage

A single flint artefact was recovered from Plot 51-3. The artefact is an incomplete oblique arrowhead in a fresh condition.

The arrowhead was recovered during the watching brief and is unstratified.

Discussion

The recovery of one flint artefact from this plot suggests very limited activity of prehistoric date in the area. Hence there is no evidence to indicate a focus for industrial or domestic activities. Furthermore, given the type of artefact recovered, it may simply represent a hunting loss.

Oblique arrowheads are generally dated to the late Neolithic (Green 1984, 34).

Recommendations for Further Work

Further analysis would not increase our understanding of the prehistoric activity within the area. Therefore no further work is recommended.

2.3.4 Plot 56-2

The assemblage

A single waste flake was recovered from Plot 56-2. The flake is in a fresh condition, with edge damage.

The flake was recovered during the watching brief element of the fieldwork and is unstratified.

Discussion

The recovery of one flint artefact from this plot suggests very limited activity of prehistoric date within the area. Hence there is no evidence to indicate a focus for industrial or domestic activities.

The flake is not diagnostic in terms of dating. However, a Neolithic to Bronze Age date range is suggested.

Recommendations for Further Work

Further analysis would not increase our understanding of the prehistoric activity within the area. Therefore, no further work is recommended.

2.3.5 Plot 56-7

The assemblage

A single bladelet was recovered from Plot 56-7. The bladelet is fragmentary, but in a fresh condition.

The artefact was not found in association with the archaeological remains encountered within this plot.

Discussion

The recovery of one flint artefact from this plot suggests very limited activity of prehistoric date within the area. Hence there is no evidence to indicate a focus for industrial or domestic activities.

As a single find, the bladelet is not particularly diagnostic in terms of dating. Bladelets are often a component of Mesolithic assemblages, but can also be associated with assemblages of Neolithic date. Hence a broad Mesolithic to Neolithic date range is suggested.

Recommendations for Further Work

Further analysis would not increase our understanding of the prehistoric activity within the area. Therefore, no further work is recommended.

2.3.6 Plot 56-9

The assemblage

One fragmentary core was the only struck flint recovered from Plot 56-9. The core, part of a single platform blade core, still retains an area of cresting in preparation for the detachment of further blades.

The core was recovered during the watching brief element of the fieldwork and is unstratified.

Discussion

The recovery of one flint artefact from this plot suggests very limited activity of prehistoric date within the area. Hence there is no evidence to indicate a focus for industrial or domestic activities.

Based upon the typology of the core and the cresting, a Mesolithic date is suggested.

Recommendations for Further Work

Further analysis would not increase our understanding of the prehistoric activity within the area. Therefore, no further work is recommended.

Part 2

The Prehistoric Pottery Assessment

Carol Allen

3 ASSESSMENT REPORT ON PREHISTORIC POTTERY AND FIRED CLAY

Plot 19-1, NGR SD 978 535
Plot 21-10, NGR SD 918 519
Plot 21-18, NGR SD 901 521

3.1 Introduction

A number of excavations took place along the route of the Pannel to Nether Kellet pipeline. This report presents an assessment of the prehistoric pottery found at Plots 19-1, 21-10 and 21-18.

Wherever possible, the report provides identification of the pottery types, with the likely dates for the vessels, and also gives a summary of the pots' fabrics. The potential of the assemblage is assessed, and recommendations for further work are provided together with costs.

3.2 Methodology

The pottery has been recorded and described according to the guidelines of the PCRG (1997). In addition, this report conforms to the standards and guidance of the IFA (2001). All the sherds have been counted, weighed and recorded. The pot type was indicated where this is known and the abrasion level of the sherds is recorded.

A sherd from each pot has been examined by use of a x2 binocular microscope in order to allow the fabric types to be summarised. The part of the pot remaining – rim, body or base – is also recorded, together with the number of vessels estimated to be present and those requiring illustration for a report.

Those sherds which could not be identified to a particular type are described as prehistoric in the catalogue. It may be possible to clarify the type once tempering materials and fabric types have been established, but the general lack of form and decoration suggests that this is unlikely.

3.3 Quantifications

A total of 363 sherds and fragments of pottery, weighing 998g, has been recorded on these sites. On Plot 19-1 344 sherds were found, on Plot 21-10 2 sherds and on Plot 21-18 17 sherds were found. From these sherds 12 separate vessels of different types have been recognised as shown on Table 1, and the sherds from these pots provide a form or decoration suitable for illustration.

Where sherds are described as prehistoric, it has not been possible to allocate them to a particular vessel type as no form or decoration was apparent.

3.4 Fabric Types

The tempering materials have been summarised for this assessment, but would require a more detailed study for a full report. The fabric number has been recorded on Table 1 and more detail is given below. The division of the fabric types was made based upon the apparent tempering materials visible by eye and the appearance, colour and firing of the sherds. This assumes that the potters were aiming to produce pots with a distinctive appearance and tempering.

Three main types were apparent. Fabric 1 is tempered with large grog and quartz, and fabric 2 contains large pieces of quartz and sandstone. Fabric 3 has shell, and voids indicative of leached shell, together with large quartz and sandstone. Changes in fabric types used in prehistoric pottery through time are commonly seen even on the same site (Allen 1991, 4-5; Chowne et al. 2001), as here on Plot 19-1. Traditions of pottery manufacture changed with each period and the tempering materials varied according to the region (Allen and Hopkins 2000, fig. 8; Cleal 1995).

The sites lie close to the Lower Carboniferous limestone and it is likely that the shell tempering may have been found fairly locally. The large quartz and sandstone inclusions may also be local and derived from the mudstones known to exist in this area (Edwards and Trotter 1954, 24) but their source needs to be resolved more closely.

The character and the origin of the tempering materials can only be confirmed by thin section analysis, as it is possible that some of the inclusions were obtained outside the immediate vicinity of the site. It has been shown that shell in some prehistoric pottery was of marine origin (Cleal et al. 1994, 447). Three thin sections, with a summary report, should be sufficient to clarify the nature of the inclusions.

3.5 Pottery Forms and Dates

3.5.1 General

The pottery assemblage comprises mainly material of early Bronze Age date, and sherds of a single vessel which is of early Iron Age date. In addition, many of the sherds in the assemblage have been identified as being prehistoric, but their exact type is unclear.

Of the 12 pots which have been identified from the sherds, one is a Beaker vessel, 10 represent Collared Urns and one is early Iron Age.

3.5.2 Beaker Pot

A single sherd from a Beaker vessel was found in good condition on Plot 21-10 in context (5259), the base spread of a burnt mound. Beaker pottery is known in burials throughout Britain (Clarke 1970). However, this sherd is decorated with paired fingernail impressions, and this type is more likely to be associated with a domestic settlement site (Gibson 1982). Pottery of this type is usually dated to a period between 2600 and 1800 BC (Kinnes et al. 1991). However, local comparisons need to be found for this pot, and recent work on Beaker pottery needs to be considered (Needham 2005).

3.5.3 Collared Urns

Sherds from 10 Collared Urns were found on Plot 19-1. These include five parts of rims (5130/1, 5130/4, 5130/5, 5169/1 and 5169/3), which represent both flat and rounded types. Three sherds from different collars were found, undecorated (5130/2 and 5130/3) and decorated (5162/565), also the complete base of a vessel (5153) and part of a shoulder with a cordon (5169/2). Collared Urns are known throughout Britain and this region (Longworth 1984) and are usually dated to around 1800 to 1700 BC (Needham 1996). Local comparisons need to be found for these vessels to determine whether they are unusual or typical in the area.

3.5.4 Iron Age

Two sherds, shell tempered, of the base and lower body of an undecorated early Iron Age vessel were found on Plot 21-18 (context 10049). Pottery of this type is usually dated to around the 5th century BC (Elsdon 1996), but local comparisons need to be found to confirm the type and dating of the vessel.

3.6 Fired Clay

A total of six pieces of fired clay were found on the three sites. These are irregular, and need to be further investigated to see if their character and function can be determined.

3.7 Context

All the Collared Urns were found on Plot 19-1, the sherds of the Beaker vessel on Plot 21-10 and the early Iron Age sherds on Plot 21-18.

3.7.1 Plot 19-1

Sherds from two Collared Urns were found within the main curvilinear feature [5152] and [5163] on the site. However, the pottery found on this site is quite fragmented and may have been redeposited. Only a few sherds were found in this ditch in spite of the extent of the excavation of the feature. Sherds from a further five Collared Urns were found in the fill of pits [5134] and [5135]. Pits with partial or complete Collared Urns are known elsewhere in the Midlands, and a search for regional comparisons needs to be made. Sherds from three further Collared Urns were found on this site in shallow linear feature [5170]. Further investigation is required of the contexts and any associated finds.

3.7.2 Plot 21-10

The Beaker sherds from context (5259) came from the dark peaty silt which showed the extent of the burnt mound. Burnt mounds are generally considered to be of Bronze Age date (Brossler, Early and Allen 2004, 128), but Beaker pottery is an unusual find in such a context, and further comparisons should be sought to better understand this pottery deposit.

3.7.3 Plot 21-18

The sherds of the Iron Age vessel were found in the fill (10049) of a midden [10048] within an area of Iron Age-Romano-British features.

3.8 Condition and Storage

3.8.1 Condition

The abrasion levels of each vessel within the three phases have been recorded on Table 1. Of the 12 identified vessels six were unabraded (U=less than 5% of the original surface lost) and six were slightly abraded (S=5-25%) of the original surface lost. Of the remaining sherds described as prehistoric on Table 1, many are moderately abraded (M=25-50% of surface lost), abraded (A=50-75% lost) and very abraded (V=>75% lost), making identification difficult. The average sherd weight at 2.75g is very small indicating that the assemblage is fragmented.

3.8.2 Storage

No special storage is required for these vessels. They should be well packed in suitable material to prevent further abrasion.

All the sherds with form and decoration should be retained for further study and research.

3.9 Potential and Recommendations for Further Work

This is a small assemblage of 12 vessels from three different sites. The publication of the pots and discussion of their associated finds will add to the knowledge of Beaker pottery and particularly of Collared Urns in the region.

Comparative material should be sought in the locality and in the region, in order to further understand the assemblages and place them within their local and regional perspective. Dating for comparative pottery should be sought in order to better understand the pottery from these sites.

The fabrics of the pottery should be investigated by thin section analysis, and it is recommended that 3 thin sections and a summary report would be required. This will clarify the type of shell and other inclusions used for tempering, will assist understanding of the technology and potting traditions on this site, and may indicate trading connections.

The fabrics should be quantified and qualified, as this would add considerably to knowledge of pottery fabrics of all these periods in this area. The study of pottery fabrics is ongoing and can substantially aid the identification of prehistoric pottery once the basic data is established (Allen and Hopkins 2000, fig. 8). It should be possible to determine whether different fabrics relate to different styles of pots and whether the pottery fits within a regional pattern, or has an uncharacteristic tradition.

Twelve vessels, each represented by only a few sherds, should be illustrated from this assemblage.

Part 3

The Iron Age Pottery Assessment

Chris Cumberpatch

4 IRON AGE POTTERY ASSESSMENT

4.1 Introduction

The pottery assemblage from the Pannal, North Yorkshire and Nether Kellet, Lancashire (PNK 06) pipeline was examined by the author on 4th March 2007. The details of the assemblage are summarised in the catalogue below.

4.2 Catalogue

10049

Six small abraded body sherds (10g) in an orange oxidised fabric with dull grey surfaces containing moderate to abundant quantities of rounded quartz grit. The sherds are presumably from a hollow ware vessel but there is little basis on which to assess the possible form.

10187

One sherd (6g) from the upper section of a jar. The fabric is a dull orange colour with a dark grey surface internally and traces of a light grey surface externally. The sherd contains moderate to abundant quantities of rounded quartz grit occasionally up to 1.2mm but generally between 0.5mm and 1.00mm with occasional more angular sherds in a similar size range. An unusual feature, almost certainly accidental, is a long thin void running around the pot in the centre of the wall. This is almost certainly the result of a piece of grass caught in the clay during the manufacture of the pot.

There is little in the sherd itself to allow it to be dated conclusively

10106

Two joining sherds (10g) forming part of an everted jar rim. The fabric is a bright orange oxidised type with pale grey highly abraded surfaces. It contains moderate to abundant rounded quartz grit

10285

Four body sherds (25g) in an oxidised fabric with a grey external margin and a partial reduced core. The fabric contains moderate to abundant quantities of poorly sorted rounded quartz grit and very fine flakes of muscovite.

10375

Rim sherd (6g) in a hard, black coarse quartz tempered fabric, possibly from a small bowl or dish. The rim has a slight internal bevel and although hand-made is well finished. There is little sign of serious abrasion. The form and fabric would seem to indicate a later prehistoric date with the closest parallel for the fabric being perhaps H2 as defined elsewhere (Cumberpatch 2007).

Further work is required in order to identify specific parallels for the vessel form although jars of various sizes are common throughout the later prehistoric period (Mackey 2003).

15059

A coarsely tempered sherd (4g) of undetermined form containing angular quartz grit. It may be the foot of a pedestal base or, more probably, the edge of a lid with a slightly domed profile. Lids are known to have been a feature of the later prehistoric pottery of North and East Yorkshire (Cumberpatch 2007) and this may be such a sherd.

15060

Four fragments of fired clay in a soft, mainly oxidised, sandy textured fabric containing sparse quartz grit (24g). Two of the sherds are featureless fragments without surviving surfaces but two appear to have a deliberate shape although it is far from clear as to how far they can be seen as fragments of a pottery vessel or vessels. One fragment could possibly be part of a knob-handled lid (cf. Didsbury 2004, Fig. 104, 90; Cumberpatch 2007) which might suggest that it dates to the Roman period, although the tradition represented by the fabric would appear to be a local one, as it differs considerably from the examples from Wharram Percy and Reighton.

4.3 Discussion

The assemblage can be split into a number of groups, based on the fabrics represented. The sherds from contexts 10106, 10285 and 10049 are all closely related and are probably of a similar date and type. The sherd from context 10187 is similar but coarser, while those from 15060 are also similar but are much finer, lacking the coarse quartz component. The sherds from contexts 15059 and 10375 are different both from each other and from the remainder of the assemblage. As far as dating is concerned, these sherds are almost certainly of later prehistoric date, and further research may lead to the identification of parallels for one or both. As noted above, the sherds from 15060 may be from a type of vessel which appears in later prehistoric and Roman period assemblages, but further work is needed in order to find specific parallels in a similar fabric type. There is little in the character of the remaining sherds to indicate a date. Soft orange sandy wares with quartz temper are known from medieval contexts in other areas (notably Derbyshire) but it is far from clear that these sherds are of medieval date. That having been acknowledged, they do not seem to be of later prehistoric type and, if not of Roman date, then a medieval date may have to be accepted by default. It is probable that further work may reveal parallels for these sherds, although what these might be is unclear.

4.4 Further work

A full report on the pottery described in this assessment will involve a more comprehensive search for parallels for both fabrics and form, as outlined above. Two sherds (contexts 10375 and 15059) will require illustration as will the fragments of the possible knob from context 15060 if its character can be definitely established.

Part 4

The Iron Age and Romano-British Pottery Assessment

Ruth Leary

5 ROMANO-BRITISH AND IRON AGE POTTERY ASSESSMENT

5.1 Factual Data

The pottery was examined in context groups and catalogued according to the Guidelines of the Study Group for Romano-British Pottery for basic archiving (Darling 2004). The fabrics were recorded in broad groups and source suggested where appropriate. Reference was made to the National Fabric Collection where appropriate (Tomber and Dore 1998). Details of fabric variations were recorded where appropriate. Forms, decoration and sherd conditions were described with quantification in ware/form groups by sherd count and weight. The assemblage was assessed in terms of the date range of individual features and of the settlements, indications of their character, status and function and evidence for trade and exchange of ceramics. The assemblage was assessed with reference to the known ceramics of the region and of Roman Britain as a whole.

5.2 Quantity and provenance

There were 412 sherds of pottery (6033g.), of which 22 sherds (100g.) were prehistoric, probably Iron Age. The quantities of pottery sherds recovered from the excavated areas and trenches are shown in Table 1.

Table 1: Quantity of pottery from excavated trenches and contexts

Plot	Cxt.	Type	Fill of	Interp.	Sherd count	Wt/g	Rim % total	Sherd wt/g	Date of latest in gp	Date range gp
21-18	10022	Layer		Possible hillwash	2	21.6		10.8	L2+	M1-L2+
21-18	10032	Fill	10033	Upper fill of ditch	1	6	2	6.0	L2-M3	L2-M3
21-18	10042	Layer		Cobbles cut by ditch	5	24.9		5.0	RB	RB
21-18	10049	Layer		Midden	68	616.8	69	9.1	L3-4	IA-L3/4
21-18	10051	Fill	10050	Fill of ditch cut	5	54.8	5	11.0	M3-M4	2-M3/M4
21-18	10064	Layer		Activity surface	3	144.5	16	48.2	L2-M3, 170+	L2-M3, 170+
21-18	10074	Layer		Darker filled cobbles	1	47		47.0	RB	RB
21-18	10076	Layer		Colluvium	5	54.1	44	10.8	L3+	L2-L3/4
21-18	10106	Layer		Organic, poss. midden	87	844.3	101	9.7	M3	M/L2-M3? 1 IA sherd
21-18	10120	Fill	10119	Top fill of ditch	2	14.8		7.4	3+	3 or 4
21-18	10126	Fill	10125	Fill of field drain	46	373.7	75	8.1	M3+	L1/E2-M3/M4
21-18	10132	Layer		Activity surface	1	8.8		8.8	M1-2	M1-2
21-18	10138	Fill	10137	Fill late gully	8	27.5	7	3.4	L2/M3+	L2-3

Part 4 Romano-British and Iron Age pottery assessment
Ruth Leary

Plot	Cxt.	Type	Fill of	Interp.	Sherd count	Wt/g	Rim % total	Sherd wt/g	Date of latest in gp	Date range gp
21-18	10143	Fill	10141	Upper fill of ditch	5	330.5	31	66.1	3+	L2-3
21-18	10158	Cut		Ditch cut	1	9.8	7	9.8	2+	2-E/M3
21-18	10162	Fill	10160	Upper fill of RB ditch	1	5.8		5.8	RB	RB
21-18	10184	Fill	10183	Finds from 10183	10	63.8	18	6.4	L2-M3	2-M3
21-18	10187	Layer		Alluvial deposit	4	53.4	17	13.4	E3+	1A-E3
21-18	10212	Fill	10211	Primary deposit	1	13.2		13.2	RB	RB
21-18	10218	Layer		Cobble spread	1	16.9		16.9	M3+	L2-M3
21-18	10244	Layer		Threshing floor	16	66.1	5	4.1	RB	RB
21-18	10247	Structure		Possible wall footings	2	29.1	10	14.6	M-L3	M-L3
21-18	10248	Layer			31	1581.4	1	51.0	E3	2/2 2-E3
21-18	10252	Fill	10284	Upper fill of RB terminal	11	494.3	56	44.9	L2+	L2-M3
21-18	10285	Fill	10284	Primary fill of ditch terminal	5	25.5		5.1	1A	1A
21-18	10298	Fill	10295	Upper fill of pit	6	76.4	6	12.7	3	3
21-18	10303	Fill	10302	Fill of ditch	2	10.4		5.2	RB	1A-RB
21-18	10304	Layer		Layer	1	3.9		3.9	M1-M3	M1-M3
21-18	10320	Fill	10324	Upper fill of cut Natural silting	1	4.9		4.9	RB	RB
21-18	10375	Fill	10374	Fill of drainage ditch	2	9.5	10	4.8	M1-2	1A-M1/2
21-18	10424	u/s finds			52	701.2	76	13.5	M3-M4	
21-18	10426	Layer		Natural revetting	5	19.8		4.0	RB?	RB?
21-18	10439	u/s finds			2	61.8	10	30.9	M3-M4	M3-M4
21-18	10442	Layer			5	27.1		5.4	RB	RB
21-18	15059	Eval. trench			1	4.7		4.7	L1A	L1A
21-18	15060	Eval. trench			4	24.5		6.1	1A	1A
21-18	15068	Eval. trench			1	2.6		2.6	2	2

Plot	Cxt.	Type	Fill of	Interp.	Sherd count	Wt/g	Rim % total	Sherd wt/g	Date of latest in gp	Date range gp
21-18 Total					404	5875.4	566	14.5		
6-7	12010				1	12.2				
6-7 total					1	12.2				
3-4	1040				1	24.4		24.4	RB	RB
3-4 Total					1	24.4	0	24.4		
3-5	1011				1	26.7	9	26.7	L2-M3	L2-M3
3-5	7020				4	83.9	18	21.0	L2	M/L2/M3
3-5	7044				1	10.5		10.5		
3-5 Total					6	121.1	27	20.2		
Total					412	6033.1	593	14.6		

By far the majority of the Romano-British pottery came from Plot 21-18, and on this site, most of the sherds came from midden deposits. The very small numbers of sherds from Plots 3-4 and 3-5 are described in the catalogue and require no further discussion.

5.3 Range and variety of material

5.3.1 Wares

The fabric of the pottery was first examined by eye and sorted into ware groups on the basis of colour, hardness, feel, fracture, inclusions and manufacturing technique. National fabric collection codes are given wherever possible (Tomber and Dore 1998).

Table 2: Quantities of wares

Ware group	Description	No.	Wt/g	Rim %	Tomber and Dore
FLA	Fine cream ware with darker buff slip	1	15		
BB1	Black burnished ware	36	340.1	72	BB1 DOR
BBT1	Black burnished ware 1 copy	1	9.5		
BSB	Medium quartz tempered brown “native” ware	1	4.7		
CT	Shell-tempered ware, probably Dales ware	5	22.8		DAL SH
DR20	Dressel 20 amphora	19	1516.6		BAT AM
FLA	White ware	1	8.8		
FLB2	White slipped ware	23	229.2	23	
GR	Grey ware	1	16.7	12	
GRA	Fine quartz-tempered grey ware	3	11		
GRB1	Medium quartz tempered grey ware typical of South Yorkshire kilns	164	1894.1	301	
GRB17	Medium quartz tempered grey ware with orange core	18	187.5	5	

Ware group	Description	No.	Wt/g	Rim %	Tomber and Dore
GRC	Grey brown fabric with abundant medium/coarse quartz and common medium mica. Unusual for Romano-British	1	3.4	1	
GRC6	Gritty grey ware typical of South Yorkshire kilns	2	156.2	25	
GT	Lumpy reduced ware with quartz and some sparse shell. Often with argillaceous inclusions. Typical of L1-m2 "native" wares	1	11.8		
MH	Mancetter-Hartshill mortarium	17	567	58	MAH WH
MNV	Nene Valley mortarium	1	23.5		WH LNV
MOAB	Orange mortarium, probably from South Yorkshire kilns, no slip visible	3	149.5	20	
MOXW	Oxfordshire white ware mortarium	1	30.2		OXF WH
MWS	White slipped orange mortarium, probably Cantley	3	285.3	27	CAN WS
NSP	Sandy ware indeterminate	5	34.6		
NV	Nene Valley colour-coated ware	6	13.4		LVN CC
OAA1	Fine oxidised ware	10	1.2		
OAB1	Medium oxidised ware	26	127.1	7	
OAB1G	Medium oxidised ware with grey core	21	116.4		
OAC1	Coarse oxidised ware	1	11.6		
PQT	Handmade quartz-tempered wares	21	94.8	13	
TS	Samian	18	139.4	29	
Total		412	6033	593	

5.3.2 Forms

Black burnished ware category 1 jars and bowls were present in moderate quantities, and were made up of flat and incipient bead and flange rim bowls, plain rim dishes and late jar with splayed and outcurving rims of the type common in the 3rd century. The grey wares also included flat-rim bowls and dishes, grooved and plain rim dishes and one possible colander. This last vessel was very abraded and had a flat rim with reeding on the top. The walls seemed to be quite straight and it was not certain what form the full profile took. The inward slope of the wall was unlike the usual body form for a reeded rim bowl, and the other possibility would be a colander of South Yorkshire type, a form which continued to have the reeded rim well into the late Roman period (Buckland et al 1980 type Ha). A moulded rim jug/flagon in a hard, rather gritty, grey ware with a small flange around the neck retained the smudge of clay where the handle had formerly been attached. This type is very unusual for South Yorkshire kilns although the fabric is perfectly acceptable within the range made there. The form compares more closely with types from East Yorkshire at Crambeck and Holme-on-Spalding-Moor (Corder 1937 type 14 and Corder 1930 fig. 13) dating to the late 3rd-4th century. The rim form is similar to a face neck flagon from late 3rd-4th century kilns at Goodison Avenue (Buckland and Magilton 2005 no. 41). The medium-mouthed jars were either of everted or cupped rim type and the wide-mouthed jars were shouldered jars with short everted rims (Buckland et al. 1980 type Hb). The normally very common, wide-mouthed, deep bowls (Buckland et al. 1980 type Hc) were scarcely present at all and were restricted to quite small vessels with bead or club rims. A group of oxidised white-slipped wares were recognised and the identified forms comprised a flanged hemispherical bowl with bead rim and a two ribbed handle probably from a flagon. The hemispherical bowl is not precisely paralleled in the South Yorkshire kiln group, but a waster from Blaxton suggests

this form was made there (Buckland and Dolby 1980 no. 217), perhaps in the second half of the 2nd century. Similar vessels were made in the Derbyshire kilns in the 2nd-mid 3rd century (Leary 2003, fig. 11 no. 21). Apparently unslipped oxidised sherds with a grey core may belong to this group and represent severely abraded examples. A second flanged hemispherical bowl was made in this ware, and a small two-ribbed handle, perhaps from a mug or beaker.

Mortaria from the kilns at Mancetter-Hartshill, Coventry included a flanged mortarium of 2nd century date and three multi-reeded hammerhead mortaria of mid 3rd-mid 4th century. One fragment of a reeded rim mortarium was of Nene Valley type and dates to the 3rd century. Oxidised mortarium sherds were identified in a similar fabric to that made at the Cantley kilns, including a collared form of the late 2nd-mid 3rd century and a bead and flange mortarium of 2nd century type. Another bead and flange mortarium of this type was present in a similar fabric which retained a white slip. Some of the oxidised mortarium sherds may have originally been slipped. One white Oxfordshire mortarium sherd was present and this is unlikely to have reached this area before the late 3rd-4th century. At York, Oxfordshire mortarium sherds only occur in contexts belonging to the 4th century or later (Monaghan 1997, 937) so a later date is possible for this sherd.

Sherds from a late Dressel 20 oil amphora were identified, and some shell-tempered body sherds compared well with Dales ware. Some 18 samian sherds were identified and these need specialist identification.

Pre-Roman sherds were identified and fell into three groups – handmade quartz-tempered wares, a reduced sandy ware of late Iron Age or Conquest period type (BSB) and a ‘native’ ware with quartz, fine shell and argillaceous inclusions (GTA). The first ware group included some handmade sherds, including one which seemed to be a pedestal base, an everted rim and an internally bevelled rim. The BSB sherd seemed to come from a pedestal base and the GTA sherd was undiagnostic. This group indicates activity in the pre-Roman Iron Age.

5.4 Chronology

The majority of types of fabrics and forms identified in the assemblage from 21-18 date to the late 2nd-mid 3rd century, with some evidence for prehistoric activity. The well-dated BB1 types include jars with late rim forms and obtuse lattice burnish (cf. Gillam 1976 nos. 8 and 9 dated mid-late 3rd century, Holbrook and Bidwell 1991, 95) but none had a grooved shoulder, a feature dated to AD240 or later (Bidwell 1985) so a mid 3rd century date is likely. The bowls with the grooved flat rims date to the late 2nd-mid 3rd century (Holbrook and Bidwell 1991, 98). The absence of developed bead and flange bowls point towards a date before cAD270 when this type became common (Holbrook and Bidwell 1991, 99). Only a small number of earlier types, such as the bowls with flat rims (all of which could be late 2nd century in date), were identified, and no early BB1 jars were present. The grey ware jars with everted and cupped rims were of similar date. The everted-rim jars with burnished lattice decoration made at Rossington Bridge in the 2nd century were not present, but instead plain jars with curving, almost cavetto rims accounted for c.20% of the medium-necked jars. Over half the medium-necked jars were cupped-rim forms. This type was given a date range in the late 2nd-mid 3rd century by Swan (2002, fig. 12 no. 158) and although still present in the later kilns, was most common in the Blaxton kilns (Buckland and Magilton 2005, 46 no. 36, dated AD160-250). Cupped-rim jars in grey ware were lacking in the late 2nd century groups from Doncaster High St (Leary 2004) and in a mid-late 2nd century assemblage at Stainton, South Yorkshire (Leary 2005). The form seemed to have been most numerous in the first half of the 3rd century. At the South Yorkshire kilns, a comparison with the well-dated forms of incipient bead and flange bowls and developed bead and flange bowls shows that the cupped-rim jars were in decline by the time the developed bead and flange bowl form came into use (**Figure 1**), dated by Holbrook and Bidwell to cAD270 (1991, 98). Groups from South Yorkshire settlements

suggest this type was overtaken in popularity by Dales ware in the late 3rd century and was very rare on 4th century sites (Figure). The groups from Holme Hall and West Moor Park were midden accumulation deposits and the dates give the date range of the pottery present. The precise date of the decline in numbers of cupped-rim jars is difficult to determine using groups of this character, but it is clear that the grey ware form appeared late in the 2nd century or early in the 3rd century and declined in numbers by the time that developed bead and flange bowls became numerous, c.AD270.

The absence of Dales ware jars is likely to be due to the site's position, lying on the edge of the core distribution of Dales ware (Tyers 1996 fig. 237), although Dales ware is well attested at Ilkley in the later Roman period (Hartley 1966, 60 and Woodward 1926 42-43, noted as less common than Huntcliff wares) and was present to the west at Lancaster in association with 4th century pottery (Jones and Shotter 1988, 108 no. 63). It may be that the distribution of this type was quite patchy before the late 3rd-early 4th century, and the reason for its absence lies in the earlier date of the site. Certainly, at Castleford, Dales ware did not become common until the early 4th century (Rush 2000, 158).

The bowls and dishes indicate a similar date range. Types most common in the late 2nd century, such as the flat-rim bowls in BB1 or grey ware, accounted for c.40% of the grey ware bowls, with just under 20% being grooved flat rim bowls. The dishes were plain or grooved rim, and the oxidised ware bowls were comprised either of samian types or the flanged hemi-spherical bowls of 2nd-mid 3rd century type.

The mortaria consisted of 2nd century bead and flange mortaria, probably belonging to the second half of the 2nd century, and mid 3rd-mid 4th century multi-reeded, hammerhead rim mortaria.

The latest pottery included mid 3rd-mid 4th century types, but the absence of developed bead and flange bowls and other late types such as the later Nene Valley pottery and East Yorkshire reduced and calcite gritted wares suggests that occupation did not continue much later than the mid 3rd century. A small amount of handmade pottery indicated pre-Roman Iron Age occupation.

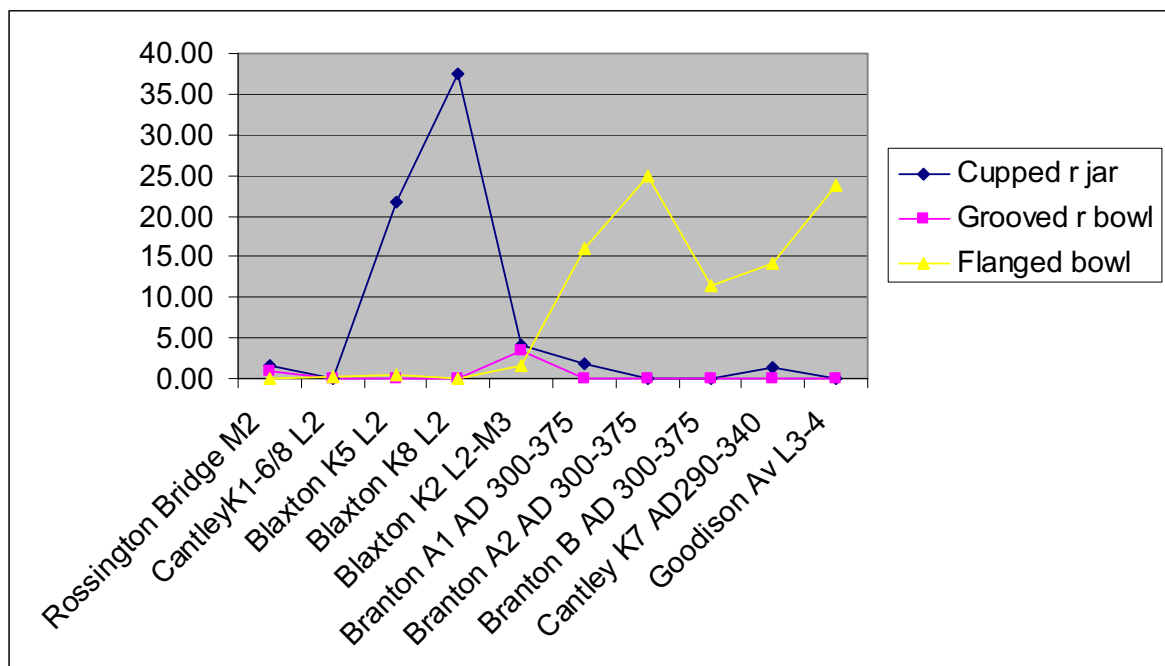


Figure 1: Key forms at South Yorkshire kiln groups. Blaxton, Buckland and Dolby 1980, Branton, Buckland 1976, Cantley, Annable 1960, Goodison Ave, Buckland and Magilton 2005.

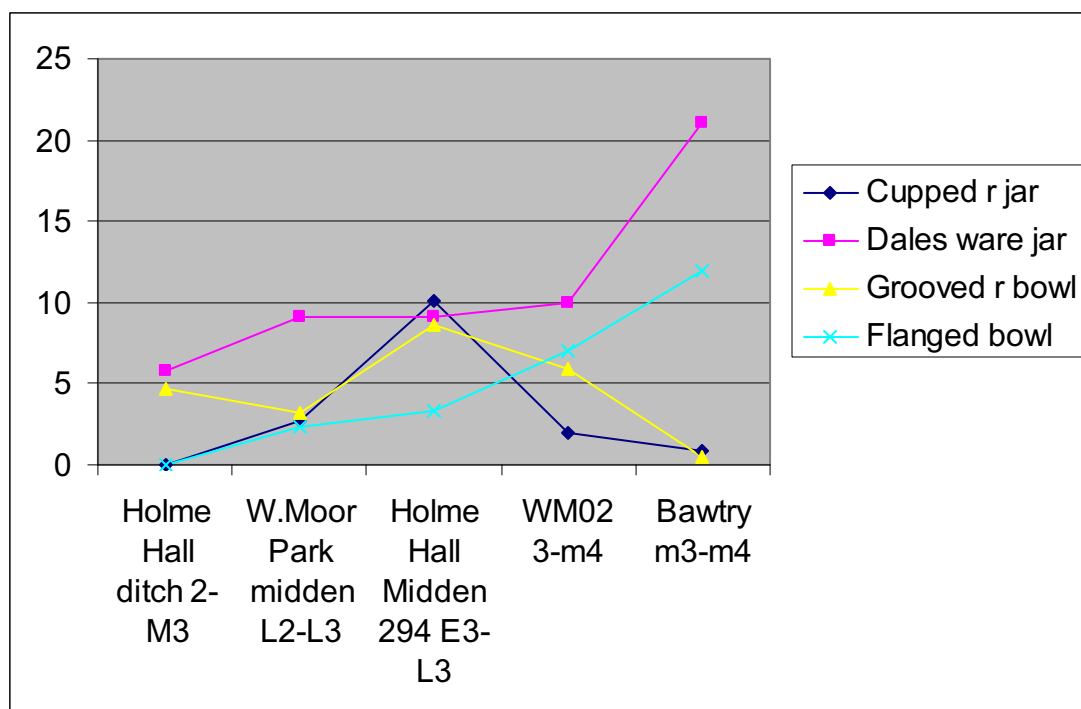


Figure 2: Key forms in rural settlement assemblages in South Yorkshire sites (Holme Hall, Stainton, Leary 2005b, Bawtry, Leary 2006, WM02 West Moor Park 2002 in prep.)

5.5 Function, site status and trade

Several indicators of moderately high status were determined. The relative proportion of bowls and dishes to jars (27:52) was towards the high end for a rural settlement in this region (compare Evans 2001a, 155 Bullerthorpe Lane, Evans 2001b). The majority of the pottery came from the South Yorkshire pottery kilns. BB1 cooking vessels, jars and bowls/dishes were obtained from Dorset, and around half the mortaria came from non-local sources: Oxfordshire, the Nene Valley and Mancetter-Hartshill near Coventry. A very small number of shell-tempered body sherds were probably Dales ware from North Lincolnshire or Humberside. The quantity of traded wares such as samian, amphora, colour-coated wares and mortaria from the Nene Valley and Oxfordshire kilns suggest a degree of affluence not enjoyed by other rural settlements in South and West Yorkshire. By sherd count, the Dressel 20 oil amphora from Spain contributes nearly 5% of the assemblage, which puts the site on a par with military sites in Evans' analysis (2001b fig. 11). A further 4.5% of the pottery came from the samian potteries in Gaul. Nearly 10% of the pottery came from Dorset (BB1), while the Mancetter-Hartshill mortaria contributed nearly 5% by count and 10% by weight. Unusually an Oxfordshire mortarium was identified. Although Nene Valley colour-coated wares were not very common (2% by count) at Doncaster, the Nene Valley wares only reached 3% in the late 2nd-mid 3rd century group, and on most rural South Yorkshire sites of the 3rd century, less than 1% is common. The site would, therefore, appear to be at the upper end of the rural settlement types.

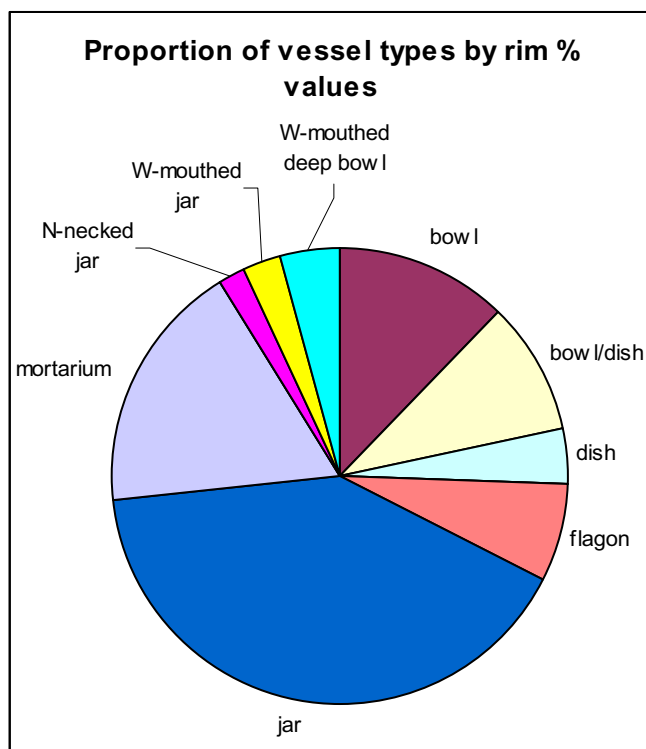


Figure 2: Quantification of vessels by vessel types by rim % values

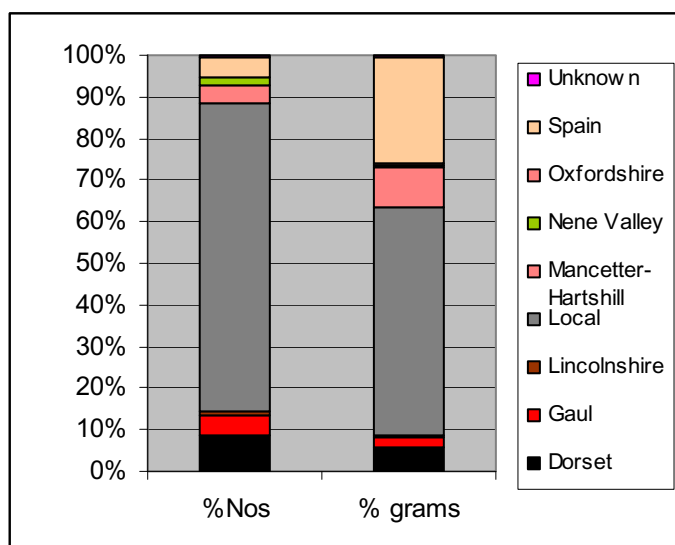


Figure 3: Quantification of sherds by source using sherd count and weight values

5.6 Taphonomy

The average sherd weight was 15g, an average weight for South and West Yorkshire rural sites (Evans 2001a, table 16). Only one sizeable group was excavated, the midden group, the remainder mostly comprising less than ten sherds in moderately abraded condition.

5.7 Conditions

One sherd, a Dressel 20 amphora sherd, had a large hole made in it. Secondary use of such large, commodious vessels was not uncommon, and this hole may have facilitated the use of foodstuff stored in the amphora. A GTA sherd was sooted and five sherds were burnt: body sherds of samian, and FLB2, a GRB1 base, a BB1 plain rim dish and a MOAB mortarium.

5.8 Statement of Potential

5.8.1 The pottery

The assemblage from Plot 21-18 sheds light on several aspects of Roman settlement and ceramics:

- The assemblage includes a well-dated late 2nd-mid 3rd century group of rather higher status than normal for rural settlement in the region.
- The group is unusual in having a relatively narrow date range, and this increases the value of the group, since most groups from rural sites are accumulation deposits with a wide date range. The latter groups make it difficult to establish the date range of individual locally made types. This group includes traded wares which have a well established date range, and thus the group will help to establish the date range of some of the South Yorkshire types.
- Rural sites have been identified as crucial to our understanding of life in the Roman period, since they represent the majority of people living in Roman Britain (Willis 2004, 4.5). The group from 21-18, in particular, sheds light on the degree to which some rural settlements were integrated with the Roman economy more than other sites.
- In addition, Plot 21-18 seems to have acquired Roman mores to a greater extent than is apparent at contemporary rural sites in West and South Yorkshire, where bowls and dishes suitable for individually served portions, typical in Roman-style dining, are uncommon.
- This site also has potential for spatial analysis (Willis 2004, 4.5.3), since it is clear that some parts of the site have concentrations of Roman pottery, whereas other parts have very little ceramic material. It will be important to determine if this is the result of chronology or differences in the functions of parts of the site.
- The site also adds to our understanding of the types and wares current in the late 2nd-mid 3rd century in the region, and suggests that the site may lie on the edge of the core distribution area for Dales ware.
- The selective acquisition of pottery from the local South Yorkshire kilns, apparently including few of the deep bowls and wide-mouthed jars so typical of that industry, contrasts with other rural sites in the region.

5.8.2 Specialist analysis

The Iron Age and mortarium fabrics should be characterised in more detail by specialists and a report on the samian should be obtained from a samian specialist. A consultation with the national mortarium specialist Kay Hartley should be funded to confirm preliminary identification of sherds from this class of vessel.

5.9 The site

5.9.1 Site chronology

Full site data was not available, and it was not known how features related to one another when this assessment was carried out, so further work needs to be done to determine the dating and phasing of individual features.

5.9.2 Spatial analysis

The assemblage was not examined in detail in terms of intra-site variation in the types of pottery, but pottery deposition seemed to be concentrated in the north-west area of the site, and there may be differences in the types of vessels being deposited in the features across the site.

5.9.3 Nature of occupation and aspects of trade and exchange

Difficulty is experienced in detecting differences in status amongst the rural settlements of this region. The evidence from this site and a small number of other sites such as Parlington Hollins (Evans 20001) and Swillington Brickworks (Evans unpublished), both in West Yorkshire, suggests that some differentiations of sites on the basis of the types of pottery used may permit detection of some indications of social stratification in the rural settlements. To some extent, the greater articulation of sites such as 21-18 is reflected in their ability to obtain traded goods, and their higher social status, or at least more Romanised habits, is reflected by their greater use of bowls and dishes. These fruitful lines of enquiry increase the potential of this small group.

5.10 Storage and curation

The pottery is predominantly stable.

5.11 Recommendations

- The pottery has been catalogued in broad ware groups. More detailed fabric analysis would enhance the data set.
- The context groups should be discussed and their relationships examined when stratigraphic data is available. Site phasing may be possible.
- Key groups should be illustrated with the range of types found on the site represented.
- Several rural settlements in West and South Yorkshire have been excavated recently, and comparison with the ceramic assemblages from these sites would be straightforward, since the data sets have already been compiled, and would greatly increase the value of the assemblage. With relatively little outlay, the site could be put in the context of other rural settlements in the region as well as being compared with quantified groups from Doncaster fort and vicus. Reference would also be made to unquantified published groups from Ilkley.
- The prehistoric pottery and samian should be examined by appropriate specialists and Kay Hartley should verify the identifications of some of the mortarium sherds. The potential for fabric analysis of the prehistoric pottery should be assessed.
- The existing assessment support should be upgraded to publication standard, and the assemblage should be published in a local journal with the range of vessel types

illustrated. The report should summarise the date range and types of pottery present, giving details of the key groups for site chronology in an illustrated pottery catalogue. The character of the site as indicated by the pottery should be discussed in reference to other sites of all types in the region, and the spatial distribution of the pottery examined for evidence of functional variation. Evidence for differences in articulation with the Roman economy should be discussed at a regional level and comparisons made with neighbouring regions, such as the situation found in East Yorkshire where Evans was able to detect a lack of integration between the rural settlements with the nucleated settlement of Shiptonthorpe in the 2nd century; a situation which seemed to alter profoundly in the 3rd century (2006, 140).

Part 5

The Post-Roman Pottery Assessment

Alan Vince and Kate Steane

6 ASSESSMENT OF THE MEDIEVAL AND LATER POTTERY FROM PLOT 7-18

A large collection of medieval and later pottery was recovered from excavations on the line of the Pannal to Nether Kellet pipeline. The pottery concerned comes from several excavations of which by far the largest assemblage is from Plot 7-18. The pottery from that site consists of high to late medieval and post-medieval pottery with a possible hiatus or lessening of activity between the two periods. The site seems to have been abandoned c.1800.

6.1 Description

The pottery was classified into ware types, all of which are common in Yorkshire and the Midlands in the medieval to post-medieval periods. However, in many cases it is likely that these types refer to a tradition, in which vessels were made using similar fabrics, forms and decoration but whose production sites could not easily be determined. In particular, this appears to be true of much of the post-medieval slipwares, which was produced in the Staffordshire tradition but includes both vessels which would be indistinguishable from products from the Potteries and those whose fabric, form or decoration mark them out as being local, Yorkshire products (Cumberpatch 2003; Cumberpatch 2006).

6.1.1 Medieval

The earliest medieval pottery types known in West Yorkshire are York A ware, produced at Thorner, and York Gritty ware, probably produced at Potterton. Thorner and Potterton are neighbouring parishes about 20 miles southeast of Plot 7-18. Both of these wares are found at York, 20 miles to the east of the production sites. It is, however, arguable whether the absence of these wares from Plot 7-18 is solid evidence that the site was not occupied during the currency of these wares, from the late 9th to the 12th centuries, since at present, it seems that both were producing pottery mainly for the urban market, from where it was probably redistributed.

The earliest type present is Northern Gritty ware (NGR). Analysis of a large collection of pottery from Inganthorpe Manor, near Wetherby, included comparative study of pottery from kiln sites at Baildon, Follifoot, Winksley and Grantley, as well as pottery from a consumer site in Knaresborough (Vince 2005b; Vince 2005a; Bellamy and Le Patourel 1970). These studies concluded that Northern Gritty ware was produced from clays outcropping alongside coals in the Millstone Grit and Coal Measures formations, and that individual potteries employed clays with a range of properties, depending on the purpose for which the pottery was intended and probably also the changing fashions in pottery appearance and decoration. Nevertheless, it was possible at Inganthorpe Manor to say that the source of the pottery was probably one or more potteries situated to the north-west of the site, and that no pottery from Baildon, Follifoot, Grantley or Winksley was present. The pottery from Knaresborough, on the other hand, could well have come from the same source.

Visually, the large collection of Northern Gritty ware from Plot 7-18 appears to have a great deal of uniformity, both in fabric and typology, and it is quite likely that it was all produced at a single centre. The typology of the jar rims is similar to that from the Upper Heaton kiln, located about 26 miles south of the site, but this might be due to the regional tradition of pottery production shared by potters over a large area of West Yorkshire, rather than because the Askwith vessels were made at Upper Heaton. In total, 276 sherds were recovered, representing no more than 178 vessels and weighing in total 2.985 kg (Table 1).

Table 1

Form	Sum of Nosh	Sum of Weight	Sum of NoV
CAUL	22	128	1
JAR	239	2424	165
JUG	9	279	9
JUG/JAR	1	2	1
LARGE JAR	5	152	2
Grand Total	276	2985	178

The vessels mostly came from wheelthrown jars, which mostly have soot adhering to the exterior. Definite sherds of jug were rare (9 in total). Several sherds come from a cauldron, having opposed angled handles and a sharply everted rim. These features are common on late medieval metal vessels and this appears to have been a direct copy of such vessels, although similar vessels were produced in the Low Countries in the later 14th to early 16th centuries (Hurst, Neal, and van Beuningen 1986, Dutch Red Earthenware).

A small number of sherds have features which could be drawn (Rims from 19 vessels and 3 handles). Several of the vessels appear to offer the possibility of reconstruction, which might reduce the number of vessels present but increase the value of the illustrations).

At Inganthorpe Manor, Northern Gritty ware was thought to have been in use from the late 12th to the mid 14th century, but a longer date range at Askwith is quite possible.

The only other ware present is Humberware (HUM). This is a fine red earthenware whose silty fabric is a result of the use of either post-glacial lacustrine clays or marine/estuarine clays in the Humber wetlands (Hayfield 1992). Fifty sherds of Humberware were present, mostly body sherds which might be from either jugs or jars. Eleven jug sherds, five jar sherds and three sherds from small unglazed drinking jugs were identified. The latter form is particularly characteristic of the later 14th century, but Humberware was used from the mid 14th century to the early 16th century.

No other sherds which might be of medieval date were present.

6.1.2 Late Medieval/Transitional

Seventy-three sherds of wares which could have been used either side of the mid 16th century dissolution were present. They represent no more than fifty vessels, and weigh in total 1.158 kg (Table 2). The most common ware is Ryedale ware, produced in North Yorkshire at sites in the Hambleton Hills and the Ryedale area. This ware appears to have been in use in the late 15th century, and is certainly present at or before the Dissolution on monastic sites. It is not certain how late the industry continued. At Castle Howard, for example, the ware was in use in the village which preceded the stately home, alongside late 17th century slipwares, but it is only an assumption that the smashed vessels of these two types were contemporary (Vince 2002). Similarly, the ware is often found in late 17th century deposits in York, but it is rare for these not to contain residual material. A range of vessels was represented, but bowls were by far the most common type.

The other ware present is Cistercian ware, definitely in production in Yorkshire by the early 16th century but quite probably already present by the late 15th century (A Boyle pers comm). Most of these vessels are cups, but the handle from a standing costrel was also present.

Table 2

cname	Form	Sum of Nosh	Sum of Weight	Sum of NoV
CSTN	COSTREL	1	19	1
	CUP	14	157	12
RYEDALE	BOWL	44	809	29
	BOWL/JAR	1	6	1
	HANDLED BOWL	1	18	1
	HANDLED JAR	8	93	3
	JAR	2	32	2
	JUG	2	22	1
Grand Total		73	1156	50

6.1.3 Early Post-Medieval (late 16th to mid 17th century)

From the late 16th century onwards, a series of pottery production centres were in operation in Yorkshire whose products' basic appearance does not vary much over a long period of time. Examples at Plot 7-18 include several types classed simply as "blackware" (BL), which might be of any date from the late 16th to the late 18th century. However, it is possible to identify other wares more closely, and these indicate that there is a late 16th to mid 17th century component to the pottery collection.

Three wares in particular can be dated to this period (Table 3). These consist of Brownware (BERTH), Midlands Purple (MP) and Midlands Yellow ware (MY). Brownware has a red earthenware body and a brown glaze. It is sometimes difficult to distinguish this ware from glazed red earthenware, which has a plain lead glaze, but where the glaze can be accidentally coloured by bleeding of iron-rich inclusions into the glaze. Nevertheless, in most cases the intention to produce a brown glaze is evident. Midlands Purple and Midlands Yellow ware are both types which had a wide currency both in the Midlands and Yorkshire. In this collection, none of the finds has any features which would definitely prove that they were locally produced but a Yorkshire source is likely. There are a few forms and decorative types produced in this period which might allow a closer date, but at Plot 7-18 only the broader, late 16th to mid 17th century date is possible. Several of these vessels are smashed and the possibility of reconstruction of complete profiles exists.

Table 3

cname	Form	Sum of Nosh	Sum of Weight	Sum of NoV
BERTH	BOWL	2	5	2
	CHPT	21	187	5
	CUP	7	31	6
	JAR	10	50	10
	JUG	2	58	2
	POSS	3	18	3
	POSS/CHPT	6	42	6
MP	BOWL/CHPT	1	91	1
	CHPT	1	7	1
	CUP	6	90	5

cname	Form	Sum of Nosh	Sum of Weight	Sum of NoV
MY	JAR	43	747	24
	JAR/CHPT	2	35	2
	LARGE JAR	1	42	1
	POSS	3	103	2
	BOWL	18	246	9
	JAR	8	634	4
	POSS	7	195	2
Grand Total		141	2581	85

6.1.4 Later Post-Medieval (late 17th to mid 18th century)

The majority of the datable post-medieval types date to the late 17th to mid 18th centuries. Most of these are of Staffordshire slipware tradition and include some probable Staffordshire products (such as a brown stoneware tankard of late 17th-early 18th century date), but a lot which are certainly not Staffordshire and are probably “local” (Table 4). By the end of the period, however, even this undefinable “feel” is likely to be unreliable, since the same potters were setting up factories in Yorkshire and Staffordshire and there is likely to have been a movement of potters between the two regions. In total, 877 sherds of these definitely late 17th to mid 18th century types were present, representing no more than 671 vessels and weighing 7.745 kg.

Most of the vessels are slipwares made from light-firing and red-firing Coal Measures clays. Most of the vessels were made on the wheel, but a number of press-moulded vessels were also found.

Table 4

cname	Form	Sum of Nosh	Sum of Weight	Sum of NoV
AGATE	DISH	1	2	1
AGATE Total		1	2	1
NOTS	BOWL	18	66	15
	BOWL/JAR	2	51	2
	CUP	7	74	4
	CUP/TANK	1	3	1
	CUP/TANK/JAR	1	2	1
	DJ	9	168	2
	HANDLED JAR	27	719	2
	JAR	41	394	21
	JAR/TANK	1	2	1
	JUG	3	47	2
	TANK	18	231	13
NOTS Total		128	1757	64
REFR	CUP	1	1	1
	JUG	7	31	4
	TPOT	1	14	1

cname	Form	Sum of Nosh	Sum of Weight	Sum of NoV
REFR Total		9	46	6
STBRS	TANK	6	105	5
STBRS Total		6	105	5
STCO		18	91	15
	DISH	40	552	24
STCO Total		58	643	39
STEM	DISH	4	85	3
STEM Total		4	85	3
STMO	BOWL	21	295	7
	CUP	36	149	29
	FLANGED BOWL	4	54	4
	JAR	2	8	2
	JUG	2	1	1
	POSS	28	174	16
	POSSET	1	4	1
	SMALL FLANGED BOWL	1	1	1
	TANK	12	44	7
STMO Total		107	730	68
STRE	BOWL	1	2	1
STRE Total		1	2	1
STRES	?	1	39	1
	BOWL	127	1513	112
	CHARGER	1	9	1
	FLANGED BOWL	3	43	2
	JAR	2	6	2
	LARGE SHALLOW DISH	3	91	1
	PANC	9	283	6
STRES Total		146	1984	125
STSL	?	1	2	1
	BOT	1	2	1
	BOWL	2	49	2
	CHPT	2	21	2
	CUP	199	890	174
	JAR	2	5	2
	JAR/BOWL	1	7	1
	LARGE POSSET	10	148	1
	POSS	100	858	83
	POSS/CUP	4	20	4
	POSSET	1	10	1
	SMALL FLANGED BOWL	1	4	1

cname	Form	Sum of Nosh	Sum of Weight	Sum of NoV
	TANK	29	135	28
STSL Total		353	2151	301
SWSG	BOWL	6	11	6
	BOWL/JAR	1	1	1
	CUP	7	14	6
	DISH	17	50	14
	JAR	2	4	2
	JUG	1	10	1
	LID	2	11	2
	PLATE	4	14	4
	TANK	6	22	6
	TPOT	1	3	1
SWSG Total		47	140	43
TGW	ALB	6	69	5
	BOWL	3	5	2
	CHARGER	1	3	1
	DISH	1	8	1
	PLATE	5	12	5
TGW Total		16	97	14
WHIELDON	DISH	1	3	1
WHIELDON Total		1	3	1
Grand Total		877	7745	671

Wares made in Coal Measures light-firing clays consist of press-moulded slipware (STCO); embossed, press-moulded slipware (STEM); Mottled ware (STMO); some slip-decorated wheelthrown openwares (STRES) and slip-decorated wheelthrown closed wares (STSL). Wares made in Coal Measures red-firing clays consist of black-glazed redware (STRE) and some of the slip-decorated wheelthrown openwares (STRES). Nottingham and Staffordshire Brown stonewares were also produced from Coal Measures light-firing clays (NOTS and STBRS respectively). Many of these vessels appear to be reconstructable, and the resulting reconstructed vessels are likely to be complete enough to allow the overall decorative scheme to be identified. There are several distinct types present, some of which were common in Staffordshire and others which are not. The latter include vessels in which the mottled glaze of the Staffordshire mottled ware was imitated by the use of a thin brown slip below a plain lead glaze. Initial study suggests that most of the types present are likely to have been in use in the late 17th to early 18th century and none, for example, were finished using lathe turning, a technique seen quite often in the mid 18th century as slipware producers adopted techniques introduced or invented by the fineware potters making stonewares and, later, refined earthenwares.

There is a tremendous amount of variability in the slipwares. To give one example, the wheelthrown redware slipwares (STRES) include six sherds from large bowls with a combed slipware panel on the flat centre of the vessel. Comparison of these sherds indicates that they all come from different vessels and were decorated in three different styles:

- a) An overall very pale brown slip, with dark brown and white slips trailed over each other in the flat centre of the bowl and then feathered by running a tool through the slips in a wavy pattern.
- b) An overall very pale brown slip, with light brown and white slips trailed over each other in the flat centre of the bowl and then feathered by running a tool through the slips in a wavy pattern.
- c) An overall pale brown slip (darker than in (a) or (b)), with parallel white trailed lines in the central band, combed at right angles to the lines.

A small number of refined wares were present, made from clays which were heavily prepared (by sieving, levigation, addition of crushed bone, flint or china clay and the like) before use. These consist of a sherd from an Agate ware vessel (AGATE); nine sherds of refined redware (REFR); 47 sherds of white salt-glazed stoneware (SWSG) and a sherd of Whieldon ware (WHIELDON). All of these types are likely to have been made in the mid 18th century, c.1740s to c.1770s, although it is impossible to say how long they would have remained in use, quite possibly until the end of the century. The white stoneware, for example, includes very few plain tankards, a type which was produced from c.1720 until c.1760, but which is most common in the earlier decades, and includes a high proportion of scratch-blue decorated vessels. Scratch blue was introduced in imitation of Westerwald stoneware in the 1740s and is most common in the 1750s. It rapidly fell out of fashion with the introduction of Creamware, which was in commercial production from c.1765 onwards.

There is a large amount of potential information on the typology of these vessels, including vessel profile shapes, rim, base and handle forms and decorative methods and schemes. Some of these have been recorded in the catalogue (App 1) but much more could be done.

6.1.5 Early Modern (Late 18th century)

A small quantity of pottery is of types which were introduced in the 1760s, Creamware (CREA), and 1770s, Pearlware (PEAR). A total of 88 sherds were recovered, representing no more than 28 vessels and weighing in total 0.511 kg (Table 5). In addition, a number of vessels of Sunderland slipware were present (SUND). These are known to have been produced alongside finewares and exported down the eastern seaboard. They occur widely in Yorkshire, and this site is one of the few where a late 18th century, as opposed to a 19th century, date can be reliably assigned.

The Creamware vessels include several plates whose moulded rims are capable of being classified and more closely dated. Some of the other Creamware forms are also potentially datable.

Table 5

Cname	Form	Sum of Nosh	Sum of Weight	Sum of NoV
CREA	BOWL	5	9	2
	CUP	1	1	1
	DISH	2	3	1
	LID	1	3	1
	PLATE	70	451	19
	PLATE?	1	1	1
	TANK	1	4	1
PEAR	BOWL	6	38	1

Cname	Form	Sum of Nosh	Sum of Weight	Sum of NoV
SUND	PLATE	1	1	1
	BOWL	24	600	14
	FLANGED BOWL	11	302	9
	LARGE BOWL	1	46	1
Grand Total		124	1459	52

6.1.6 Early Modern (19th century and later)

Only one sherd of definitely 19th century date was present, a refined whiteware dish with a light blue sprigged flower decoration. Transfer-printed ware, buff ware, and Derbyshire stoneware, all of which are typical of early 19th century assemblages, are all absent.

6.2 Assessment

6.2.1 Phase 1

Pottery was recovered from five phase 1 contexts: 13065, a buried soil pre-dating the Phase 1 stone building; 13098, a cultivation horizon which is the earliest deposit excavated; 13087, the primary fill of ditch 13058; 13101, the fill of ditch 13102, and 13016, the fill of the robber trench of the south wall of the Phase 1 building, 13017.

Two post-medieval sherds were present, a Brownware from 13065 and a press-moulded slipware from 13098. Both are probably intrusive. With their exception, the latest types present are Humberware, from ditch 13058 and cultivation horizon 13098, and possibly the cauldron handle from robber trench 13016 (although this could, as suggested above, date to the late 13th to 14th centuries and be a direct copy of contemporary metalware). The Humberware is of later 14th century or later date. It is not clear whether the Humberware is contemporary with the Northern Gritty ware in this phase or replaced that ware. This leaves two alternative chronologies:

A long chronology in which the Phase 1 building was built, used and its south wall demolished before Humberware arrived on the site, and there is a hiatus in the later 14th century and later, or

A short chronology in which all the Phase 1 activity took place in the later 14th century and later.

Table 6

Context group	Context	BERTH	HUM	NGR	STCO	Grand Total
Buried soil	13065	1		2		3
Cultivation horizon	13098		1	46	1	48
Ditch 13058	13087		3			3
Ditch 13102	13103			14		14
Robber trench 13017	13016			145		145
Grand Total		1	4	207	1	213

6.2.2 Phase 1 to 2

A layer of silt (13085) overlay the backfilled ditch 13058. It produced three sherds: one Northern Gritty ware, one Humberware and one sherd of a tin-glazed vessel.

A similar layer (13096) pre-dates the south and east walls of the Phase 2 structure. It produced 52 sherds, ranging in date to the mid 18th century. However, this late date relies on a single small sherd of white salt-glazed stoneware, and if that is ignored, then a date in the late 17th century can be given, on the basis of sherds of Nottingham Stoneware and a range of Staffordshire-type slipwares. The largest sherds, all of which come from smashed vessels, are of Ryedale ware, Midlands Purple ware and Midlands Yellow ware, all of which can be dated to the later 16th to mid 17th centuries.

These two deposits suggest that there was a hiatus between the Phase 1 occupation, whatever its absolute date, and the construction of the Phase 2 building.

6.2.3 Phase 2

One wall of the medieval Phase 1 structure was reused as the wall of a new building whose other walls were new. Very few deposits can be associated with the construction or use of the building. A single sherd of pottery, the rim of a pancheon in a mixed red/white clay (STCOAR), is recorded as coming from the east wall, and, assuming that it was present in the wall before its destruction, this would date the construction to the later 17th century at the earliest. Twelve sherds come from the surface of the cross passage, 13043. These include sherds of mottled ware and a light-bodied wheelthrown slipware cup, which also indicate a late 17th century or later date. However, these sherds could have been trodden into the surface during the use of the building and do not date its construction. Finally, five sherds come from the fill of a cess pit, 13048, which was situated within wall 13029. Three of these come from the same vessel, which has been burnt and is impossible to identify. The other two sherds are of glazed red earthenware, which is impossible to date closely, and another sherd of a STCOAR flanged bowl, like that from the east wall.

These finds are consistent with the building having been constructed in the 17th century, but leave the precise date uncertain.

6.2.4 Phase 3

An addition was added to the Phase 2 building, and the original building and its annex were then in use together until the abandonment and collapse of both structures.

A small quantity of pottery is associated with the construction of the Phase 3 structure. Twenty-five sherds were recovered from a dump, 13050, which pre-dated the construction and is probably contemporary with it. All of the types present are of wares present in the 17th century, including several of late 17th century or later date. Four sherds were recovered from the paved floor of the structure, 13006. These are of Ryedale ware and wheelthrown slip-decorated redware (STRES). The latter indicates a late 17th century or later date. Eight sherds were recovered from a clay floor, 13028, of which one was a white salt-glazed plate, of mid 18th century date.

On the basis of this single plate sherd, a mid 18th century date can be assigned to the Phase 3 structure.

A small amount of pottery can be associated with the use of this Phase 3 structure. 43 sherds come from occupation layer 13015. Several of these are clearly residual and of medieval or late 16th-early 17th century date. The remainder are mostly of types which were used in the late 17th to mid 18th centuries. Four sherds are of mid 18th century types: a refined redware jug; two Sunderland coarseware bowl sherds; and a white salt-glazed dish. Two sherds were recovered from the fill of a sump, 13063. Both are of types with a long date-range in the later 17th to mid 18th centuries.

The material from 13015 indicates that the Phase 3 structure was in use in the mid 18th century.

A large quantity of material was present in the rubble spread which covered the site of both structures. The material was recorded in six contexts (13001; 13002; 13007; 13010; 13011 and 13014). In addition, much of this material was recorded by grid square, allowing spatial variability to be sought. In total, 1497 sherds were recovered from this spread, representing no more than 1045 vessels and weighing 23.872 kg.

The deposit includes a number of late 18th century types, including 64 sherds of Creamware and 6 sherds of Pearlware, all from one vessel, a bowl for which a complete profile can be reconstructed. The low quantity of Pearlware and the absence of transfer-printed ware suggests an end date before 1800.

Several of the sherds in this rubble were parts of vessels spread across contexts, although most of the joining sherds come from the same context and grid square. This suggests that vessels were mostly lying where they were discarded and smashed, which would imply that these vessels were in use at the end of the site's occupation (or that the site was used as a dumping ground). However, the list of smashed vessel types in this deposit includes types of mid 17th century or earlier date, and this would imply that these vessels were in use for perhaps 150 years.

The pottery from this deposit consists of a wide variety of forms, of varying functions, and if the material was indeed in use in this complex, there is a strong possibility that the distribution of vessel forms reflects the use of the structures.

Pottery was recorded from context 13081, the fill of a stone structure, interpreted as a fireplace. Three sherds were present, a flanged bowl of Sunderland Coarseware and a Creamware plate and tankard.

Twenty-two sherds were recovered from context 13074, the fill of a drain, 13069. However, all of the types present are of medieval or early post-medieval date, apart from a single sherd of a Staffordshire-type white slipware posset pot, which could also pre-date the construction of the Phase 2 building.

6.3 Further Work

The importance and potential of the pottery from Plot 7-18 can be considered separately for the medieval and post-medieval assemblages.

6.3.1 Medieval

There is a reasonably large collection of stratified medieval pottery from the site, and when residual sherds are included this becomes a large collection of 322 sherds. However, many of these sherds come from the same vessels, and looking only at material from the same contexts, the maximum number of vessels present can be reduced to 100. Undoubtedly, a cross-context search for joins would reduce the number of vessels further, and also probably provide more information about the phasing of the site in the medieval period, by showing whether or not certain contexts were filled contemporaneously or, if not, their relative sequence. A maximum of 26 vessels could be drawn, probably reducible to around 20 following cross-context comparison. These vessels are represented by sizeable fragments, in which the profile, rim diameter and perhaps even the complete profile can be established. On rural settlements such assemblages are rare. It is therefore recommended that this searching for complete vessels is undertaken, and when completed, that all the vessels are drawn unless a close match can be made with other vessels in the assemblage.

At this stage, it would be useful to consult a local specialist, Steve Moorhouse, who has over 30 years experience of Dales medieval pottery.

It is then recommended that the source of the vessels is investigated. This should include analysis of a sample of vessels from the Upper Heaton kiln, whose products are close in form to the Askwith vessels, and that a sample of the Askwith Northern Gritty vessels are compared with these Upper Heaton samples, and with the data collected from Baildon and other kiln and consumer sites.

Similarly, a sample of the Humberware vessels should be analysed for comparison with the material from Follifoot, York, Holme-upon-Spalding Moor and West Cowick. This would test whether or not the Askwith site was relying on a remote pottery source in the later medieval period (Follifoot is only 14 miles to the east, but West Cowick is 44 miles to the east and Holme-upon-Spalding Moor is 62 miles to the east).

Finally, the Ryedale ware from Askwith could be sampled and compared with material from production sites in the Hambleton Hills and Ryedale ware from a consumer site in York. If it could be proved that the site was relying on these remote sources, then the lack of more exotic wares in the collection would tell us something new about the way in which sites such as Askwith were provisioned, and suggest that distribution was in the hands of travelling hawkers who bought supplies of pottery direct from the producer, rather than the occupants themselves travelling to market towns such as Otley or Ikley where they would have had a wider choice. The results of these studies should then be prepared for publication.

6.3.2 Post-Medieval

The post-medieval pottery is at least as important as the medieval pottery and is certainly a much larger and more varied collection. With a few exceptions, it is likely that much of the material was locally produced, but using similar techniques to those employed in the Staffordshire potteries. The exceptions include the tin-glazed ware and the Sunderland coarseware. The latter is present as a remarkably high proportion of the late 18th century pottery found, and it would be worthwhile testing this identification using thin section and chemical analysis, since the implication is that pottery was carried overland for a distance of about 90 miles from Sunderland to Wharfedale. It is possible that the pottery was transported by sea to the Tees, but until the Tees Navigation act of 1808 (48 George III. Cap. 48, Royal Assent 27th May, 1808) the Tees itself was not navigable as far upriver as Stockton, which is itself 64 miles from Askwith. The possibility of a local source for the Sunderland coarseware should therefore be explored, although several sherds were noted as having a “salt-surfacing”, an accidental result of making pottery from a brine-rich calcareous clay, certainly not to be expected in local West Yorkshire potteries.

It would also be worthwhile examining the fabric of red-firing and light-firing vessels which are clearly not of Staffordshire origin, and comparing them with vessels where a Staffordshire source is either likely or possible. By this means it would be possible to estimate the amount of pottery from the site which was of “local” origin. Here, “local” can be glossed as “West Yorkshire”. It is not thought that this slipware was actually produced in Wharfedale.

A typological study of the pottery should then be undertaken. This is necessary because it is clear from the assessment that parts of the same vessel lie scattered across the site, and it should be possible to reconstruct complete profiles of numerous vessels. Since most of these reconstructable vessels come from the spread of rubble over the top of the Phase 2 and 3 structures which was clearly deposited in the late 18th century, it is likely that many are vessels which were in use at the end of the 18th century, long after such slipware types had ceased to be produced in Staffordshire or are found on consumer sites in the West Midlands.

Being aware of the precise forms, fabrics and decoration of these late types could affect the dating of other sites in West Yorkshire, and could either indicate the late production of such types for a conservative Dales market, or may indicate that pottery on this site had a long lifespan, in which case it would be useful to know precisely which types lasted longest. It is also possible that this rubble spread incorporates material discarded outside the house during its occupation but spread back onto the house site at the demolition period, levelling the plot for further building. The results of a detailed analysis of the material may well allow us to choose between these options.

6.4 Retention

The collection is a valuable archaeological resource, because of the methods used to excavate and record it. It should therefore be retained in its entirety, with the possible exception of unstratified material. However, even the unstratified collection appears to be of exactly the same character as the stratified material and may well include missing parts of stratified vessels. Therefore, in this instance, the unstratified material too should be retained.

7 ASSESSMENT OF THE POTTERY FROM PLOT 8-5

Excavations in advance of the Pannal to Nether Kellet pipeline were undertaken by Network Archaeology Ltd. At Plot 8-5, an iron-working site was discovered. The earliest activity revealed was a ditch, which was cut by a linear feature interpreted as a hedge, which contained metalworking debris in its fill. This in turn was sealed by a spread of burnt material associated with iron working. Other features consist of a slag mound; a furnace; an area of crushed ore and charcoal; a trampled floor of small pebbles; a small pit interpreted as a clay quarry; and a complex of pits and hearths.

7.1 Description

7.1.1 Medieval

Ninety-nine sherds of medieval pottery were recovered (Table 1). They consist of three sherds of Humberware and ninety-six sherds of Northern Gritty ware. Several of the northern gritty sherds come from the same vessels and the maximum total number of vessels represented is 82.

The pottery found is of two types: Humberware and Northern Gritty ware. Both are described in the assessment of the Plot 7-18 pottery.

The Humberware is of mid 14th to early 16th century date and the Northern Gritty ware could be slightly earlier or contemporary, since its date range probably extended from the later 12th to at least the 14th century.

Table 7

cname	Form	Sum of Nosh	Sum of NoV	Sum of Weight	Average of ASW
HUM	JUG/JAR	3	3	20	6.67
NGR	JAR	87	72	399	6.63
	JUG	9	7	115	11.65
Grand Total		99	82	534	7.64

Several of the sherds were abraded and six of the sherds have fresh breaks. This abrasion, taken alongside the low average sherd weight, means that it is uncertain whether the pottery was contemporary refuse or incorporated in the deposits from earlier activity.

7.1.2 Early Modern

A single, very small, fragment of Creamware was recovered.

7.2 Assessment

7.2.1 Stratigraphy and Chronology

Pottery was recovered from six contexts: the fill of the hedge line (11030); the spread of burnt material (11015 and 11021); the roasted ore and charcoal spread (11004); the slag mound (11003) and the slag pit of the furnace (11016). It therefore seems that the iron-working activity is later than late 12th century. The latest type comes from the slag mound, although, with such small numbers of sherds, this may not indicate that slag continued to be added to the mound after the excavated furnace and hearths were abandoned (i.e. that there were other furnaces and hearths in the vicinity). However, it does imply that the activity continued into the mid 14th century.

Table 8

Context group	Form	HUM	NGR	Grand Total
Burnt material (11015 and 11021)	JAR		62	62
	JUG		9	9
Possible hedge line (11030)	JAR		10	10
Roasted ore and charcoal (11004)	JAR		2	2
Slag mound (11003)	JAR		5	5
	JUG/JAR	3		3
Slag pit in furnace (11016)	JAR		8	8
Grand Total		3	96	99

7.2.2 Further Work

The collection of medieval pottery from this site is relatively small, and only contains two featured sherds. However, because it provides the only dating evidence for the iron-working activity on the site, it is worth trying to establish the date of the pottery more closely. There are three approaches: an examination of the typology of the sherds, concentrating on the two rims; an examination of the fabric, to establish their sources or, failing that, to establish whether or not the pottery came from the same sources at that supplying the Scales settlement investigated on Plot 7-18, and finally, to establish local parallels for the rim forms by obtaining specialist advice from Steve Moorhouse.

Table 3

Context	cname	Form	Description	Part	Nosh	NoV	Weight	ASW	Condition	Use
11003	NGR	JAR		BS	5	5	12	2.40	ABRA	
11003	HUM	JUG/JAR		BS	3	3	20	6.67	ABRA	
11003	CREA	JUG	Band of brown indust slip ext	BS	1	1	1	1.00		
11004	NGR	JAR		BS	1	1	1	1.00	ABRA	SOOTED EXT
11004	NGR	JAR		BS	1	1	2	2.00		
11015	NGR	JUG	Glaze int	BS	4	4	29	7.25	GLAZE DECAYED	
11015	NGR	JAR		R	1	1	4	4.00		SOOTED RIM EXT
11015	NGR	JAR		BS	18	18	85	4.72		
11015	NGR	JAR		BS	19	19	75	3.95		SOOTED EXT
11015	NGR	JAR		BS	2	2	35	17.50	LARGE IRON CONCRETIONS ADHERING	SOOTED EXT
11015	NGR	JAR		BS	4	4	48	12.00	LARGE IRON CONCRETIONS ADHERING	
11015	NGR	JUG	Glaze int	B;BS	3	1	70	23.33	GLAZE DECAYED	

Part 5: Post-Roman pottery
Alan Vince and Kate Steane

Context	cname	Form	Description	Part	Nosh	NoV	Weight	ASW	Condition	Use
11016	NGR	JAR		BS	2	1	4	2.00		SOOTED EXT; BLACK DEP INT
11016	NGR	JAR		BS	6	1	14	2.33	FRESH BREAKS	SOOTED EXT
11021	NGR	JUG	Glaze int	BS	1	1	9	9.00	GLAZE DECAYED	
11021	NGR	JUG	Dribbles of glaze ext	BS	1	1	7	7.00		DARK DEP INT
11021	NGR	JAR		BS	1	1	35	35.00	LARGE IRON CONCRETIONS ADHERING	SOOTED EXT
11021	NGR	JAR		BS	1	1	5	5.00		SOOTED EXT; BLACK DEP INT
11021	NGR	JAR		BS	2	2	3	1.50		SOOTED EXT
11021	NGR	JAR		BS	14	14	52	3.71		
11030	NGR	JAR	Small; thin walled	R;BS	10	1	24	2.40		SOOTED EXT; BLACK DEP INT

8 ASSESSMENT OF THE POTTERY: OTHER PLOTS (2006)

In addition to major collections of medieval and post-medieval pottery from Plots 5-8 and 7-18, the archaeological fieldwork on the Pannal to Nether Kellet Pipeline produced a small quantity of pottery from other sites, mostly unstratified material (Table 1). The material ranges in date from the medieval period to the early modern period.

Table 9

Plot	Sum of Nosh	Count of NoV	Sum of Weight
2-6	1	1	1
3-5	23	16	158
3-6	1	1	1
6-7	1	1	5
7-19	7	6	19
9-5	1	1	83
11-12	11	10	70
11-2	2	2	9
12-3	6	5	41
13-19	33	16	209
14-5	3	3	96
15-1	47	45	767
15-15	17	15	472
15-16	44	27	486
16-1	26	25	165
16-2	9	8	37
16-3	13	12	98
16-4	11	11	171
16-5	21	15	103
16-7	3	3	5
17-1	1	1	3
17-2	6	4	18
17-3	4	4	51
17-6	6	3	31
19-7	1	1	1
21-18	40	29	248
23-2	3	3	22
26-16	5	4	47
31-13	3	2	4
33-3	14	5	496
34-2	12	9	97
34-5a	5	4	146
36-3	2	2	97
46-10	25	22	420

Plot	Sum of Nosh	Count of NoV	Sum of Weight
46-5	2	2	59
52-1	2	1	8
52-3	4	3	126
52-4	7	7	132
52-6	1	1	18
53-1	58	39	1267
53-2	8	8	306
54-1	4	4	29

8.1 Description

8.1.1 Roman or Anglo-Scandinavian

A small group of sherds from Plot 21-18 are of wheelthrown redwares which are not recognised as being typically Roman by the Roman pottery specialist. The only other options are that they are of Anglo-Scandinavian or medieval date. Since the size and shape of the vessels concerned is not paralleled in the medieval period (i.e. after the mid 11th century), the only remaining option is that they are of Anglo-Scandinavian date.

The sherds all have similar fabrics, and at x20 magnification they can be seen to contain:

- Abundant angular and sub-angular quartz grains, between 0.2mm and 1.0mm across; black and red sub-angular and rounded ironstone fragment and sparse well-rounded quartz grains in a fine-textured light brown groundmass.
- Moderate angular and sub-angular quartz grains, between 0.2mm and 1.0mm across; black and red sub-angular and rounded ironstone fragments and sparse light-coloured mudstone fragments in a fine-textured, slightly micaceous light brown groundmass.
- Abundant angular and sub-angular quartz grains, between 0.2mm and 1.0mm across; black and red sub-angular and rounded ironstone fragments and sparse well-rounded, matt-surfaced quartz grains in a fine-textured, micaceous dark brown groundmass with a grey core.
- Abundant well-sorted angular and sub-angular quartz grains between 0.1mm and 0.3mm across in a fine light brown groundmass.

The rounded quartz grains in fabrics (a) and (c) originate in the Permian or Triassic sands which outcrop along the western edge of the Vale of York. Therefore, these fabrics were probably not produced in Wharfedale but further to the east or south. The main Roman fabric from this site has been identified by Ruth Leary as being a South Yorkshire product, and fabrics (a) to (c) could well have originated in the same area, if they are of Roman date. Fabric (d) contains a finer sand, characteristic of clays derived from the Middle Jurassic of the North Yorkshire Moors. Such clays, composed of re-deposited Mudstones, occur on the eastern side of the Vale of York, at least as far south as York. However, no examples of this fabric are known from Anglo-Scandinavian deposits in York, and if this sherd is indeed of Anglo-Scandinavian date, then it must therefore have been produced to the north of York. Similar fabrics do occur in York, however, in the 1st to mid 3rd centuries ({Monaghan 1997 #113}, EBOR).

Most of the sherds are featureless, but come from closed vessels (jars). That from 10049 (fabric (c)) comes from a vessel with a flat-topped tall lid-seated rim which is not paralleled in

the only extensive Anglo-Scandinavian corpus from Yorkshire, at Coppergate in York ({Mainman 1990 #20753}). The sherd from 10058 comes from a vessel with a narrow neck (such as a Roman flagon or a bottle), and the sherds from 10042 and 10034 come from the same flat-based jar, with a plain base angle and on which the lower part of the body has a very slightly concave profile.

8.1.2 Medieval

Thirty-seven sherds dating between the 12th and the 16th centuries were recovered. They consist of Northern Gritty ware (NGR); Humberware (HUM) and Ryedale ware (RYEDALE). All three wares are discussed in more detail in the assessment of the pottery from Plot 7-18. Most of the sherds are reasonably large, but the exceptions are the sherds of Northern Gritty jar, which are mostly small (average sherd weight 5.44gm). Some of these sherds have a red-firing body and contain red-firing mudstone inclusions alongside the fragments of Millstone Grit. They might, therefore, have been made from weathered mudstone of Millstone Grit age, and might therefore have been produced in Wharfedale, or at least outside of the outcrop of Coal Measures mudstones.

Table 10

cname	Form	Sum of Nosh	Count of NoV	Sum of Weight	Average of ASW
HUM	JUG	2	2	94	47.00
	JUG/JAR	3	3	135	45.00
	LARGE JAR	2	1	70	35.00
NGR	JAR	25	21	119	5.66
	JAR/JUG	1	1	3	3.00
	JUG	2	2	79	39.5
RYEDALE	BOWL	1	1	9	9.00
	JUG	1	1	12	12.00
Grand Total		22	18	449	22.28

8.1.3 Post-Medieval

253 sherds of Post-Medieval pottery were recovered. All are of types present on Plot 7-18, and the date range of the types is discussed there. They consist of black-glazed redwares, ranging in date from the 16th century Midlands Purple and Cistercian ware vessels to types which could be of 18th or 19th century date; slipwares made from light-firing, red-firing and mixed clays which are mostly of later 17th and 18th century date and could be made in Yorkshire or the Staffordshire potteries, and a small quantity of regional imports. The latter consist of Nottingham stoneware (NOTS), which probably is mainly of later 18th-century and later date in this area, and tin-glazed ware, for which a number of possible sources exist, both in England and the Low Countries.

Most of the pottery could be assigned to a broad form group, and most of the types found were used in food preparation and storage, followed by drinking (cups, posset pots and tankards, the latter two certainly used mainly for alcoholic drinks). Other activities were represented by much smaller numbers of vessels. They include vessels used in dining or display (chargers, plates and dishes); gardening (flower pots, probably actually early modern); personal transport of liquids (costrels); chamber pots and a single albarello, used to contain medicines and cosmetics.

Table 11

cname	Form	Sum of Nosh	Count of NoV	Sum of Weight	Average of ASW
BERTH	CHPT	1	1	22	22.00
	JAR	1	1	1	1.00
	JAR/POSS	2	1	10	5.00
	LARGE JAR	1	1	34	34.00
BL	BOWL	12	10	198	16.87
	CUP	10	8	80	6.83
	JAR	21	19	736	36.82
	JAR/POSS	2	2	29	14.50
	JUG	1	1	35	35.00
	LARGE JAR	3	3	286	95.33
	PANC	10	8	501	49.88
	POSS	8	6	55	7.58
	TANK	1	1	22	22.00
	COSTREL?	2	2	22	11.00
	CUP	6	5	17	2.90
GRE	BOWL	1	1	54	54.00
	JAR	1	1	20	20.00
	JAR/JUG/BOWL	1	1	2	2.00
MP	CUP	1	1	13	13.00
MY	BOWL	3	3	84	28.00
	CUP	1	1	1	1.00
	JAR	2	2	25	12.50
	POSS	1	1	2	2.00
	JAR/JUG/DJ/TANK	2	2	26	13.00
NOTS	BOWL	3	3	91	30.33
	JAR	14	11	128	10.05
	JAR/JUG/DJ/TANK	2	2	26	13.00
PMLOC	BOWL	1	1	9	9.00
	FLP	6	5	49	9.10
STCO	DISH	2	2	8	4.00
STCOAR	BOWL	2	2	31	15.50
	JAR	7	7	232	33.14
	LARGE JAR	6	5	333	60.70
	PANC	11	3	438	28.83
STMO	BOWL	2	2	4	2.00
	CHPT	1	1	130	130.00
	CUP	3	3	7	2.33
	JAR	8	5	30	3.87
	TANK	6	6	25	4.17
STRE	FLP	1	1	21	21.00
STRES	BOWL	30	23	226	6.17

cname	Form	Sum of Nosh	Count of NoV	Sum of Weight	Average of ASW
	CHARGER?	2	1	7	3.50
	HANDLED BOWL	1	1	42	42.00
	PANC	7	5	314	48.60
STRES?	BOWL?	1	1	1	1.00
STSL	CUP	25	12	109	4.23
	JAR	1	1	15	15.00
	POSS	6	6	44	7.33
	TANK	2	2	7	3.50
SWSG	JAR	5	4	15	3.25
TGW	?	1	1	1	1.00
	ALB	1	1	1	1.00
	BOWL	1	1	1	1.00
	PLATE	3	3	3	1.00
Grand Total		253	201	4597	18.61

8.1.4 Early Modern

One hundred and eighty sherds of late 18th century or later date were recovered (Table 4). These include types present at Plot 7-18, where occupation ceased c.1800, but also several types not present at that site, which are of 19th or 20th-century date.

All of the types found are factory products, including 25 definite and two possible sherds of Sunderland coarseware. The high frequency of this glazed red earthenware, often slip-decorated, was noted in the latest deposits at Plot 7-18, and it is clear from these finds that it is a general feature of later 18th century and later deposits encountered more widely in Wharfedale.

Most of the sherds with identifiable forms come from vessels used for dining (plates); this is followed by vessels used for food preparation and storage (to which an unknown proportion of the blackware vessels included as Post-Medieval can probably be added). This is followed by drinking vessels (cups, dishes, mugs, jugs and teapots), chamber pots and a fragment of a pottery egg. Ceramic eggs were produced in two-part moulds and used to encourage poultry to lay, and in this case the size of the egg suggests geese rather than hens.

Table 12

cname	Form	Sum of Nosh	Count of NoV	Sum of Weight	Average of ASW
BLUE	TPOT	1	1	21	21.00
CREA	?	1	1	1	1.00
	BOWL	3	1	6	2.00
	CUP	2	2	2	1.00
	DISH	2	2	7	3.50
	JAR	1	1	1	1.00
	JUG	4	3	6	1.50
	JUG?	1	1	1	1.00

cname	Form	Sum of Nosh	Count of NoV	Sum of Weight	Average of ASW
ENGs	PLATE	18	11	48	2.56
	SMALL JAR	1	1	1	1.00
	FAKE EGG	1	1	11	11.00
	JAR	9	7	133	17.38
ENPO	BOWL	1	1	5	5.00
	CUP	4	3	18	5.33
	DISH	1	1	18	18.00
	MUG	1	1	8	8.00
NCBW	PLATE	1	1	8	8.00
	BOWL	7	5	7	1.13
	JAR	1	1	1	1.00
PEAR	?	2	2	23	11.50
	BOWL	18	15	79	3.82
	CHPT	4	3	101	19.33
	CUP	3	3	3	1.00
TPW	DISH	1	1	1	1.00
	JAR	3	3	18	6.00
	JUG	3	3	54	18.00
	PLATE	15	8	51	4.33
	TANK?	1	1	2	2.00
	BOWL	5	5	38	7.60
	BOWL/DISH	2	1	1	0.50
	CHPT	1	1	28	28.00
	CUP/JUG	1	1	1	1.00
	DISH	4	1	26	6.50
	JAR/MUG	3	2	28	12.75
	JUG	1	1	10	10.00
	MUG	3	2	15	6.00
	PLATE	28	16	117	4.66
	TANK;JAR	1	1	4	4.00
	TANK;JAR;MUG	1	1	30	30.00
WHITE	?	3	2	2	0.75
	BOWL	3	3	24	8.00
	CUP	2	2	6	3.00
	JAR	1	1	2	2.00
	JUG	4	2	50	12.50
	PLATE	6	6	32	5.33
	TPOT	1	1	5	5.00
Grand Total		180	133	1054	6.31

Most of the types present cannot be dated closely without a considerable amount of research, but only 39 sherds are of types which need be of 19th-century date, and only 21 of these are likely to be of mid 19th or later date.

8.2 Assessment

8.2.1 Stratigraphy and Chronology

Plot 2-6

A single unstratified group of pottery was recovered from Plot 2-6. It consists of a sherd of post-medieval pottery.

Plot 3-5

A single unstratified group of pottery was recovered from Plot 3-5. It consists of three sherds of post-medieval pottery. In addition, twenty sherds were recovered from a deposit described as natural clay. These sherds consist of seven sherds of medieval date; six sherds of post-medieval date; five sherds of post-medieval or early modern date and two sherds of early modern date.

Plot 3-6

A single unstratified group of pottery was recovered from Plot 3-6. It consists of a sherd of early post-medieval pottery.

Plot 6-7

One stratified context from Plot 6-7 produced pottery, the fill of gully 12012. The sherd is of early post-medieval date.

Plot 7-19

A single unstratified group of pottery was recovered from Plot 7-19. It consists of seven sherds of early modern pottery.

Plot 9-5

A single unstratified group of pottery was recovered from Plot 9-5. It consists of one sherd of medieval pottery.

Plot 11-2

A single unstratified group of pottery was recovered from Plot 11-2. It consists of two sherds early modern pottery.

Plot 11-6

A single unstratified group of pottery was recovered from Plot 11-6. It consists of a sherd of medieval pottery.

Plot 11-12

Five unstratified groups of pottery were recovered from Plot 11-12. All contain early modern pottery and some contain blackwares which could be of similar date.

Plot 12-3

Two unstratified groups of pottery were recovered from Plot 12-3. They include four post-medieval sherds, one early modern sherd and one blackware of post-medieval or early modern date.

Plot 13-19

Three assemblages of pottery were recovered from Plot 13-9. They consist of a levelling layer, 5032, and two topsoil layers, 5001 and 5002. The levelling layer produced a single sherd of medieval date (NGR) and eight sherds of post-medieval date, including a Staffordshire-style slipware cup of late 17th century or later date. The topsoil deposits produced a further medieval sherd and 22 post-medieval sherds, the latest of which is a Staffordshire-style mottled ware tankard, dating to the late 17th century or later.

Plot 14-5

An unstratified assemblage of pottery was recovered from Plot 14-5. It consists of a sherd of Ryedale ware and two blackware sherds, one definitely of post-medieval date and the other of post-medieval or early modern date.

Plot 15-1

Five unstratified assemblages of pottery were recovered from Plot 15-1. They produced 3 sherds of medieval pottery, 44 sherds of post-medieval date, including late 16th to mid 17th-century types, and three sherds of early modern date.

Plot 15-15

One unstratified assemblage of pottery was recovered from Plot 15-15. It produced 17 sherds all of which could be of early modern date (although the 4 Nottingham stoneware sherds could be of late 17th century or later date).

Plot 15-16

Three unstratified assemblages of pottery were recovered from Plot 15-16. They produced 1 sherd of medieval pottery, 10 sherds of post-medieval date, including one late 16th to mid 17th-century type, and 34 sherds of early modern pottery, including mid 19th-century or later types.

Plot 16-1

Five unstratified assemblages of pottery were recovered from Plot 16-1. Nine sherds of medieval date (two HUM and seven NGR) and fifteen sherds of post-medieval date, all of later 17th to mid 18th-century types, were present. Seven sherds of early modern date were present.

Plot 16-2

Two unstratified assemblages of pottery were recovered from Plot 16-2. They produced five sherds of medieval pottery; three sherds of post-medieval pottery; one sherd of post-medieval to early modern pottery and two sherds of early modern pottery.

Plot 16-3

Three unstratified assemblages of pottery were recovered from Plot 16-3. They produced two sherds of post-medieval pottery; one sherd of post-medieval to early modern pottery and ten sherds of early modern pottery.

Plot 16-4

One unstratified assemblage of pottery was recovered from Plot 16-4. It produced one sherd of post-medieval to early modern pottery and ten sherds of early modern pottery.

Plot 16-5

Two unstratified assemblages of pottery were recovered from Plot 16-5. They produced eight sherds of post-medieval date; six of either post-medieval or early modern date and seven of early modern date.

Plot 16-7

Two unstratified assemblages of pottery were recovered from Plot 16-7. They produced one sherd of post-medieval date; one of either post-medieval or early modern date and one of early modern date.

Plot 17-1

One unstratified assemblage of pottery were recovered from Plot 17-1. It produced one sherd of either post-medieval or early modern date.

Plot 17-2

One unstratified assemblage of pottery were recovered from Plot 17-2. It produced two sherds of post-medieval date; one of either post-medieval or early modern date and two of early modern date.

Plot 17-3

One unstratified assemblage of pottery were recovered from Plot 17-3. It produced two sherds of either post-medieval or early modern date and one of early modern date.

Plot 17-6

Two unstratified assemblages of pottery were recovered from Plot 17-6. They produced one sherd of early post-medieval date and one of early modern date.

Plot 19-7

One unstratified assemblage of pottery was recovered from Plot 19-7. It produced a sherd of -medieval date.

Plot 21-18

Three unstratified assemblages of pottery were recovered from Plot 21-18 and three from excavated contexts.

The excavated material consisted of a post-medieval sherd from the fill of a ditch (10383); and sherds of post-medieval (1); post-medieval to early modern (4) and early modern pottery (18) from the topsoil (10000).

The unstratified assemblages produced one sherd of post-medieval to early modern pottery and eight early modern sherds.

In addition, 7 sherds of either Roman or Anglo-Scandinavian date were recovered, from contexts 10008, 10021, 10034, 10042, 10049, 10058, and 10060. Since these all come from feature fills they are potentially evidence for Anglo-Scandinavian occupation.

Plot 23-2

Two unstratified assemblages of pottery were recovered from Plot 23-2. They produced one sherd of early post-medieval date and two of early modern date.

Plot 26-16

One unstratified assemblage of pottery was recovered from Plot 26-16. It produced two sherds of post-medieval date and three of early modern date.

Plot 31-13

One unstratified assemblage of pottery was recovered from Plot 31-13. It produced two sherds of either post-medieval or early modern date and one of early modern date.

Plot 33-3

Two unstratified assemblages of pottery were recovered from Plot 33-3. They produced one sherd of post-medieval date, ten sherds of post-medieval or early modern date and three of early modern date.

Plot 34-2

One unstratified assemblage of pottery was recovered from Plot 34-2. It produced three sherds of post-medieval date; two of either post-medieval or early modern date and seven of early modern date.

Plot 34-5a

Two unstratified assemblages of pottery were recovered from Plot 34-5a. They produced one sherd of post-medieval date and four sherds of post-medieval or early modern date.

Plot 36-3

Two unstratified assemblages of pottery were recovered from Plot 36-3. They produced one sherd of medieval date and one sherd of post-medieval or early modern date.

Plot 46-5

One unstratified assemblage of pottery was recovered from Plot 46-5. It produced two sherds of early modern date.

Plot 46-10

Two unstratified assemblages of pottery were recovered from Plot 46-10. They produced one sherd of early post-medieval date; one sherd of post-medieval date; six sherds of post-medieval or early modern date and seventeen sherds of early modern date.

Plot 52-1

One unstratified assemblage of pottery was recovered from Plot 52-1. It produced two sherds of post-medieval or early modern date.

Plot 52-3

Two unstratified assemblages of pottery were recovered from Plot 52-3. They produced three sherd of medieval date and one sherd of early modern date.

Plot 52-4

One unstratified assemblage of pottery was recovered from Plot 52-4. It produced three sherds of post-medieval date; three of post-medieval or early modern date and one of early modern date.

Plot 52-6

One unstratified assemblage of pottery was recovered from Plot 52-6. It produced one sherd of early modern date.

Plot 53-1

Two unstratified assemblages of pottery were recovered from Plot 53-1. They produced two sherds of early post-medieval date; five sherds of post-medieval date; seventeen sherds of post-medieval or early modern date and thirty-four sherds of early modern date.

Plot 53-2

One unstratified assemblage of pottery was recovered from Plot 53-2. It produced one sherd of medieval date; two sherds of post-medieval date; three of post-medieval or early modern date and two of early modern date.

Plot 54-1

One unstratified assemblage of pottery was recovered from Plot 54-1. It produced one sherd of post-medieval date; one of post-medieval or early modern date and two of early modern date.

8.2.2 Further Work

Most of the pottery from the unstratified collections is not recommended for further study. However, the red-firing NGR sherds should be analysed as they are potentially evidence for local pottery production in the medieval period whilst the Roman/Anglo-Scandinavian sherds from Plot 21-18 should also be analysed, since if they are indeed of Anglo-Scandinavian origin then they represent the first evidence for pottery production apart of York A and York D wares, which are both limited to sites to the south and east of Wharfedale. Thin section and chemical analysis, using Inductively Coupled Plasma Spectrography, are recommended.

8.2.3 Retention

All of the stratified material should be retained. More information could be extracted from a detailed study of the medieval and post-medieval pottery in the future and it is recommended that this material too is retained.

9 ASSESSMENT OF THE MEDIEVAL AND LATER POTTERY (2007)

A collection of medieval and later pottery was recovered from archaeological fieldwork carried out on the line of the Pannal to Nether Kellet pipeline by Network Archaeology Ltd (Site Code: PNK 07).

The finds include a few sherds of medieval pottery and large collections of post-medieval and early modern pottery.

9.1 Description

9.1.1 Medieval

Three sherds of medieval pottery were recorded. All are apparently, from visual analysis, of types produced in Yorkshire. The earliest (6110118) is a sherd of Yorkshire Gritty ware (YG). This ware was produced at centres in West Yorkshire from the mid 11th to the 13th centuries. A sherd of Northern Gritty ware (16016) is of a type produced at several centres in West Yorkshire from the later 12th century onwards. Finally, a sherd of Humberware (6119022) was present. This type was produced at centres in the Humber wetlands and Vale of York from the mid 14th to the early 16th centuries.

9.1.2 Post-medieval

1,455 sherds of post-medieval pottery were recorded. They were grouped into broad ware groups, which in the main do not indicate their source, but reflect broad ceramic traditions. Most are varieties of glazed red earthenware for which large numbers of manufacturing centres existed (Brears 1971).

Table 13

cname	Description	Total
BERTH	Brownware	149
BERTH/SUND	Brownware or Sunderland Coarseware	2
BL	Blackware	349
CHPO	Chinese Export Porcelain	8
CIST	Cistercian ware	56
GRE	Glazed Red Earthenware	443
MP	Midlands Purple ware	30
MY	Midlands Yellow ware	5
PMX	Misc Post-medieval ware of non-local or imported origin	1
STCO	Staffordshire-type press-moulded slipware	1
STCOAR	Staffordshire-type coarseware	127
STEM	Staffordshire-type embossed press-moulded slipware	1
STMO	Staffordshire-type mottled ware	154
STRES	Staffordshire-type wheelthrown red slipware	9
STSL	Staffordshire-type yellow-bodied slipware	49
SWSG	English White Salt-Glazed Stoneware	18
TGW	Tin-Glazed ware	11

cname	Description	Total
WHIEL	Whieldon ware	1
Grand Total		1455

Most of the pottery could be assigned to a broad form group, or at least to a choice of two or three forms (Table 2). Of note are a tin-glazed drug jar or albarello and a possible grog-tempered whiteware saggar from Plot 54-2, which may indicate the production of pottery nearby.

Table 14

Form	Description	Total
?	Unknown	17
ALBARELLO	Albarello	1
BOT	Bottle	3
BOWL	Bowl	465
BOWL/JAR		32
BOWL/PANC		5
BOWL?		7
CHP	Chamberpot	9
CHP?		11
CUP	Cup	142
CUP/POSS		1
CUP/TANK/POSS		2
CUP?		2
DISH	Dish	4
DJ	Drinking Jug	1
JAR	Jar	387
JAR/BOWL		28
JAR/JUG		1
JAR?		12
JUG	Jug	2
JUG/CUP		1
JUG/JAR		3
LARGE JAR		90
PANC	Pancheon	93
PANC/BOWL		14
PIPKIN	Pipkin	1
PLATE	Plate	19
PLATE?		1
POSS	Posset pot	45
POSS/BOWL		3
POSS/CHPT		3
POSS/CHPT?		1

Form	Description	Total
POSS/JAR		5
POSS?		18
SAGGER?		1
TANK	Tankard	25
Grand Total		1460

9.1.3 Early Modern

677 sherds of pottery of later 18th century or later date were recorded (Table 3). The pottery is mainly of refined whiteware fabrics which were produced at several centres in English, most prominent of which are the Staffordshire potteries. Exceptions are Derbyshire and Nottinghamshire stonewares, both of which are the products of specific midlands potteries, and Sunderland Coarseware. The latter has a dark red body with variable quantities of calcareous inclusions in the groundmass and is easily distinguished from the post-medieval red earthenwares, none of which have a calcareous body. The only recognised foreign import in this collection is a sherd of a Rhenish stoneware Seltzer bottle, probably imported together with its mineral water contents.

Table 15

cname	Description	Total
CREA	Creamware	108
DERBS	Derbyshire Stoneware	3
ENGS	Misc English Stoneware	42
ENPO	Misc English Porcelain	67
LPMLOC	Locally-produced red earthenware	5
NCBW	Buff ware	11
NOTS	Nottingham stoneware	39
PEAR	Pearlware	146
REFR	Refined Redware	10
SELZ	Seltzer bottles	1
SUND	Sunderland Coarseware	36
TPW	Transfer-Printed ware	170
WHITE	Misc Refined Whiteware	39
Grand Total		677

Much of the early modern material could be assigned to a form group (Table 4). Many of the forms are similar to those found in the post-medieval period. However, pancheons and posset pots are absent. New types include insulators, used mainly on telegraph poles; marmalade jars (ancestral to our present-day glass preserve jars in size and shape); flowerpots and sanitary ware (such as toilet bowls, urinals, and sinks).

Table 16

Form	Description	Total
?	Unidentified	4

Form	Description	Total
BOT	Bottle	6
BOWL	Bowl	148
BOWL/CUP		2
BOWL/DISH		1
BOWL/VASE		1
BOWL?		2
CHP	Chamber pot	1
CUP	Cup	55
DISH	Dish	12
DISH/BOWL		1
INSULATOR	Insulator	14
JAR	Jar	59
JAR LID	Jar lid	1
JUG	Jug	13
JUG/VASE		4
LARGE BOWL		3
LARGE JAR		15
MARMALADE JAR	Marmalade jar	7
OBJECT	Object	2
OBJECT/VESSEL?		1
ORNAMENT	Ornament	1
PLATE	Plate	273
PLATE/DISH		1
PLATE?		1
SANITARY WARE	Sanitary ware	2
TANK	Tankard	23
TPOT LID	Teapot lid	2
TPOT	Teapot	3
TPOT?		1
VASE	Vase	2
VESSEL		11
Grand Total		672

9.2 Assessment

9.2.1 The topsoil strip watching brief

The majority of the finds, 1,462 objects in total, were recovered during the watching brief and topsoil strip stage of the project. Most are essentially unstratified. Two of the medieval potsherds come from this stage, from Plots 40-6 and 56-6. The 884 sherds of post-medieval pottery include 622 from Plot 34-5; no other site produced more than 21 sherds (Table 5).

Table 17: post-medieval pottery

Plot	Total
29-1	10
30-1	3
30-4	1
30-5	1
30-6	1
31-11	1
31-12	1
31-3	3
31-7	2
31-9	1
32-11	2
32-6	1
32-7	4
32-8	6
32-9	2
33-2	6
33-3	1
34-2	2
34-4	1
34-5	622
35-12	1
36-1	16
36-10	2
36-3	1
36-4	1
36-6	3
37-1	1
37-2A	1
37-3	2
37-4	4
38-1	1
39-2	1
40-1	2
40-12	8
40-2	1
40-5A	4
40-6	1
40-7	1
41-2	2
41-3	6

Plot	Total
44-7	2
44-8	1
44-9	1
45-11	1
45-2	4
45-7	1
46-1	1
46-10	21
46-11	4
46-2	3
46-3	10
46-5	3
46-6	1
46-8	2
47-1	7
47-3	2
47-4	2
48-4	3
48-8	3
50-1	1
50-2	2
50-5	1
51-2	5
51-7	4
54-2	3
54-6	4
54-7	2
55-1	1
55-3	3
56-1	2
56-3	2
56-4	3
56-5	11
56-6	6
56-7	11
56-8	3
57-1	3
58-2	8
58-3	7
Grand Total	884

The early modern pottery also shows a concentration on Plot 34-5, but not to the same extent (Table 6). It includes a collection from context 14050 (Plot 36-11), which was a large landfill area and which includes several marked pieces which, with work, could be closely dated. These are, however, extremely late in date and include a marmalade jar marked with medals awarded in the 1870s, and jars marked *W.P. Hartley, London and Liverpool*, which also date at the earliest to the late 19th century.

The pottery from context 14026 (Plot 38-1) comes from a field levelling deposit. The wares present suggest a mid 19th century date.

The pottery from Plot 41-3 includes telegraph insulators of four types, all probably produced by Bullers Ltd, London. These were associated with a dismantled railway.

Table 18: late 18th and 19th century pottery

Plot	Total
29-1	4
30-1	2
30-6	1
32-11	41
32-2	2
32-3	2
32-5	1
32-6	8
32-7	41
32-8	40
33-1	1
33-2	1
34-2	1
34-3	7
34-5	76
36-1	14
36-11	12
36-7	2
37-1	3
37-2A	2
38-1	52
39-1	1
40-1	1
40-12	5
40-14	3
40-5	2
40-7	3
41-2	3
41-3	25
42-2	6

Plot	Total
44-1	1
44-3	1
44-4	2
44-6	1
44-7	6
44-8	6
44-9	1
45-1	4
45-10	2
45-2	1
45-7	1
46-1	3
46-10	16
46-11	8
46-2	2
46-3	5
46-5	5
46-6	2
46-8	12
47-1	9
47-5	1
48-8	3
49-5	4
49-6	1
50-2	12
50-3	1
50-4	1
51-11	6
51-2	2
51-7	1
54-2	12
54-4	1
54-5	1
54-6	2
54-7	1
55-2	1
55-3	1
55-5	3
55-6	5
56-1	1
56-2	1

Plot	Total
56-2A	2
56-3	4
56-4	1
56-6	6
56-7	30
56-8	4
57-1	1
57-3	4
58-1	1
Grand Total	564

9.2.2 Plot 31-11

Eighteen sherds were recovered from a deposit below trackway 19001. This assemblage is of late 18th century or later date and includes twelve transfer-printed ware sherds but, as with Plot 34-5, no wares which could not have been present before c.1800.

9.2.3 Plot 34-5

In addition to the pottery recovered from Plot 34-4 during the watching brief phase, this site was excavated and produced a further 644 sherds. These came from four contexts:

Context 16007 was the backfill of a stone trough. The 36 sherds are mostly of post-medieval date, together with a single sherd of a Pearlware tankard. Assuming that this is not intrusive, it should date the backfill to the late 18th century or later.

Context 16016 is a spread of material below the topsoil. The pottery assemblage consists predominantly of post-medieval wares (435 out of 491 sherds) together with 55 sherds of late 18th-century or later date. None of the latter need be later than c.1800.

Very similar assemblages come from the topsoil (1615) and unstratified material (16035).

The Plot 34-5 assemblage includes some sherds which are probably of mid 17th century or earlier date whilst the majority could date to the later 17th to mid 18th centuries and it is likely that the site was occupied from at least the mid 17th to the end of the 18th centuries. When considering the date of abandonment of the site, it is interesting to note that only two of the sherds are of transfer-printed ware and that most of the late 18th century pottery consists of Pearlware and Creamware.

9.2.4 Plot 45-7

A culvert or sump on Plot 45-7 was excavated and produced two fragments of field drain which probably date the backfill to the mid 19th century or later.

9.2.5 Plot 54-2

Thirty-four sherds of pottery were recovered during excavations on Plot 54-2. All come from the filling of a ditch. The primary fill, 21008, produced sherds of English porcelain, flowerpots and transfer-printed ware. Although this could be given a later 18th-century date the character of the assemblage suggests a 19th-century date. The secondary fill of the ditch (21003) includes marmalade jars and miscellaneous whitewares which are of late 19th century or later date. The ditch contained a series of iron cauldrons or buckets, one of which produced sherds of miscellaneous English stoneware (21007).

9.3 Retention

All the pottery from unstratified contexts could be discarded, although in several cases it is possible to associate it with excavated plots and thus provide a context for the finds. The remaining finds should be retained.

9.4 Further work

The late 18th-century material from Plot 34-5 could be compared with that from the 2006 phase of this project, for which a similar period of occupation was suggested. It is likely that documentary and cartographic study would identify the site and provide more social context for the finds, as well as a tighter chronology. Such a study would have to include detailed study of the red earthenware fabrics and reconstruction and illustration of as many vessels as possible. No good estimate of the scale of this project can be made without a re-examination of the material as a group but there are 92 individually recorded rims from post-medieval vessels from the site, each of which would have to be either drawn or assigned to a type. There are also eight distinct redware groups, based on method of glazing or decoration. To establish how many centres these were made at would require half a dozen samples of each ware, i.e. 48 samples.

Part 6

The Ceramic Building Material and Heat-affected Clay Assessment

Alan Vince and Kate Steane

10 ASSESSMENT OF THE HEAT AFFECTED CLAY, MORTAR AND CERAMIC BUILDING MATERIAL (2006)

A moderate-sized collection of heat-affected clay and ceramic building material was recovered during archaeological fieldwork on the line of the Pannal to Nether Kellet pipeline, undertaken by Network Archaeology Ltd. Sites ranging in date from the prehistoric period to the late 18th century were investigated, and unstratified material extended the range into the 19th and 20th centuries. Heat-affected clay from Roman deposits was recovered from Plot 21-18 and includes probable daub fragments. A second small assemblage comes from a medieval iron-working site at Plot 6-7. The other heat-affected clay is unstratified and undatable. No ceramic building material of medieval date was present, consistent with the use of stone, an abundant local resource, for both walling and roofing.

A brick-making site was investigated at Plot 6-7, and visual examination of the fabric confirms the use of local boulder clay. The material was dated on site by comparison with bricks from the post-medieval settlement at Scales, Askwith (Plot 7-18), but this material, which is all of one fabric and comes from an internal wall probably of mid to late 18th century date, has a different fabric and may not be locally produced.

A wide range of 19th and 20th century bricks and field drain fragments was present, and several of these are also made in fabrics which do not appear to be local.

Table 19

Plot	CBM				Heat-affected Clay			
	Nosh	Nov	Wt	ASW	Nosh	Nov	Wt	ASW
03-5	1	1	2	2				
06-7	31	31	15,564	596				
07-18	61	60	6,473	268	1	1	5	5
08-5					26	3	63	3
13-19	1	1	8	8	1	1	1	1
15-1	10	10	248	16	5	5	2	0
15-16					6	6	1	0
16-2					6	6	16	5
16-3	10	10	256	37				
16-5	1	1	1	1				
19-5	1	1	1	1				
19-7	2	1	1	1				
21-18	8	5	130	24	37	37	122	2
26-16	2	2	34	17				
28-1	2	2	60	30				
54-1	3	3	112	34				
Grand Total	133	128	22,890	290	82	59	210	2

10.1 Description

The material was identified using an internal fabric series and standard form names. It was quantified by fragment count, the number of objects represented and the weight in grams. The condition and traces of use of the material were also recorded.

The fabric of all of the material was examined in the hand and selected fragments were selected as a fabric series (Table 2).

Table 20

Fabric	Colour	Firing	Inclusions	Source
1	Variegated with streaks of pink (5YR 7/3) and red (2.5YR 5/8)	Oxidized	Black clay/iron pellets; red clay/iron pellets; subangular quartz up to 1.0mm (from Millstone Grit); fine quartz and muscovite sand throughout.	Probably Millstone Grit or Coal Measures.
2	Strong brown (7.5YR 5/6)	Oxidized but extremely low temperature/duration	Fragments of medium-grained white sandstone (grain size c.0.2mm); organic voids; black clay/iron pellets.	Local boulder clay
3	Red (2.5YR 4/6)	Oxidized	Angular and rounded fragments of white sandstone up to 30mm long; rounded pellets of white sandy clay; organic voids	Local boulder clay
4	Light yellowish brown (10YR 6/4) with streaks of lighter clay (very pale brown, 10YR 7/3)	Variable	Red clay/iron pellets; rounded red mudstone pellets; subangular quartz grains	Local boulder clay
5	Red (2.5YR 5/6)	Oxidized	Angular red mudstone; angular red siltstone; angular white sandstone; subangular quartz.	Local boulder clay
6	Pink (7.5YR 7/4)	Oxidized	Abundant rounded pink mudstone/clay pellets up to 4.0mm across; some with dark cores.	Coal Measures Seatearth
7	Very Pale Brown (10YR 7/3)	Oxidized	Moderate angular pink/red/black marl pellets up to 4.0mm. Fine sandy calcareous groundmass	Permo-triassic marl?
8	Variegated pink (5YR 7/4) and reddish yellow (5YR 6/6)	Oxidized	Moderate angular clay pellets and organic voids in a fine groundmass	Coal Measures Seatearth
9	Red (2.5YR 4/4)	Oxidized	Red angular clay/iron pellets; red mudstone/clay pellets; rare white sandstone	Local Boulder clay?
10	Strong brown (7.5YR 5/6)	Oxidized	Abundant subangular quartz up to 3.0mm; organics.	Local boulder clay
11	Reddish yellow (7.5YR 7/6)	Oxidized	Abundant organic voids, some rootlet sized others larger, each with a red halo	Coal Measures Seatearth
12	Reddish yellow (5YR 5/6)	Oxidized	Few large inclusions (subangular quartz) in a silty micaceous groundmass	Either levigated local boulder clay or lacustrine clay.
13	Variegated but mainly Pink (5YR	Oxidized	Red clay/iron pellets; angular red mudstone fragments in a	Coal Measures

Fabric	Colour	Firing	Inclusions	Source
	7/4)		fine groundmass	seatearth
14	Variegated but mainly Light Red (2.5YR 6/6)	Oxidized	Red clay/iron pellets; white sandstone; subangular quartz	?local boulder clay
15	Variegated but mainly Reddish Brown (2.5YR 5/4)	Oxidized	Red clay/iron pellets; white sandstone; subangular quartz	?local boulder clay
16	Reddish brown (5YR 5/4)	Oxidized	Abundant subangular quartz mainly up to 0.3mm; abundant burnt out calcareous inclusions. Subangular quartz and sparse feldspar moulding sand	Non-local? but probably Yorkshire
17	Light grey (10YR 7/2) with black core	Reduced	Organic voids (rootlets?), some with brown lining/filling	Coal Measures Seatearth?

Most of the fabrics contain similar inclusions to those seen in the two fabrics found at Plot 5-8, the post-medieval brickyard, and therefore could have been produced locally. This is also true of fine fabrics such as Fabric 12, which might owe its fine texture either to the use of levigation (mixing the clay to a slurry and allowing the coarse fraction to settle out before running off the clay to dry in settling tanks) or to the use of a lake sediment, from one of the many lakes which formed on the boulder clay in the immediately post-glacial period. Lenses of white, sandy clay are likely to be due to the inclusion of podzolised soil, formed on the boulder clay in the post-glacial period.

However, some of the fabrics contain much finer white-firing clays (Fabrics 6, 8, 11, 13 and 17) and these probably indicate the use of seatearths, white-firing clays found at the base of coal seams. Such clays are found in the latest strata of the Millstone Grit series ({Edwards & Trotter 1954 #45663}), which outcrop towards the mouth of Wharfedale, but are much more common in the succeeding Coal Measures. The Coal Measures do not occur in the Wharfe's catchment area, nor are they likely to have been brought into the valley by ice flowing to the east down the valley; the nearest outcrops are at Baildon, 10 miles to the south of Otley. Therefore, it is suggested that all the objects made from these fabrics are imported to the valley.

Two fabrics have calcareous groundmasses; Fabric 7 was made from a calcareous marl, and Fabric 16 contains calcareous inclusions, although it is not clear whether these were present in the clay fraction or are detrital (some Millstone Grit sandstones have a calcareous cement, for example). In either case, the lack of calcareous inclusions in the remaining fabrics suggests that these two fabrics were also made outside Wharfedale.

10.2 Ceramic Building Material

10.2.1 Fabrics

Ceramic building materials were made from each of the identified fabrics apart from Fabric 4 and Fabric 17 (Table 3). In most cases, the fabrics were only identified in a single object but fabrics 1, 2 and 3 and 10 were more common, although this is undoubtedly a skewed result, as a result of the inclusion of material from Plots 7-18 and 6-7. Without these two sites, the most common fabrics are 10, 12 and 7.

Table 21

Sub-fabric	Nosh	Nov	Wt	ASW
FAB1	64	62	4,349	147

Sub-fabric	Nosh	Nov	Wt	ASW
FAB2	17	17	5,070	298
FAB3	15	15	10,513	1,044
FAB10	11	11	254	21
FAB12	5	5	151	25
FAB7	5	2	53	21
FAB14	4	4	37	9
FAB5	3	3	33	11
FAB6	2	2	145	73
FAB11	1	1	10	10
FAB13	1	1	1	1
FAB15	1	1	13	13
FAB16	1	1	22	22
FAB8	1	1	3	3
FAB9	1	1	108	108
FAB1 WITH ROCKS	1	1	2,128	2,128
Grand Total	133	128	22,890	290

10.2.2 Forms

Table 4 lists the various forms identified in the ceramic building material. Within ‘air brick’, we include bricks used for standard walling purposes which have a network of cylindrical holes running vertically down the centre of the brick to lessen the weight, as well as those in which the holes run horizontally through the brick to allow circulation of air. Two types of field drain were noted: cylindrical examples with longitudinal scratches both inside and out, indicating the use of a machine in their manufacture, and U-shaped drains which appear to have been produced in a mould. Most of the fragments, however, come from bricks, and given the size of most of the fragments it is not possible to identify any distinctive characteristics, either in terms of dimensions or manufacturing features. Two complete bricks were recovered: a fabric 1 brick from Plot 7-18 (204x102x56mm) and a Fabric 3 brick from Plot 6-7 (250x117x60mm). Twelve bricks with measurable breadths were present: four are Fabric 1 bricks from Plot 7-18 (112-113mm); one is a fabric 1 brick with large rock inclusions from Plot 7-18 (102mm), and seven are fabric 3 bricks from Plot 6-7 (104-117mm). Four fabric 1 bricks from Plot 7-18 have measurable thicknesses (54-56mm) and 18 bricks from Plot 6-7 (45-58mm). Straw was used as mould lining on three of the Plot 6-7 bricks, and grooves running longitudinally down the brick, 43-45mm from the edge, were noted on a brick from Plot 6-7 and a brick from Plot 7-18. A single frogged brick was present, and there are traces of either a mark or lettering in the base of the frog.

Table 22

Form	Nosh	Nov	Wt	ASW
AIRBRICK	2	2	26	13
AIRBRICK?	1	1	3	3
BRICK	114	113	22,649	349
BRICK?	4	3	4	1
FIELDDRAIN	6	6	154	20
FIELDDRAIN?	1	1	1	1

UFIELDDRAIN	5	2	53	21
GrandTotal	133	128	22,890	290

10.2.3 Date

The Fabric 1 bricks from Plot 7-18 appear to all come from a single internal wall, which was secondary to the construction of the Phase 2 structure. Since that structure was probably built in the late 17th century or later, and was demolished by c.1800, a mid 18th century date is likely. This would place the wall into a similar phase to the addition of an outbuilding/wing in Phase 3, which is clearly dated by pottery to the 1740s or later.

The Fabric 2 and 3 bricks from Plot 6-7 cannot be closely dated, but are quite likely to be of 18th or 19th century date. If the latter, one might expect to have found other dating evidence on the site, but this is an argument from absence, and the method of manufacture used, employing straw-lined moulds, can be found as early as the late medieval period and continued in some places through the 19th century.

Field drains were not generally used in England until the mid 19th century, and these examples could be of any date from this point onwards. Finally, the airbricks are probably of 20th century date.

10.3 Heat-Affected Clay

10.3.1 Fabric

Only two fabrics were noted in the heat-affected clay collection: Fabric 4 and Fabric 17. The former is the more common, and detailed examination at x20 magnification suggests that the fabric was produced from local boulder clay. Fabric 17, however, is unusual since it appears to have been made from a fine-textured, white-firing clay, whose black core suggests that it was originally organic. It is possible that this clay was produced from a podzol, perhaps formed on fine-textured organic clay, but if not, then the clay was probably imported to the site. This would not have been done unless the clay was being used for a special purpose. White-firing clays tend to have high melting points and were and are therefore used in metallurgy. There is no evidence that this is the case, and the survival of the black core indicates that a fairly short firing at a low temperature is all that these fragments endured.

10.3.2 Forms

Two of the fragments show signs of curved impressions which might be due to their use with wattles. However, even these are not definite wattle impressions and all of the other fragments are featureless.

10.3.3 Date

Nine collections (37 fragments) came from Plot 21-18, where they were associated with Roman activity.

Three collections come from Plot 8-5, the site of a medieval iron-working settlement.

One fragment came from the fill of a quarry pit on Plot 13-19, but was not associated with any datable artefacts apart from a worked flint.

All the other fragments were unstratified and cannot be dated.

10.4 Mortar

Ten collections of mortar were recovered (Table 5). At x20 magnification, it can be seen that some were pure mortar, either used as plaster or skim, or waste; some were tempered with a fine-textured quartz sand, and others with a coarse quartzose sand (including fragments of sandstone). The sand is probably local and includes one instance of a black vesicular slag. Sparse fragments of coal and burnt shale are accidental contamination with the fuel used to produce the mortar rather than deliberate mixture (which is a known post-medieval technique).

No skimmed surfaces were present, but one of the fragments from Plot 13-19 is a wedge, probably from the use of mortar in a roof at the wall/roof angle (which is about 30 degrees).

Table 23

context group	phase	Plot	Context	sub-fabric	Description	Nosh	NoV	Weight	ASW
topsoil		13-19	5001	FINE SAQ	IRREGULAR LUMP	1	1	103	103
topsoil		13-19	5001	NO INCLUSIONS	POSSIBLE ROUGH SURFACE	1	1	91	91
topsoil		13-19	5001	SPARSE COAL;A FINE SAQ	POSSIBLE ROUGH SURFACE	1	1	89	89
topsoil		13-19	5001	A FINE SAQ	WEDGE OF MORTAR WITH TWO ROUGH SURFACES AT C.30 DEGREES	1	1	93	93
topsoil		13-19	5001	NO INCLUSIONS	IRREGULAR LUMP	1	1	2	2
unstrat	unstrat	7-18	13111	COAL;SHALE;SAQ		1	1	24	24
unstrat	unstrat	7-18	13111	NO INCLUSIONS		1	1	10	10
Rubble spread	Phase 2/3 destr	7-18	13007	SST;SLAG;SAQ		1	1	7	7
Rubble dump	Phase 2/3 destr	7-18	13010	NO INCLUSIONS		1	1	15	15
Rubble dump	Phase 2/3 destr	7-18	13010	SAQ		5	1	24	4.8

10.5 Assessment

10.5.1 Stratigraphy and Chronology

The date of the finds is given in Table 6 by fragment count. Those finds dated to the Roman or Medieval periods are dated by their context, rather than by intrinsic characteristics, and some of the material assigned here to the post-medieval period could be of early modern date (i.e. late 18th century or later). Stratified material is described further below.

Table 24

Plot	Roman	Medieval	Post-med	Modern	ND	Grand Total
03-5				1		1
06-7			31			31

Plot	Roman	Medieval	Post-med	Modern	ND	Grand Total
07-18			62			62
08-5		26				26
13-19				1	1	2
15-1			5	5	5	15
15-16					6	6
16-2					6	6
16-3			9	1		10
16-5			1			1
19-5				1		1
19-7				2		2
21-18	37			8		45
26-16				2		2
28-1				2		2
54-1				3		3
Grand Total	37	26	108	26	18	215

Plot 3-5

A possible fragment of brick came from a deposit of natural clay, 7044.

Plot 6-7

30 fragments of brick were sampled from Plot 6-7, the site of three brick clamps. All those from the northern clamp were under-fired and classed as Fabric 2. The southern clamp produced fragments of both Fabrics 2 and 3, and gully 12007 produced bricks of Fabric 3. There is no difference in dimensions between the different groups, but this is because all the bricks with measurable breadths come from gully 12007.

Plot 7-18

50 fragments of brick were recovered from the excavations at Plot 7-18. All are of Fabric 1 bricks. Two are from a buried ground surface pre-dating the construction of the Phase 2 structure, one comes from the surface of the cross-passage in the phase 2 structure, two come from the backfill of drain 13035 and the remainder are from contexts associated with the demolition of the structure. A single brick wall footing, 13030, was found in the Phase 2 structure, where it was a secondary feature, and a spread of brick rubble concentrated in the same area, suggesting that this wall was the main, if not the only, brick structure on the site. The single brick recovered from 13030 is overfired, bloated and contains rock fragments similar to those found in the Plot 6-7 bricks. Two fragments of brick were found in a feature interpreted as a fireplace 13080, but are slim evidence to suggest that a brick chimney stack might have been present.

A small collection of mortar was present, all from demolition deposits from the Phase 2-3 structure. The fragments were of different fabrics but no clear evidence for the precise function of the mortar was present. One brick fragment has a fragment of mortar attached, but the whole brick from 13030 has no sign of mortar.

Plot 8-5

Fourteen featureless fragments of fired clay were recovered from Plot 8-5. There is no sign that they were associated with iron-working (e.g. tuyère fragments), and they were not fired at a high temperature. Two come from the spread of burnt material 11015 associated with the iron-working activity, and the remainder come from the fill of gully 11022, interpreted as a hedge line.

Plot 13-19

A fragment of heat-affected clay came from quarry pit 5015, and a fragment of modern CBM and a collection of mortar fragments came from the topsoil. The mortar includes a piece probably from a roof.

Plot 15-1

Three fragments of brick were recovered from a kiln or flue, 8010.

Plot 21-18

Fired clay fragments of Fabrics 4 and 17 were recovered from the fills of Roman features (Table 7). In addition, a fragment of airbrick and a field drain were recovered from the primary fill of ditch 10026, also dated to the Roman period but perhaps, on this evidence, of modern date. Fragments of brick and U-shaped field drain were recovered from the topsoil.

Table 25

Context group	Context	FAB17	FAB4	Grand Total
Colluvial hillwash	10115		2	2
Ditch 10158	10158		1	1
Ditch 10302	10303		1	1
Ditch 10319	10317	6		6
	10318		4	4
Natural silting 10324	10320	12		12
	10321	1		1
Shallow broad ditch 10405	10404		1	1
Topsoil	10000		9	9

10.6 Retention

The fabric series should be retained, but remaining unstratified material could be discarded. The stratified material should be retained for possible re-examination.

10.7 Further Work

Several aspects of the heat-affected clay and ceramic building material collection have potential for further analysis.

Firstly, it is important, in order to understand the settlement history of Wharfedale, to establish which materials were supplied from local resources and which were imported. In order to do this, samples of the bricks produced at Plot 6-7 should be characterised using thin section and chemical analysis.

Secondly, the white-firing clay found in Roman contexts at Plot 21-18 is either of local origin, in which case the source of the clay should be determined, since it has implications for the characterisation of other ceramics in the area, or it is non-local, in which case the clay was probably used for a specialist purpose. In either case, the clay should be characterised.

Thirdly, the bricks used at Plot 7-18 would be expected to be of local origin, especially considering the proximity of Plot 6-7, but these too are made from a variegated clay which may indicate a non-local source. Characterisation of their fabric would establish their similarity to the Plot 6-7 bricks and to medieval pottery from Inganthurpe Manor, Wetherby, and from Knaresborough both of which are thought to have been made from upper Millstone

Grit series mudstones. If a non-local source is indeed confirmed, this might be evidence for the use of river transport to transport bricks (a canal was in operation at Burley in Wharfedale by 1790).

Fourthly, the remaining fabrics in the fabric series should be characterised.

11 ASSESSMENT OF THE CERAMIC BUILDING MATERIAL AND HEAT-AFFECTED CLAY (2007)

Eighteen fragments of ceramic building material were recorded. Three were unidentifiable fragments (from 23021 and 6110007). Five of these were fragments of handmade bricks (from 14159 and 16016). The use of brick in England started in the later medieval period but in the Pennines it is likely that brick was not used until late in the post-medieval period. Nine fragments came from field drains (14006, 14098, 6110053, 6110125, and 6119032). The widespread use of ceramic field drains started in the mid 19th century. Finally, a fragment of refined whiteware wall tile with a cream glaze (6119032) is likely to be of 20th century date.

Part 7

Assessment of the Quern Stones

M. E. Wright

12 THE QUERNSTONES: ASSESSMENT

The Pannal to Nether Kellet pipeline produced a substantial number of quernstone fragments of different types, from simple saddle querns common during the prehistoric period to more sophisticated rotary querns and millstones of the Romano-British period. None of the pieces was identified as later than the end of the Romano-British period. The querns derived from a number of different locations and contexts with several of the contexts producing more than one fragment and two contexts producing collections of material. The querns were all manufactured of sedimentary rocks, mainly medium grained sandstones and coarser, feldspathic millstone grits. The identification of a number of conjoining pieces reduced the initial count of querns represented, but the querns are nevertheless an interesting collection in terms of their diverse designs and technological complexity and can add to our understanding of both the development of milling technology and the economy of individual settlements.

Context 10248 produced the largest number of quern fragments, 11 pieces probably deriving from at least five individual stones or pairs of stones of Romano-British type. The pieces were re-used in a surface of mixed stone cobbles and boulders, which must have post-dated the breakage of the querns, forming a 'terminus ante quem' for the collection, which was diverse including both fragments of a large millstone and several types and sizes of hand quern.

Context 10424 produced 8 fragments from querns and utilised stones, one being the largest part of the upper stone of a beehive quern.

Context 10099 yielded fragments from the base stone of a saddle quern and a broken handstone from a saddle quern.

Context 10126 produced two quern fragments, one probably from a saddle quern and the other from a Romano-British rotary quern, probably of fairly early type.

It is recommended that a more detailed catalogue of the querns be drawn up, particularly with regard to the better preserved rotary querns, and that a small selection of the more distinctive material be illustrated. A more detailed discussion of the material from individual locations along the pipeline in the context of the interpretation of these locations and of information from other specialists should provide some information about site economies and hopefully also additional information about the date range and regional range of the different quern styles and technologies. In particular, the incorporation of the diverse quern fragments in a single surface in context 10248 is unusual and warrants further investigation and discussion.

Catalogue

Saddle Querns

SF 478 10226 21/18

Initially this was thought to be part of a beehive quern in coarse to medium grained millstone grit, but further examination suggests that it is part of a well-shaped, boat-shaped lower saddle quern. The once pecked outer surface has been mainly destroyed. The grinding face is heavily worn and very flat. Height 130 mm, width remaining 170 mm, length surviving 130 mm.

SF 489 10126 21/18

Large fragment of medium to coarse, feldspathic millstone grit, probably once part of a saddle quern base of boat-shaped form. The upper grinding face has been destroyed and there is a flat base facet. Some iron adheres to one broken surface, probably deriving from translocated

iron in groundwater. Width of flat base 180 mm, length more than 400 mm, height remaining 85 mm.

SF 490 10215 21/18

Complete lower saddle quern made from a sandstone boulder with a flat base and smoothly worn concave grinding face. Maximum dimensions 340 x 260 mm and 110 to 160 mm deep.

SF 494 10219 21/18

Largely complete small saddle quern probably broken or modified for re-use in antiquity, in a fine grained micaceous sandstone. Maximum dimensions 300 x 210 x 155 mm.

SF 452 10099 21/18

About two thirds of a small saddle quern of medium grained millstone grit showing flat, smooth wear on the grinding face and with the dorsal face trimmed to a rounded shape. Measurements 215 x 155 x 98 mm.

SF 503 10099 21/18

About two thirds of a broken probable handstone from a saddle quern in dense, micaceous sandstone.. The surface is reddened by heat. Remaining dimensions 250 x 160 x 115 mm.

SF 505 10424 21/18

Irregular piece of millstone grit measuring 170 x 150 x 60 mm with slight smoothing on one side, probably from wear.

SF 506 10424 21/18

Rounded cobble of fine to medium micaceous sandstone, probably utilised. Measurements 110 x 105 x 70 mm.

SF 507 10424 21/18

Large rectanguloid cobble in a dense, quartzitic sandstone. All the surfaces are smoothed and one face has 13 small depressions probably caused by percussive use. Size 170 x 11 x 70 to 100 mm.

SF 508 10424 21/18

Incomplete stone probably recently broken in a dense, fine to medium micaceous sandstone with one very flat, worn surface. It is unclear if this is part of a saddle base stone or a large handstone, though probably the latter. Size 220 x 170 to 190 x 95 to 115 mm.

SF 509 10424 21/18

Large, rounded fragment of medium to coarse, feldspathic gritstone with one very flat, rectangular face. Possibly used as a crushing tool. Measurements 173 x 170 x 90 mm. Rectangular, flat face measures 170 x 115 mm.

SF 580 5212 19/1

A small triangular fragment of a much larger, heavily used lower stone of a saddle quern made of medium grained feldspathic millstone grit, showing traces of heat or burning. Measurements remaining 167 x 190 x 90 to 125 mm.

SF ? 11049 8/5

Small hand rubber of fine, micaceous sandstone measuring 75 x 60 x 32 mm.

Rotary Querns

Beehive Querns

SF465 10126 21/18

About three quarters of the upper stone of a beehive quern in a medium grained, feldspathic millstone grit with some sub-angular particles of gravel size. The quern is of a truncated cone shape with a wide summit, 206 mm high and about 300 to 320 mm in diameter. The quern exhibits 2 handle sockets for radial handles and a small hollow, probably representing the beginning of a third handle socket. There is a wide, bowl shaped hopper, surrounded by an upstanding rim.

SF504 10424 21/18

Part of the upper stone of a well worn beehive quern in medium to coarse-grained feldspathic millstone grit. The quern has a bowl-shaped hopper, joined to the grinding surface by a narrow feedpipe and there is evidence of a radial handle socket. Diameter of quern at grinding surface 295 mm, height remaining 120 mm.

Romano-British flat querns

SF 451 10424 U/S 21/18

Large fragment of a rotary quern stone in medium to coarse feldspathic millstone grit. The quern has been defaced in antiquity but is probably the lower part of an upper stone of about 340 to 360 mm diameter and with a maximum remaining height of 90 mm. This size range includes both beehive querns and post conquest Romano British flatter types. The quern was probably of flat RB type, though its context with other utilised stones, saddle quern and beehive quern might argue for its being of beehive type.

SF 464 10008 21/18

Between one third and one half of the upper stone of a quern of Romano-British type made in a medium grained feldspathic millstone grit. The quern, which is of 380 mm diameter and 140 mm high has a rounded 'bun-shaped' appearance and a deep conical hopper. A deeply carved slot in the upper surface would have been fitted with a radial handle.

SF 473 10248 21/18

SF 479 10248 21/18

Two conjoining fragments making about one quarter of a particularly finely executed quern of distinctive Romano-British type in a well cemented, medium grained feldspathic millstone grit. The quern is of 460 mm diameter and about 30 mm thick. It has seen heavy use to reduce it to this thinness and has a smoothly worn, sloping grinding surface. The quern has a decorative outer groove, surrounding a raised rim which forms part of the conical hopper at the centre.

SF 474 10248 21/18

SF 483 10248 21/18

SF 485 10248 21/18

Three conjoining pieces making up about half of a small, doughnut shaped quern of about 340 mm diameter, being about 95 mm high. The quern is made of a medium to coarse pebbly millstone grit and has a flat, worn grinding surface and central perforation of 35 mm diameter, flaring towards both quern surfaces.

SF 480 10126 21/18

Almost one quarter of a flat quern of Romano-British type in a very coarse, pebbly, puddingstone-like millstone grit with many sizeable rounded pebble inclusions. The well-shaped upper stone has an inclined, concave, worn grinding surface and a slight depression for a hopper in the neatly finished flat top. Diameter 400 mm, height 75 mm.

SF 482 10248 21/18

About 40 percent of the lower stone of a flat rotary quern of Romano-British type in a poorly sorted, feldspathic millstone grit. Estimated diameter about 400 mm, thickness 45 to 50 mm. Drilled central eye of 21 mm diameter.

SF 484 10248 21/18

About one quarter of the upper stone of a flat, rotary quern of Romano-British type, made of a medium to coarse, feldspathic millstone grit. The inclined grinding surface is worn but has signs of re-dressing. Diameter about 480 mm, thickness 75 mm.

SF 500 10216 21/18

Approximately one quarter of a rotary quern made of medium grained, feldspathic millstone grit, defaced so as to remove the grinding surface. Probably part of the upper stone of a Romano-British rotary quern similar to SF 464 and possibly even part of this stone, though this cannot be demonstrated. Diameter estimated at 460 mm, remaining height 95 mm.

Millstones

SF475 10248 21/18

SF476 10248 21/18

Two conjoining pieces making up part of a millstone in medium to coarse, feldspathic millstone grit. Piece SF476 is 78 mm thick at the point where the stone is perforated by a cylindrical hole estimated at 65 mm diameter. The grinding surface is pecked and worn and has been subjected to minor heat damage. The quern edge has a neatly rounded profile. Initially it was thought that the perforation was the central eye of the stone, but the probable attribution of fragment SF486 as part of the same stone or possibly the paired stone led to problems in estimation of the diameter, with widely differing diameters obtained from the two stones. The raw material, thickness and general finish of the millstones suggest that they are identical and have led to a reinterpretation of the hole as either one of a pair of eccentric sockets for an overhead drive mechanism for an upper stone or else one of a pair of hopper feeds. Such paired perforations are commonly encountered on Roman millstones of this size, but it is not always clear which function they performed when the stone is incomplete. This interpretation is consistent with features of the stone which suggest it to be an upper stone.

SF486 10248 21/18

Two conjoining pieces making up part of the edge of a large millstone. This may be the same stone as SF475 and SF476 or even part of the paired stone, as the raw materials are similar and also the thickness, though the upper and lower faces of SF486 have been defaced leaving only 55 mm of thickness remaining. A diameter for this stone estimated from the curve of part of the edge gives a diameter of about 1100 mm or a little more. This is not an especially accurate method for assessing diameter as there can be considerable variability in the tightness of the edge curve and in the degree of circularity at this period, with some querns having decidedly oval dimensions. This factor might apply especially in the case of a lower stone, as lower stones were not always finished with the same degree of care as upper stones.

Part 8

Worked Stone Assessment

Hilary Major

13 ASSESSMENT OF THE WORKED STONE 2006 (EXCLUDING QUERNS)

Thirty pieces of stone were examined, weighing 28691g. They included medieval or post-medieval stone tile fragments from Plot 7-18, and two ovoid stones from the ring cairn on Plot 21-18 that may be structured deposits.

13.1 Plot 6-7

One piece of sandstone was examined, an irregular sandstone block with no definite signs of working.

13.2 Plot 7-18

Five pieces of sandstone roof tiles were found, none complete. At least one (13034) had been re-used in the structure of a post-medieval drain. The only other piece of definitely worked stone was a coarsely dressed cylinder made from fine grit (13007). This may have been used as a post-base.

13.3 Plot 13-19 WB

Two fragments were recovered from the topsoil. One was probably part of an architectural feature; the other appears to be vitrified ceramic, possibly oven or furnace lining. Neither piece is datable.

13.4 Plot 21-18

Two of the stone small finds came from the ring cairn, and may represent structured deposits. Both are modified natural ovoid pebbles of similar shape and size. One had probably been utilised as a rubber (10215, SF491); the other was probably not utilised as such, but had been deliberately shaped (10226, SF477).

The other stone finds from the plot included a disc, which may have been used as a lid, or a pot-stand. None of the other fragments was definitely utilised, but some were possibly used as whetstones.

13.5 Recommendations for further work

For publication: a summary of the stone finds from Plot 7-18, and full publication of the stone from the ring cairn and the disc from Plot 21-18.

Three finds should be illustrated for publication: SF477, SF491 and SF512.

14 ASSESSMENT OF THE WORKED STONE (2007)

Six pieces of stone were examined, weighing 1932g.

14.1 Plot 34-5

Four pieces of slate tile came from the topsoil and subsoil. They are probably all roof tiles. They appear to have been lozenge-shaped rather than rectangular. Two had holes in them, pecked rather than drilled. There was also a sandstone roof tile of indeterminate shape, with a drilled hole.

Too little detail survives on these fragments to be able to assign a date to them.

14.2 Watching Brief Topsoil Strip

One sandstone slab fragment was found. It was possibly part of a floor or roof tile, but there were no surviving details. The date is indeterminate.

14.3 Recommendations for further work

No further work is required

Part 9

Metal and Small Finds Assessment

Hilary Major

15 METAL AND OTHER SMALL FINDS

15.1 Plot 3-5

There were just three small finds from the site. One was a large iron nail, the second a halfpenny, probably 1799, both from context 7044. The third was part of a Roman glass bangle. Glass bangles are not particularly common, so for this to be the sole Roman small find is unexpected.

15.1.1 Recommendations for further work

The glass bangle should be drawn and published. Further work will be necessary to establish a closer date for the object.

15.2 Plot 7-3

A single horseshoe fragment was found. It is possibly 11th-13th century.

No further work is required.

15.3 Plot 7-18

The site produced 150 small finds, few of them complete. All the datable finds were 16th century or later, the bulk of them probably 18th or early 19th century, contemporary with the latest use and demolition of the building. All four coins recovered were of this date, three definitely or probably George III, and one possibly George IV.

There was a small amount of material from stratified Phase 2 contexts, including a fragment from a pewter spoon of probable 17th century date.

The rest of the identifiable material comprised mainly household and personal items. The latter category included three shoe buckles, a heel iron and hobnails, and two buttons, one of which was inscribed 'Northamptonshire militia'. The household items included a further three fragments of spoons, part of a table fork, a fragment of a copper alloy vessel, a candle holder and a key bit. The structure of the building was represented by fragments of window came and two drop hinges. The window comes were milled, and of slight construction, which would be consistent with an 18th century date.

15.3.1 Recommendations for further work

Selected finds should be illustrated and published.

15.3.2 Illustrations for publication

The following iron objects should be illustrated for publication:

- 13001 Table fork
- 13001 Drop hinge
- 13007 Candle holder

15.4 Plot 8-5

Two small fragments of slag were present.

No further work is required.

15.5 Plot 11-12

One piece of modern steel sheet was found.

No further work is required.

15.6 Plot 13-19 (Watching Brief)

Eleven iron finds were recovered, all except one from context 5001. The only datable finds were Tudor or later. This small assemblage appears domestic in nature, although the objects could possibly be from a workshop. The material includes a lock bolt, two pieces of strapping, a staple, a possible handle from a ladle, and a socketed fire-hook. One of the four nails is of a type that is typically Tudor.

15.6.1 Recommendations for further work

A summary of the finds should be published, with one illustration.

15.6.2 Illustrations for publication

The following iron object should be illustrated for publication:

- Socketed fire hook

15.7 Plot 14-1

The sole small find was a modern shotgun cartridge.

No further work is required.

15.8 Plot 15-1

Five iron finds were recovered, comprising two horseshoe nails, a knife, a possible wedge, and an unidentified object, possibly part of a pair of callipers. The knife has a scale tang, and is probably late medieval.

No further work is required.

15.9 Plot 16-1

There were four small finds, probably all post-medieval. They comprised an 18th century copper-alloy shoe buckle, a copper alloy block, a piece of rolled lead sheet, and an iron nail.

No further work is required.

15.10 Plot 16-2

One coin was recovered, an 18th century Irish halfpenny. Two iron objects were also found, a nail, and an unidentified modern fitting.

No further work is required.

15.11 Plot 16-3

Three small finds were recovered, comprising two fragments of waste lead, and an unidentified copper alloy object. The latter was probably post-medieval.

No further work is required.

15.12 Plot 16-4

Two pieces of lead were found, a waste puddle, and a piece of sheet. The sheet was in good condition, and is probably modern.

No further work is required.

15.13 Plot 16-5

Two copper alloy buttons were found, dating to the later 18th – 19th century.

No further work is required.

15.14 Plot 16-6

The finds comprised a 1906 penny, and a very corroded copper alloy disc, possibly a post-medieval coin.

No further work is required.

15.15 Plot 16-7

The two finds from the site were a fragment of a silver long cross penny, and an iron object, probably a staple.

No further work is required.

15.16 Plot 19-3

A post-medieval copper alloy object of unknown use was recovered. The decoration is probably machine-cut, suggesting that it is 18th century or later.

No further work is required.

15.17 Plot 21-18

The 28 artefacts from the site included a number of Roman objects, as well as later material such as horseshoes. The spot dates from the site were not available at the time of writing.

The only find from a cairn context was a bone ring. This is possibly later in date than the cairn, and the stratigraphy of the context will need to be examined to check if this could be the case.

The Roman finds included two coins, one early, but not currently identifiable, the other a *denarius* of Julia Domna (193-211). There was also a penannular brooch, and at least one bone object, a gouge of a type typically found on late Iron Age and early Roman sites. Two possible tool handles made from bone could also be of similar date, although one was unstratified.

The post-Roman finds included two horseshoe fragments from the topsoil, probably late medieval, and fragments of two pewter spoons, for which a 17th-18th century date is most likely.

There were two lead discs which could be Roman spindle whorls, one unstratified, the other from a ditch. Finally, there was a fragment of an unidentified material, possibly horn, which may be part of a decorative object. The date of its context is currently unknown.

15.17.1 Recommendations for further work

- Further research is needed on the penannular brooch, to provide parallels and a closer date.
- Coin SF487 may be identifiable by a coin specialist, but might require cleaning first.
- The assemblage will need to be considered in the light of spot-dating.
- A summary of the finds should be published, with illustrations.

15.17.2 Illustrations for publication

The following objects should be illustrated for publication:

- 10094 SF453 Penannular brooch
- 10029 SF510 Bone ?handle
- 10054 SF457 Bone gouge
- 10219 SF466

15.18 Plot 26-16 (Watching Brief)

One bone object was recovered, a one-piece handle, probably from post-medieval cutlery.

No further work is required.

15.19 Plot 28-1

The sole find was a small fragment of iron, probably a nail shaft.

No further work is required.

15.20 Plot 34-2

Two pieces of iron were recovered. One is probably part of a blade, and is undatable; the other is a bar, probably modern.

No further work is required.

15.21 Plot 46-10, Trench 118

The only find was a ceramic stamp or seal matrix, with the letters EX moulded in relief. The fabric is probably post-medieval.

No further work is required.

15.22 Plot 52-3

One iron strip was recovered. It is not datable.

No further work is required.

15.23 Plot 53-1

Two fragments of undatable iron sheet were found.

No further work is required.

15.24 No Plot

Eight finds from contexts 5057-5066 were presented without site details. None are likely to be older than 18th century, and some are clearly quite modern, including a 1941 penny, and a modern snap hook from horse harness or a carriage.

No further work is required.

15.25 Conclusions

Most of the material examined was post-medieval, and will require no further work. Plots 3-5, 7-18, 13-19 and 21-18 yielded artefacts which are worth publication, although none of these assemblages was very large, and no detailed analysis is needed.

- Further research on the glass bangle from 3-5 and the penannular brooch from 21-18
- Incorporation of other dating evidence into the archive report where appropriate
- Preparation of publication text for selected finds

Part 10

Glass Assessment

Andy Richmond

16 ASSESSMENT OF GLASS FINDS (2006)

The assemblage consists entirely of post-medieval glass. In the post-medieval period glass was mass-produced for three markets: windows, bottles and tableware. Information about the production and use of different types of glass can be gained from historical sources and an examination of the glass itself.

Historical sources suggest that glass was frequently divided into categories based on colour or lack of colour. The most expensive and prestigious glass was colourless (often called 'crystal') and this was used to manufacture fine tableware, mirrors and coach windows. The most common and cheapest glass was green (often termed 'black-glass' due to the density of colour): a natural dark green colour produced by the impurities in the raw materials used. In the early post-medieval period green glass supplied most markets but from the end of the 17th century it was only used to produce bottle glass. From the mid 17th century to the early 19th century glassmakers also produced glass which was intermediate between 'crystal' and green glass. This 'ordinary' glass was used for windows and tableware.

In the early post-medieval period, the production of naturally green glass in Britain was carried out in relatively remote rural, wooded locations (the glass is often called 'forest glass'), such as the Weald of Surrey and Sussex (Kenyon 1967) and the Bagot's Park area of Staffordshire (Welch 1990). Their furnaces were fired using wood fuel and the glass produced from sand and bracken ash (Smedley and Jackson 2002). From 1567 onwards, glassworkers were brought from continental Europe to work in England (Godfrey 1975). Initially they worked in the Weald, but by the end of the 16th century they had begun to disperse; first to Hampshire and Gloucestershire and later to Staffordshire, Lancashire and Yorkshire.

The Pannal to Nether Kellet assemblage predominantly originates from two types of glassware, being window glass and free-blown, 'black-glass' bottle glass. In both cases, the glassware is slightly iridescent due to the chemical deterioration of the glass as a result of burial in acidic soil conditions. Much of the window glass appears to be of M. 18th to 19th century date, having originated from small household panes.

The bottle glass predominantly originates from early to late 18th century vessels, probably 'black-glass' wine bottles and utilitarian wares of onion and mallet form. One shard of mid to late 17th century date was recognised (13001); such pieces are usually associated with the characteristic shaft and globe forms (c. 1630-1690) although this fragment appears to emanate from a rectangular vessel; a rare form for this date.

Occasional later fragments of glass had been recovered, including shards from late 19th and early 20th century household bottles.

No further work is recommended on this rather diffuse assemblage. It is characteristic of many such assemblages that one would find in any later post-medieval settlement or its general environs. One single fragment of glass waste was found in the watching brief (5032), suggestive of possible manufacture.

If any fragments are to be photographed or illustrated, they should include the base shard from context 13001(100E 100N) and the base shard from context 13001(102E 109N).

17 ASSESSMENT OF GLASS FINDS (2007)

The assemblage consists entirely of post-medieval glass. In the post-medieval period glass was mass-produced for three markets: windows, bottles and tableware. Information about the production and use of different types of glass can be gained from historical sources and an examination of the glass itself.

Historical sources suggest that glass was frequently divided into categories based on colour or lack of colour. The most expensive and prestigious glass was colourless (often called 'crystal') and this was used to manufacture fine tableware, mirrors and coach windows. The most common and cheapest glass was green (often termed 'black-glass' due to the density of colour): a natural dark green colour produced by the impurities in the raw materials used. In the early post-medieval period green glass supplied most markets but from the end of the 17th century it was only used to produce bottle glass. From the mid 17th century to the early 19th century glassmakers also produced glasses which was intermediate between 'crystal' and green glass. This 'ordinary' glass was used for windows and tableware.

In the early post-medieval period, the production of naturally green glass in Britain was carried out in relatively remote rural, wooded locations (the glass is often called 'forest glass'), such as the Weald of Surrey and Sussex (Kenyon 1967) and the Bagot's Park area of Staffordshire (Welch 1990). Their furnaces were fired using wood fuel and the glass produced from sand and bracken ash (Smedley and Jackson 2002). From 1567 onwards, glassworkers were brought from continental Europe to work in England (Godfrey 1975). Initially they worked in the Weald but by the end of the 16th century they had begun to disperse; first to Hampshire and Gloucestershire and later to Staffordshire, Lancashire and Yorkshire.

The Pannal to Nether Kellet 2007 assemblage predominantly originates from two types of glassware, being window glass and late 19th and early 20th century utilitarian bottle glass. In both cases, the glassware is slightly iridescent due to the chemical deterioration of the glass as a result of burial in acidic soil conditions. Much of the window glass appears to be of 19th and early 20th century date, having originated from household panes.

The bottle glass predominantly originates from late 19th and early 20th century bottle glass (Victorian and Edwardian) in varying colours. Most vessels are from two-piece moulds with applied lips. A number of earlier shards are represented, being from early to late 18th century vessels, probably 'black-glass' wine bottles and utilitarian wares of onion, mallet and cylinder form. A single shard from an octagonal form was also recorded. Octagonal bottles are not thought to have contained wine, and are rather believed to have been of medicinal use. No shards of late 17th century date were recognised; such pieces are usually associated with the characteristic shaft and globe forms (c. 1630-1690).

No further work is recommended on this rather diffuse assemblage. It is characteristic of many such assemblages that one would find in any later post-medieval settlement or its general environs.

Part 11

Clay Pipe Assessment

Wendy Booth (2006)

Allan Peacey (2007)

18 CLAY PIPE ASSESSMENT (2006)

18.1 Introduction

Seventy-five fragments of clay tobacco pipe, weighing a total of 270 grams, were recovered from seventeen plots during the archaeological investigations along the route of the pipeline. All but ten of the fragments were stratified, and the unstratified pieces were collected during the watching brief from the ground surface of Plots 14-5, 52-1, 52-4, 52-5, 53-1, and 53-2.

18.2 Methodology

The assemblage has been examined in detail by eye, with attributes such as typology, condition and any decoration being noted.

18.3 Assemblage

The density of clay pipe fragments recovered along the pipeline appears to be of an expected level for an area of land such as this. The artefacts are in a similar condition overall, as all of the pieces are abraded to a small degree, and there is a fairly high degree of fragmentation. The majority of fragments are from undecorated stems, and range in diameter from 5mm to 11mm. Bowls, bowl fragments or heel fragments were recovered from Plots 6-7, 7-18, 14-5, 15-1, and 16-2.

Plot 6-7, context 12015, produced one partial bowl with the heel and a portion of stem attached. The bowl is small and bulbous in profile, and slopes forward at an angle of approximately 40°. The mouth of the bowl is also cut so that it slopes forwards at a decline of approximately 40° from horizontal, and the base of the bowl has a pronounced flat heel. The stem is thick and slightly unevenly shaped with a diameter of 10mm. The heel is decorated with a round maker's mark stamped into the base and the rim has a single band of milling 2mm below the edge. The maker's mark consists of a simple three pointed crown over the letters 'FW', the maker's initials, enclosed by a single plain band and then a single milled band. All of this indicates a date of approximately 1660-1680.

Plot 7-18 produced the largest assemblage of pipes from any one area, which is to be expected as this plot was adjacent to the site of the village of Scales, thought to have been abandoned between 1760-1800. However, the vast majority of fragments were undecorated stem fragments, and apart from these the plot only produced a single partial bowl, from context 13002, and two partial heels. No decoration or maker's marks were present. The bowl form appears particularly long and slender and has a pronounced spur at the base. There is very little of the mouth of the bowl remaining but it appears to slope forwards rather than being level with the stem. This would indicate a slightly later date than the previous bowl, approximately 1680-1710. The partial heels are both shallow pedestal spurs, both fairly pronounced, chunky and flat based. The heel from context 13002 is 2mm deep and the one from context 13111 is 5mm deep, and they probably date approximately to the early 1700s.

Plot 14-5 produced the only unstratified bowl fragment, from find spot 4095, a single complete bowl with a partial heel. The bowl form is very similar to that of the bowl found in Plot 6-7 although approximately 2mm taller. There is a poorly executed milled band around part of the bowl mouth, and it probably dates to the same period as the bowl from 6-7, approximately 1660-1680.

Plot 15-1 produced a partial bowl with a heel, a bowl fragment, a decorated stem fragment and a partial heel from evaluation trenches 22 and 23. The partial bowl, from trench 23, context 15042, appears very similar in shape to the bowls from 6-7 and 14-5, and has a flat heel, no decoration or maker's marks, and is probably also of a similar date to the other two,

1660-1680. The bowl fragment, from trench 22, context 15024, is a fragment of rim with a partial plain band 2mm below the mouth. As the base is missing it is not possible to discern the relationship between the bowl and the stem, and therefore not possible to date the piece. The stem fragment, from 15024, is decorated with a maker's mark cartouche of a 'lion rampant' within a shield shaped ribbon and encircled by a twisted rope. This cartouche is then flanked on both sides by a heart and 'fleur de lys' design which encircles the stem, and dates from 1860 onwards. The partial heel, also from 15024, is flat, and appears to be very shallow but is too small a fragment to be diagnostic in any way.

The final fragment of any interest was recovered from Plot 16-2, test pit 4, context 15501, and is another partial bowl of similar appearance to those recovered from 6-7, 14-5 and 15-1, and would appear to be of the same date, 1660-1680. No decoration was present.

18.4 Discussion

Until the 19th century, it was usual for the smoking of tobacco to be enjoyed purely as a leisure activity, especially as the length of the pipe stems made it impractical to try and do anything else at the same time. Therefore the pipes in such assemblages as this were probably smoked by workmen in their breaks or after the day's work was complete. Due to the undiagnostic nature of the assemblage it was not possible to gain any further information.

18.5 Recommendations for further work

Further assessment or analysis would not increase our understanding of this assemblage and would not therefore contribute considerably towards the understanding of the local area or broader region. Therefore no further work is recommended.

18.6 Storage and curation

There is no apparent reason for the retention of these clay tobacco pipe fragments. These could therefore be discarded. In the event that they are retained, there are no specific requirements for the long-term storage of this material.

19 WHITE CLAY TOBACCO PIPE FRAGMENTS (2007)

The assemblage consists of twenty-seven fragments, including one marked stem, four bowl fragments and one complete bowl.

Dating clay tobacco pipes is generally reliant upon complete or identifiable bowl forms; however, there are methods of dating pipes by reference to the diameter of the stem bore, conventionally measured in 64^{ths} of an inch. It was recognised that the stem bores of early pipes was greater than those of later pipes, and that there might be a significant progression. Since Harrington's pioneering work of 1954, several modifications have been put forward. All require a considerable sample size. An up to date summary and discussion of these can be found in White 2004. It is clear that a blanket formula is inappropriate, as local practices varied considerably. Using data from her study of Yorkshire pipes from 1600-1800, White suggests the following date ranges:

stem bore	date range
8/64"	1592-1607
7/64"	1605-1695
6/64"	1687-1712
5/64"	1682-1757
4/64"	1767-1782

These should be used with extreme caution. In the assemblage under consideration, there is a stem marked in a 19th century style, probably the work of John Sephton, known to have been working in the 1820s, which has a stem bore measuring 5/64". Stem bores of 5/64" and 4/64" were used well after the period covered by White's study. A list of stem bores by context is included in Table 1.

A stem fragment from context 6110164 has a poorly impressed maker's stamp running along the stem. The letters HTON can be clearly seen preceded by what might be the upper part of a P. The only recorded maker that matches this is John Sephton of Lancaster in 1824 (Oswald 1975, 177).

From context 16016 there is an undecorated bowl fragment which could have been made anytime between 1750 to 1850.

From context 6110046 there are two fragments from decorated bowls. One is from the forward edge of the bowl, having oak leaf decoration along the mould line, a tendril extending from this and a round boss, possibly a football: probable date 1860-1900. The second, of which only a very small part of the decorated bowl has survived, has a delicate square-ended spur and probably dates 1890-1920.

From context 6119009 there is a bowl fragment with its forward edge decorated along the mould join with small, plain, leaf-shaped pellets. Probable date 1830-70. From context 6119040, the only complete bowl in the assemblage is an undecorated spurred form dating from the late 19th or early 20th century.

Table 1

Context	stem bore	fragment
14008	6/64"	stem
14159	5/64"	stem
16007	5/64"	stem
16016	7/64"	stem
16016	7/64"	stem
16016	5/64"	stem
16016	5/64"	stem
16016	4/64"	stem
16016	4/64"	stem
16016	3/64"	stem
16035	5/64"	stem
23007	5/64"	stem
6110046	4/64"	stem
6110052	4/64"	stem
6110078	5/64"	stem
6110122	5/64"	stem
6110123	5/64"	stem
6110124	7/64"	stem
6119164	5/64"	stem
6119003	4/64"	stem
6119011	5/64"	stem
6119017	7/64"	stem
6119027	6/64"	stem
6119040	4/64"	bowl

Part 12

Production Waste Assessment

Tim Young

20 EVALUATION OF ARCHAEOMETALLURGICAL RESIDUES (PRINCIPALLY PLOT 8-5)

20.1 Abstract

The main body of the submitted material comprised some 115kg of slag from Plot 8-5 on the Pannal to Nether Kellet Pipeline. The residues are dominated by materials produced during iron smelting in a large slag-tapping bloomery furnace. At least 75% of the recovered slags were likely to have been tapped, and a further 17% of the assemblage is provided by the slags which cooled within furnace 11018 on its last smelt. Of the tapped slags approximately 77% are low density, highly vesicular forms with only 23% being dense “classic” tap slags.

The slag assemblage does not appear to have been collected evenly across the site. No residues were submitted from either the supposed smithing area, nor from the ore storage/preparation area, so no comment can be made on the interpretation of these areas. The slag dump, estimated as containing 15 tonnes of material, was represented by just 32kg of mainly rather small and abraded pieces.

A small amount of roasted claystone ironstone was recovered from other contexts and confirms the nature of the ore employed.

The survival of a large quantity of slag within the abandoned furnace [11018] provides an excellent opportunity to examine the chemical reactions taking place in such a furnace. This site has a high potential for producing important additional information on the smelting technology and materials being employed.

In addition to the main coverage of Plot 8-5, this report also provides brief coverage of materials recovered from minor interventions within the same scheme.

20.2 Methods

All material submitted for the evaluation has been inspected visually, weighed and recorded to a database. As an evaluation, the production of this report has not entailed any high powered microscopic investigation or chemical analysis, and the interpretations must therefore be seen as provisional.

20.3 Results

20.3.1 Plot 8-5

The slag assemblage from this site is of a remarkably low diversity. All slags identifiable to a reasonable degree of certainty were from iron smelting. No certain smithing residues were identified, although no slag assemblages were provided from the area of the site identified by the excavators as being involved with smithing.

The dominant materials from this site were highly vesicular, sometimes almost frothy, slags which often show flow-lobed or smooth upper surfaces. The slag is mid-grey in colour, though the high porosity has encouraged weathering and much of the material is pale yellowish-brown superficially. The upper flow surfaces commonly show a maroon or even purple tint. The vesicles are dominantly small (<2mm), although some specimens suggest the slags are sometimes formed around large internal voids.

The most complete specimens show this material forms flows, of a morphology fairly similar to those commonly seen in classical dense tap-slugs, but also forms large flat-topped to even smoothly convex-topped slag cakes. The example left within the tapping pit of furnace

[11018] formed a slightly biconvex cake, about 300-350mm across and 80mm thick, with thin sheet like flowed extensions on some sides.

Some of this material has a morphology suggestive of contortion produced by raking of the slags from the tapping area when the slags were still plastic.

The large specimens also suggested that the most highly vesicular textures may be present in the middle of flows, with the lower part of the flow forming a more dense basal crust, and with vesicularity also decreasing towards a slightly denser layer forming the upper surface.

These vesicular slags are accompanied by a smaller quantity of dense classic tap-slugs with well developed flow lobes. This type of slag is present almost entirely as thin sheets, often only a single layer of flows in thickness.

Dense slags are also seen in the furnace, in the in-situ slag accumulations of (11078). These blocks are extremely dense, and include textures with vesicles and charcoal inclusions quite unlike those of the tap-slugs. The external appearance of the blocks suggests that they may also include some brecciated textures. They suggest a similar facies of slag extended from the furnace bowl through the tap-arch, forming a layer approximately 170-180mm thick. The block within the furnace has a slightly dished top.

Several deposits show occurrences of rounded concretions, which are likely to be cored on pieces of iron.

A small quantity of ore was present within the submitted material. All the submitted material was claystone ironstone, presumably from the Namurian, but possibly from the more distant Carboniferous Coal Measures. All of these specimens had probably been roasted.

Furnace lining and lining-dominated slags were remarkably sparse in the assemblage.

20.3.2 Other Plots

Material recovered from the other sites includes coal, partially burnt coal (coke), burnt coal shale, clinker (melted coal residue) and other partially vitrified stones (possibly in some cases residues from lime burning). In only two cases were the residues certainly of metallurgical origin (15104 and 15026). Except where burnt, coal should not be taken as an indicator of human activity in this area.

The finds of clinker (in which the inorganic component of the impure coal has become at least partially molten) may be indicators of more intense burning. Clinker can be generated rarely in a domestic type of fire, but will be more common in the residues of industrial coal-burning processes (including lime burning and also the fire boxes of steam engines, including traction engines). The denser clinker, such as that from (4034) might just be indicative of a metallurgical origin; dense clinkers are produced in coal or coke fired blacksmiths hearths for instance, particularly after the advent of cast-iron tuyères in the 19th century reduced the silicate input to the hearth.

The vitrified, glazed and slagged stone pieces in the collection might also result from many different processes, for instance impure limestones being burnt in limestone kilns and the accidental inclusion of sandstone or siltstone fragments within coal fires.

20.4 Interpretation

20.4.1 Plot 8-5

The assemblage from this site provides good evidence for bloomery iron smelting. The large size of the slag flows (the apparently in-situ material associated with furnace [11018] suggests the tapped low-density slag amounts to 20kg, with over 19kg of untapped material still within the furnace) is consistent with a relatively late date for this furnace, probably 14th-17th century.

The highly vesicular tap slag flows are a common feature of later medieval bloomery sites, but their significance (beyond a probable association with the smelting of claystone ironstone ores) is not fully understood, nor is their relationship to the dense tap-slugs with which they occur. The large, highly vesicular slag cake retrieved from the tapping pit of the furnace [11018] appears to show a single tapping event with a very fluid slag.

20.4.2 Other Plots

There is little evidence for significant metallurgical activity close to these other sites.

20.5 Evaluation of potential

20.5.1 Plot 8-5

The assemblage has significant potential to enhance understanding of the nature of the technology being employed and to enhance understanding of the local economy.

The in-situ slags within furnace [11018] provide a good opportunity to understand the different slag types generated within a furnace of this type, which may enhance understanding of the occurrence of these slag types when found in other circumstances. This exercise should be undertaken bearing in mind that the massive accumulation of slag in the base of the furnace may not have been a normal occurrence, and it is possible that the problem of extracting this amount of slag without causing major damage to the furnace might have been the reason for its abandonment. It is certainly surprising that if this were to have been the normal slag production in a smelt, that there was no significant quantity of slag resembling the internal accumulation recovered from other contexts within the site.

A key question that this assemblage may help to address is that of the relationship between the highly vesicular and the dense tap-slugs. Some fragments appear to show both textures within a single piece, and any such observation would be worthy of further investigation. It is conceivable that the two textures were produced at different stages within a smelt for instance.

There are several questions still to be asked of the material which may have been collected by the excavators but not submitted for evaluation:

- What is the evidence for the northern features being used for smithing?
- What is the evidence for the ore handling area to the north-west?
- What is the geological evidence for the origin of the iron ore found in that area?
- What is the significance of the ceramic materials found on the slag dump? Are they metallurgical ceramics, or unrelated materials?
- What is the evidence for the nature of furnace superstructure or lining? Are there significant fired clay assemblages associated with the metallurgical features?

The presence on the site of ore materials, can be taken with the apparently complete suite of smelting slags (and the probable existence of suitable ore and clay samples), to work towards

a mass-balance description of the furnace operation (Thomas & Young 1999a and 1999b). This would enable modelling of the size of bloom being produced and the efficiency (in terms of iron yield) of the furnace.

A further aspect of interest of this site is its location on Namurian strata. These beds are known to have been exploited for iron ore in early times in the North Pennines, but the nature of that exploitation is not so well documented as that from the geologically overlying Westphalian Coal Measures.

Further investigation of the residues should be co-ordinated with a detailed review of the associated features to ensure the maximum amount of information is retrieved.

No detailed work proposal for the analysis phase is included here because of the uncertainty over possibility of additional information or samples from the smithing and ore preparation areas, and of the existence of any furnace material samples (fired clay).

Part 13

Heat-Affected Flint and Stone Assessments

Wendy Booth

21 HEAT AFFECTED FLINT ASSESSMENT

21.1 Introduction

Ten fragments of heat affected flint, weighing a total of 63 grams, were recovered from six different areas during archaeological investigations along the route of the pipeline. All of the flint artefacts were stratified.

21.2 Methodology

The assemblage has been examined in detail by eye, with attributes such as the condition and any features being noted.

21.3 Assemblage

The density of heat affected flint fragments recovered along the pipeline is very low. Overall the artefacts are in a similar condition, and all of the pieces are moderately fragmented and pale or mid grey to white in colour. This would suggest that all the pieces have been exposed to a moderately intense degree of heat in a reducing atmosphere. The fragments vary in size from 59mm x 39mm x 17mm to 9mm x 7mm x 2 mm and none show any signs of having been worked.

21.4 Discussion

The very low frequency of heat affected flint recovered from this project does not suggest the presence of any particular domestic or industrial activities. The varied contexts that the stratified flint was recovered from give us no further evidence regarding the reason for the presence of this material. Due to the undiagnostic nature of the assemblage it was not possible to gain any further information.

21.5 Recommendations for further work

Further assessment or analysis would not increase our understanding of this assemblage and would not therefore contribute considerably towards the understanding of the local area or broader region. Therefore no further work is recommended.

21.6 Storage and curation

There is no apparent purpose in the retention of the burnt unmodified pieces. These could therefore be discarded. In the event that they are retained, there are no specific requirements for the long-term storage of this material.

22 HEAT-AFFECTED STONE ASSESSMENT

22.1 Introduction

Three hundred and ten fragments of heat-affected stone, weighing a total of 5033 grams, were recovered from sixteen plots during the archaeological investigations along the route of the pipeline. All but three of the fragments were stratified, and the three unstratified fragments were collected during the watching brief from Plots 15-15 and 16-1.

22.2 Methodology

The assemblage has been examined in detail by eye, with attributes such as condition and any features being noted.

22.3 Assemblage

The assemblage appears to be a mixture of limestone, coarse and fine sandstone and chert fragments. The pieces from Plot 15-1, context 8022, and Plot 28-1, context 9012, are limestone and highly abraded, but the rest of the assemblage is abraded to a more moderate degree. The colouration of the fragments varies from very dark grey to pale grey, white, and pale pink to dark red, with occasional mottling of pale to dark pink and/or black. The pieces are moderately fragmented. This suggests that the majority of the pieces have been exposed to a moderate degree of heat in an oxidising atmosphere, but the more degraded nature of the limestone from 15-1 and 28-1 suggests that it has been exposed to a more intense degree of heating, possibly in a reducing atmosphere. None of the fragments show any signs of having been worked.

22.4 Discussion

These fragments are probably the result of domestic burning rather than any industrial or other process. Due to the undiagnostic nature of the assemblage it was not possible to gain any further information.

22.5 Recommendations for further work

Further assessment or analysis would not increase our understanding of this assemblage and would not therefore contribute considerably towards the understanding of the local area or broader region. Therefore no further work is recommended.

22.6 Storage and curation

There is no apparent reason for the retention of these heat-affected stone fragments. These could therefore be discarded. In the event that they are retained, there are no specific requirements for the long-term storage of this material.

Part 14

Animal Bone Assessment

Jennifer Wood

23 ANIMAL BONE ASSESSMENT (2006)

23.1 Introduction

A total of 2938 (20734g) fragments of animal bone were collected by hand during a program of archaeological works along the route of the Gas Pipeline from Pannal, North Yorkshire to Nether Kellet, Lancashire, undertaken by Network Archaeology.

The remains were recovered from a range of archaeological contexts, although the main bulk of the material was recovered from Plot 21-18 where a number of intercutting features were identified such as field systems, enclosures, paved areas and an oval stone structure tentatively identified as a ring cairn.

23.2 Methodology

For the purposes of this assessment, the entire assemblage has been fully recorded into a database archive. Identification of the bone was undertaken with access to a reference collection and published guides. All animal remains were counted and weighed, and where possible identified to species, element, side and zone (Serjeantson 1996). Also fusion data, butchery marks (Binford 1981), gnawing, burning and pathological changes were noted when present. Ribs and vertebrae were only recorded to species when they were substantially complete and could accurately be identified. Undiagnostic bones were recorded as micro (rodent size), small (rabbit size), medium (sheep size) or large (cattle size). The separation of sheep and goat bones was done using the criteria of Boessneck (1969) and Prummel and Frisch (1986) in addition to the use of the reference material. Where distinctions could not be made the bone was recorded as sheep/goat (S/G).

The condition of the bone was graded using the criteria stipulated by Lyman (1996): grade 0 being the best preserved bone and grade 5 indicating that the bone had suffered such structural and attritional damage as to make it unrecognisable.

The quantification of species was carried out using the total fragment count, in which the total number of fragments of bone and teeth was calculated for each taxon. Where fresh breaks were noted, fragments were refitted and counted as one.

Tooth eruption and wear stages were measured using a combination of Halstead (1985), Grant (1982) and Levine (1982), and fusion data was analysed according to Silver (1969). Measurements of adult, that is, fully fused bones were taken according to the methods of von den Driesch (1976), with asterisked (*) measurements indicating bones that were reconstructed or had slight abrasion of the surface.

23.3 Results

23.3.1 Condition

The condition of the bone was moderate to poor, averaging between grades 3 and 4 on the Lyman criteria (1996). The assemblages collected from Plots 7-8 and 15-1 averaged at a slightly poorer condition, predominantly at grade 4. Table 1 summarises the condition of the assemblages by individual plot.

The condition of the bone severely limits the number of observable traits such as butchery and gnawing marks. Moderate to poor condition and high fragmentation has limited the number of measurable bones within the assemblage. These traits are summarised within Table 2.

Most of the observable traits have been recorded within the assemblage from Plots 7-18 and 21-18, the two assemblages of any real size from the program of works.

23.3.2 Species Representation

Table 3 (following page) summarises the number of fragments of bone identified to species or taxon from each individual plot.

Table 1: Condition of Hand Collected Assemblage

Condition	2-6	7-18	9-6	13-19	15-1	15-16	16-2	16-3	17-6	19-6	21-18	26-16	31-13	34-2	Total
2	1	4		2							93				100
3		38	3	3	5	2		4	1	1	1508	2	2	1	1570
4		45		1	69	2	1				1115				1234
5		3			3						29				35
Total	1	90	3	6	77	4	1	4	1	1	2745	2	2	1	2938

Table 2: Summary of Pathological, Butchered, Gnawed, Burnt and Measurable Fragments, by Plot

	2-6	7-18	9-6	13-19	15-1	15-16	16-2	16-3	17-6	19-6	21-18	26-16	31-13	34-2
Pathology											2			
Butchery		1									12			
Worked											3	1		
Gnawed		1									20			
Burnt		19			2	2			1		285		2	1
Measured		2	2	1							47			

Table 3: Hand Collected Assemblage Identified to Taxa, by Plot

Taxon	Plot														Total
	2-6	9-6	7-18	13-19	15-1	15-16	16-2	16-3	17-6	19-6	21-18	26-16	31-13	34-2	
Equid			5		2						61				68
Donkey/Mule											1				1
Cattle			14*	2	10	1					298				325
Sheep/Goat		2	6	3	1					1	154		1		168
Sheep		1									2				3
Pig						1					42				43
Dog	1										6				7
Domestic Fowl			1								4				5
Gull?			1												1
Bird			1	1											2
Roe Deer											2				2
Deer			1												1
Rabbit			1												1
Large Mammal			17		13			1			476	1	1		509
Medium Mammal			30		1	2	1		1		281	1			317
Small Mammal											1				1
Unidentified			13		50			3			1417			1	1484
Total	1	3	90	6	77	4	1	4	1	1	2745	2	2	1	2938

*includes partial calf skeleton

Only three Plots, 7-18, 15-1 and 21-18, produced assemblages of any real consideration: the bone recovered from the remaining sites were of very low numbers or solitary fragments, which provide very limited information save the presence of the identified species.

Cattle and sheep/goat are predominant within the three main assemblages, followed by smaller numbers of equid (horse family) and pig, with smaller numbers of domestic fowl, dog, roe deer, deer, rabbit, possible gull and bird as identified within the assemblage.

A partial cattle skeleton was identified within the assemblage from 7-18 (marked with a * within the table). Further analysis is required to remove the bias caused by as yet unidentified disarticulated complete/partial skeletons, to provide clearer indications of animal husbandry and utilisation practices on site.

Several examples of small and slender equid bones have been identified within the assemblage, one of which has been tentatively identified as donkey or mule. It is possible that these remains may just be from a small breed of pony; however, the assemblage would benefit from further comparison from similar assemblages and modern reference to try and further establish species. Donkey and mule are not commonly identified within archaeological assemblages and therefore may have some significance.

23.3.3 Contexts of Interest

Plot 15-1 [8011]

A partially complete calf burial, less than 6 months old, was recovered from the site. The burial was identified as possibly modern during excavation.

Plot 21-18

The majority of the animal bone recovered from Plot 21-18 has been recovered from layers and spreads; the relationships of these layers and spreads at the time of this assessment are still a little uncertain. The layers associated with the possible ring cairn structure have been stated to be potentially colluvial or waterborne in nature. Some of the animal bone remains recovered from layers (10115), (10116), (10222), (10219) and (10354) display abrasion and smoothing of the broken edges which could be consistent with movement, possibly in water.

In addition, layers (10115) and (10116) both contain a number of equid bones, specifically metapodials, belonging to more than one individual. At this stage of the assessment, the assemblage context is inconclusive and would certainly benefit from further analysis once the nature and dating of the deposits has been clarified.

23.4 Discussion

Through out the scheme of works only three assemblages appear to be of sufficient size to require further analysis: 7-18, 15-1 and 21-18. The remaining assemblages consist of very small numbers of bones, or isolated fragments, which would provide very little information save their presence.

As the nature of the depositional contexts and dates of the animal bone assemblage are tentative at this stage of the assessment, little can be suggested on the nature of the assemblages until these are finalised. Once the phasing of the site has been clarified, the assemblage would benefit from further analysis to establish the underlying animal utilisation and husbandry practices that may have taken place.

Further analysis of the assemblages associated with the possible ring cairn, in association with other finds, may help clarify the nature of the structure.

Comparisons of the small equid remains from the site with modern and contemporary data may support the presence of donkey/mules within the assemblage or a smaller pony species.

Small animals, bird and fish remains are scarce within the assemblage; fish have not currently been identified. In the event of environmental samples any further animal bone should be incorporated, to provide as full a picture of animal utilisation as possible. Small species such as rodents and fish are often too small to be collected by hand, yet are vital in the understanding of the environment, subsistence strategies and animal utilisation on site.

23.5 Recommendations

Calculations of minimum number of individuals from the assemblages to calculate accurate abundances of each species, removing bias caused by the presence of partial/complete skeletons.

Analysis of materials with finalised phasing data to check patterns across phases within the site and across the scheme, where possible.

Tooth wear and epiphyseal aging data analysed to assess potential husbandry strategies.
Analysis of deposits and spatial arrangements to suggest any sequence or method to deposition, activity areas etc.

Further identification of the unidentified fish and bird remains to gain a full understanding of the complete range of consumed and utilised animal on site.

Incorporate any animal bone materials from the environmental samples, if required, to provide as full a picture of animal utilisation as possible.

Comparisons with other similar assemblages both regionally and nationally where data is available.

Reworking of the archive record data to provide a suitable report for the smaller assemblages.
Comparison of measurements from equid remains to assess presence of possible donkey/mules or small species of pony.

24 ANIMAL BONE ASSESSMENT (2007)

24.1 Introduction

A total of 79 (1234g) fragments of animal bone were recovered by hand during a program of archaeological works undertaken by Network Archaeology, along the route for a pipeline from Pannal to Nether Kellet in Yorkshire and Lancashire.

The main bulk of the assemblage was recovered from subsoil and as unstratified watching brief finds; the majority of the animal bone was recovered from section 34, plot 5. Two fragments of animal bone were recovered from a stratified context of ditch fill [21005].

24.2 Methodology

For the purposes of this assessment, the entire assemblage has been fully recorded into a database archive. Identification of the bone was undertaken with access to a reference collection and published guides. All animal remains were counted and weighed, and where possible identified to species, element, side and zone (Serjeantson 1996). Also fusion data, butchery marks (Binford 1981), gnawing, burning and pathological changes were noted when present. Ribs and vertebrae were only recorded to species when they were substantially complete and could accurately be identified. Undiagnostic bones were recorded as micro (rodent size), small (rabbit size), medium (sheep size) or large (cattle size). The separation of sheep and goat bones was done using the criteria of Boessneck (1969) and Prummel and Frisch (1986) in addition to the use of the reference material. Where distinctions could not be made the bone was recorded as sheep/goat (S/G).

The condition of the bone was graded using the criteria stipulated by Lyman (1996); grade 0 being the best preserved bone and grade 5 indicating that the bone had suffered such structural and attritional damage as to make it unrecognisable.

The quantification of species was carried out using the total fragment count, in which the total number of fragments of bone and teeth was calculated for each taxon. Where fresh breaks were noted, fragments were refitted and counted as one.

Tooth eruption and wear stages were measured using a combination of Halstead (1985), Grant (1982) and Levine (1982), and fusion data was analysed according to Silver (1969). Measurements of adult, that is, fully fused bones were taken according to the methods of von den Driesch (1976), with asterisked (*) measurements indicating bones that were reconstructed or had slight abrasion of the surface.

24.3 Results

24.3.1 Condition

The overall condition of the bone was moderate, averaging at grades 3 on the Lyman criteria (1996). Table 1 summarises the condition of the assemblages by individual plot.

Table 1: Condition of Hand Collected Assemblage, by Section and Plot

	Section								
	32		34		36	38	40	54	Total
Plot	3	5	10	5	11	1	3	2	
Condition									
1	100%	100%							4%
2				17%	22%				14%
3			100%	70%	67%	100%			68%
4				11%	11%		100%	100%	13%
5				2%					1%
N=	2	1	1	54	9	9	1	2	79

The condition of the bone can limit the number of observable traits such as butchery and gnawing marks. Moderate condition and high fragmentation has limited the number of measurable bones within the assemblage. These traits are summarised within Table 2.

Table 2: Summary of Observable Traits by Plot

Section	Plot	Pathology	Worked	Butchered	Gnawed	Burnt	Measurable Bones	Age Score Mandibles
32	3	0	0	0	0	0	0	0
	5	0	0	0	0	0	0	0
34	10	0	0	0	0	1	0	0
	5	0	0	3	1	12	0	0
36	11	0	0	5	0	0	0	0
38	1	0	0	3	0	0	0	0
40	1	0	0	0	0	0	0	0
54	2	0	0	2	0	0	0	0
Total		0	0	13	1	13	0	0

Most of the observable traits have been recorded within the assemblage from the area of Plot 34-5: as this is the main bulk of the assemblage, this is to be expected.

24.3.2 Species Representation

Table 3 summarises the number of fragments of bone identified to species or taxon from each individual plot.

Table 3, Fragments Identified to Taxa, by Plot

	Section								
	32		34		36	38	40	54	Total
Plot	3	5	10	5	11	1	3	2	
Taxon									
Equid				1					1

Cattle				8			2	10	
Sheep/Goat	1	1		6	1	1		10	
Pig					2	1		3	
Rabbit						1		1	
Large Mammal				15	4	2	1	22	
Medium Mammal	2			4	1	1		8	
Unidentified				20	1	3		24	
Total	2	1	1	54	9	9	1	2	79

Cattle and sheep/goat remains are equally abundant within the identified assemblage, followed by pig, with isolated fragments of equid (horse family) and rabbit also identified. A fragment of pig mandible from an infant/neonatal animal may suggest the animals were being bred on or near the site.

No animal remains recovered from samples were present at the time of assessment. Therefore further remains of domestic and wild mammals, birds and small mammals may be collected during any pending environmental work.

24.3.3 Contexts of Interest

Due to the small size of the assemblage and the majority of the remains being recovered from unstratified contexts, no contexts of specific interest were noted. Several fragments of bone were recovered from watching brief features; further analysis of the stratigraphic data may provide information towards the assemblage interpretation, although it is likely to be relatively limited.

24.4 Discussion

The assemblage recovered from the Pannal to Nether Kellet pipeline is relatively small and the majority is unstratified or from subsoil contexts. The remains appear to represent predominantly food and butchery waste. Many of the fragments of bone were from large modified animals, and the observed butchery techniques are indicative of those used within the post-medieval/modern periods.

Further analysis of the remains is likely to provide little or no information of relevance to the interpretation of the assemblage or the site.

24.5 Recommendations

- Further analysis of the assemblage is not recommended unless there are substantial remains recovered from environmental sieving or changes to the context interpretation.
- Reworking of the assessment report and incorporation of the archive with the previous year's work (PNK 06), if proceeding to full report.

Part 15

Environmental Assessment

Val Fryer

25 CHARRED PLANT MACROFOSSILS AND OTHER REMAINS (2006, EXCLUDING PLOT 21-18)

25.1 Introduction and method statement

Excavations along the route of a gas pipeline between Pannal in North Yorkshire and Nether Kellet in Lancashire were undertaken by Network Archaeology. At least seven distinct areas of archaeological activity were investigated, and this assessment includes results from six of the excavations. Plot 21-18 has been written up as a separate report (Fryer 2007).

Samples for the retrieval of the plant macrofossil assemblages were taken from features from all six excavations. The samples were processed by manual water flotation/washover and the flots were collected in a 500 micron mesh sieve. The dried flots were scanned under a binocular microscope at magnifications up to x 16 and the plant macrofossils and other remains noted. Nomenclature within the tables follows Stace (1997). All plant remains were charred. Modern contaminants were present throughout. In a number of instances, assemblages contained only charcoal and/or other material types. All such samples are listed within Appendices 1 – 6, and Appendix 7 lists samples from Plot 19-1 which contain material suitable for potential AMS/C14 determinations. This material (cereal grains and/or nutshell fragments) has been separated and placed in glass vials within the sample bags.

The non-floating residues were collected in a 1mm mesh sieve and sorted when dry. All artefacts/ecofacts were retained for further specialist analysis.

25.2 Results

25.2.1 Plant macrofossils

Of the ninety-six assemblages studied from the six excavations, all but eleven were composed almost entirely of charcoal/charred wood fragments. Other plant macrofossils were exceedingly scarce, but did include fragments of hazel (*Corylus avellana*) nutshell, barley (*Hordeum* sp.) and wheat (*Triticum* sp.) grains and individual seeds of grassland herbs and wetland plants.

Charcoal/charred wood fragments, including some larger pieces in excess of 5mm, occurred at varying densities throughout, and were particularly abundant within the assemblages from Plot 8-5. Fragments of indeterminate charred root or stem were also recorded, but other plant remains were almost entirely absent. It was noted that the charcoal within a number of assemblages from all six of the excavations was very rounded and abraded, possibly as a result of either prolonged exposure prior to burial or the subsequent disturbance of the deposits by agricultural or other activities.

25.2.2 Other materials

A limited range of other material types was also recorded. The fragments of black porous and tarry material are possible residues of the combustion of organic remains at very high temperatures; some charcoal fragments were seen to have such residues on their surfaces. Other materials included fragments of burnt or fired clay, burnt stone and ferrous residues.

25.3 Discussion and recommendations for further work

In the following text, sites will be dealt with individually. Recommendations for any further work required are included at the end of each text section.

25.3.1 Plot 6-7: Post-medieval brick clamp near Askwith, Lower Wharfedale

Two samples were taken from material associated with the brick clamp. Sample 1450 (layer [12001]) is principally composed of pellets of a dark-coloured, densely compacted mineralised silt. Plant macrofossils are very scarce within the assemblage, which otherwise contains only a few small pieces of burnt stone. Charcoal is also scarce within sample 1454 (natural clay [12017]), although the assemblage does contain a moderate density of small coal fragments. Neither of the assemblages appears to be directly related to the functioning of the clamp, and it is assumed that the material present is derived from a low density of scattered debris of uncertain origin.

Although it was hoped to gain some evidence of the types of fuel used within the clamp and the management of any local fuel resources, there is insufficient material for any further analysis.

25.3.2 Plot 8-5: Possible medieval iron furnace and ancillary features, Denton Moor near Otley

Thirty-two samples were taken from features associated with an iron production furnace of probable medieval date. A number of the recovered assemblages are relatively large (in excess of 1 litre in volume), but most consist primarily of charcoal/charred wood fragments. Two samples (1359 from pit [11014] and 1371 from surface [11056]) contain small fragments of hazel nutshell, which may be present either as an incidental constituent of the fuel or as the relicts of 'snacks' eaten by the furnace operators. As expected, given the context, ferrous residues are present within most of the assemblages.

Analysis of the charcoal within these assemblages may provide valuable data about the selection of fuel type for the different processes undertaken, and may also give indications about the management of the resources required to support such an industrial process. It is, therefore, recommended that charcoal >2mm be separated out and sent for identification and analysis. The sorting and extraction of suitable material can be undertaken by the author if required.

25.3.3 Plot 15-1 Undated field kiln to the west of Halton East near Skipton

Two samples were taken, one, <201>, from the fill of the kiln, and the other (sample <205>) from a furrow which either pre- or post-dated the kiln. Both recovered assemblages are extremely small (considerably <0.1 litres in volume) and plant macrofossils are exceedingly rare. Charcoal/charred wood fragments are present along with small pieces of charred root/stem, but it is doubtful whether there is sufficient material from the kiln for identification and dating purposes. The small amount of material within the furrow is almost certainly derived from scattered/wind-blown detritus of unknown origin.

25.3.4 Plot 19-1: Prehistoric sub-circular gully with ancillary features near Skipton

Fifty-one samples were taken, of which only nine contain plant macrofossils other than charcoal/charred wood fragments. However, the assemblages are mostly very small (<0.1 litres in volume) and these remains are exceedingly scarce, rarely occurring as more than one specimen per assemblage. Possible barley and wheat grains are present, although preservation is very poor, with most specimens being both very fragmented and severely puffed/distorted as a result of high temperature combustion. A single meadow/creeping/bulbous buttercup (*Ranunculus acris/repens/bulbosus*) seed is present in sample <559> (ditch fill [5159]) and a possible sedge (*Carex* sp.) nutlet is recorded from sample <586> (posthole [5131]). Hazel nutshell fragments are present within samples <560> (from posthole fill [5137]), <564>, <565> and <566> (all from slot [5166]). The remaining forty-two assemblages are primarily

composed of charcoal/charred wood fragments, with other remains occurring at a very low density. It is possibly of note that the charcoal within many of the assemblages is particularly rounded and abraded, and in four assemblages (samples <582>, <583>, <585> and <595>) the material is also heavily coated with indeterminate cream/brown mineral concretions. Samples <606> and <607> (from ditch fills (5242) and (5249) respectively) were almost entirely composed of pellets of a fine, densely compacted, organic mud.

As little datable material was recovered during excavation, it was hoped that macrofossils suitable for potential AMS/C14 dating would be present within the assemblages. Consequently, the cereals, grains and nutshell fragments have been removed and placed in separate glass vials within the sample bags. However, in most cases fewer than five specimens are present and the dating potential is generally low. It is, therefore recommended that charcoal fragments >2mm are separated from the samples and submitted for identification and analysis. This may pinpoint a higher density of material suitable for dating purposes. The sorting and extraction of suitable material can be undertaken by the author if required.

25.3.5 Plot 21-10: Bronze Age burnt mound to the north-east of East Marton

Five samples were taken from the mound material (context (5259)) and from the fill of a wooden trough (feature [5255]) situated at the centre of the mound. As is typical with such structures (cf. the '*fulachta fiadh*' assessed as part of the Ennis Bypass scheme, County Clare, Ireland (Fryer 2004)), the assemblages are comprised almost entirely of charcoal/charred wood fragments, with those from the mound material being noticeably rounded and abraded. The exact function of these structures is, as yet, unknown, but it would appear that large quantities of water were heated within the troughs by the addition of hot stones, possibly for the purpose of cooking meat, cleaning fleeces or treating hides (cf. Brindley, Lanting and Mook 1989-90)

Identification and analysis of the charcoal may provide data about resource management within the local environment and may also pinpoint material suitable for dating. It is, therefore recommended that all material >2mm is separated and submitted. The sorting and extraction of suitable material can be undertaken by the author if required.

25.3.6 Plot 28-1 Undated kiln and stone lined feature west of Long Preston

Four samples were taken from ancillary features associated with the kiln. Sample <252> (context [9000]) consists almost entirely of black (possibly ferrimanganiferous) concretions. Charcoal/-charred wood fragments, pieces of charred root/stem and black porous material are also present, but at a low to moderate density. Similar mineralised concretions are also recorded within sample <255> from pit fill (9037). Pits [9051] and [9053] contained only small quantities of charcoal/charred wood.

Charcoal of a suitable size for identification/dating is extremely rare and further analysis is, therefore, not recommended.

26 AN ASSESSMENT OF THE CHARRED PLANT MACROFOSSILS AND OTHER REMAINS: PLOT 21-18

26.1 Introduction and method statement

Plot 21-18, at Bank Newton to the west of Skipton, North Yorkshire, consisted of stone roundhouse platforms of Iron Age to Roman date. An ovoid ring cairn was situated to the east of the main settlement. Samples for the retrieval of the plant macrofossil assemblages were taken from across the excavated area, and sixty three were submitted for assessment.

The samples were processed by manual water flotation/washover and the flots were collected in a 500 micron mesh sieve. The dried flots were scanned under a binocular microscope at magnifications up to x 16 and the plant macrofossils and other remains noted. Nomenclature within the tables follows Stace (1997). All plant remains were charred. Modern contaminants including fibrous roots and seeds were present throughout. Where samples contained material suitable for potential AMS/C14 determinations, the material (cereal grains and/or nutshell fragments) has been separated and placed in glass vials within the sample bags.

The non-floating residues were collected in a 1mm mesh sieve and sorted when dry. All artefacts/ecofacts were retained for further specialist analysis.

26.2 Results

26.2.1 Plant macrofossils

Cereal grains/chaff and seeds of common weeds, grassland herbs and wetland plants were present at varying densities in all but fifteen samples (see above). Preservation was moderately good, although a proportion of the grains were severely puffed and distorted, possibly as a result of combustion at very high temperatures.

Oat (*Avena* sp.), barley (*Hordeum* sp.) and wheat (*Triticum* sp.) grains were recorded, with wheat occurring marginally more frequently than barley. A high proportion of the wheat grains were of an elongated 'drop-form' typical of spelt (*T. spelta*) type, and spelt glume bases were recovered from approximately 50% of the samples studied. Possible asymmetrical lateral grains of six-row barley (*Hordeum vulgare*) were noted within samples 336 (pit/post-hole [10309]) and 363 (context [10414]). Oat grains were comparatively rare and, in the absence of the diagnostic floret bases, it was not possible to ascertain whether wild or cultivated varieties were present.

Seeds of segetal weeds, grassland herbs and wetland plants were present within most of the assemblages studied, although frequently at a very low density. Common cereal crop contaminants included brome (*Bromus* sp.), small legumes (Fabaceae), goosegrass (*Galium aparine*), persicaria (*Persicaria maculosa/lapathifolia*) and dock (*Rumex* sp.). Grasses (Poaceae) and grassland herbs occurred less frequently, but the latter did include onion couch (*Arrhenatherum* sp.), ribwort plantain (*Plantago lanceolata*) and buttercup (*Ranunculus acris/repens/bulbosus*). Sedge (*Carex* sp.) nutlets were recorded within five assemblages. Occasional fragments of hazel (*Corylus avellana*) nutshell were the sole tree/shrub plant macrofossils recorded.

Charcoal/charred wood fragments were present throughout, although rarely at a very high density. Pieces of charred root/stem, including a moderate density of heather (Ericaceae) stem, were also recorded along with indeterminate plant tubers. Other plant remains were exceedingly scarce.

26.2.2 Other materials

The fragments of black porous and tarry material recorded within a number of assemblages are probable residues of the combustion of organic remains (including cereal grains) at very high temperatures. Bone fragments, including a number of burnt specimens, were present throughout along with small pieces of coal, although the latter could well be modern in origin.

26.3 Discussion

Although the samples are from a wide range of context types (i.e. ditches, pits, post-holes, layers and surfaces), the composition of the assemblages is comparatively uniform, possibly indicating a common source for much of the material present. Although many of the assemblages are small (<0.1 litres in volume) the ubiquity of cereal grains, chaff and weed seeds may indicate material derived from a mixture of domestic hearth waste (see also the burnt bone fragments) and/or cereal processing/storage debris. The latter was commonly used during later Iron Age and the Roman periods as kindling/fuel for domestic fires and light industrial purposes, and may possibly have been traded as such (cf, Van der Veen 1999). At Bank Newton, heather also appears to have been used as fuel; this was a greatly favoured resource as it was easy to light, quickly reached a high temperature on ignition and maintained an even temperature throughout combustion. Charred fuel waste is very lightweight, and unless it is buried immediately, it is very liable to be dispersed across a wide area by the wind. Therefore, while a number of features at Bank Newton (for example ditches [10137] (sample <314>) and [10252] (sample <330>) and pit [10044] (sample <303>)) may contain primary deposits of spent fuel/hearth waste, others probably contain scattered debris, much of which was probably accidentally incorporated within the feature fills.

26.4 Conclusions and recommendations for further work

In summary, the uniformity of composition of the Bank Newton assemblages may indicate that many have a common source, i.e. scattered or wind-blown hearth waste and/or cereal processing debris. Although the original composition of the assemblages may have been altered during dispersal, the generally low ratio of seeds and chaff to grains possibly indicates that the occupants of Bank Newton were not primary cereal producers, but were importing batches of semi-cleaned grain from more agriculturally productive areas to the south and east. Wherever the grain was being produced, the occurrence of grassland herb seeds within the assemblages may indicate that the development of new types of heavy plough during the Later Iron Age and Early Roman periods was facilitating the cultivation of previously grassed areas for the first time. The predominance of brome fruits within many of the assemblages is of interest, as similar patterns have been recorded from a number of near contemporary (Middle to Late Iron Age sites) in southern Britain (for example Asheldham Camp and St. Osyth, Essex (Murphy 1991 and Fryer 2007 respectively) and Suddern Farm and Nettlebank Copse in Hampshire (Campbell 2000a and 2000b respectively)). In these instances, it is assumed that the brome was either deliberately cultivated for fodder, or was tolerated as an impurity of the main crops as it did not affect either the storage properties of the cereal or detract from its quality as food/fodder.

As this excavation has provided a rare opportunity for the study of rural development in the Southern Dales area during the Later Iron Age and Roman period, it is recommended that the following samples are fully quantified and analysed:

Sample 303	Pit [10044]
Sample 314	Ditch [10137]
Sample 322	Layer (10106)
Sample 324	Feature [10252]
Sample 330	Ditch [10252]
Sample 341	Ditch [10319]

27 AN ASSESSMENT OF THE PLANT MACROFOSSILS AND OTHER REMAINS (2007)

27.1 Introduction and method statement

Excavations at PNK 07 were undertaken by Network Archaeology as part of an ongoing investigation of the archaeological sites along the route of a gas pipeline between Pannal in North Yorkshire and Nether Kellet in Lancashire. The work revealed a burnt mound of probable Later Neolithic to Early Bronze Age date (Plot 50-2), an as yet un-dated kiln and a number of organic deposits, two of which were described as being within a cauldron (Area 54-2). Samples for the retrieval of the plant macrofossil assemblages were taken and nine were submitted for assessment.

The samples were processed by manual water flotation/washover and the flots were collected in a 250 micron mesh sieve. Three samples (816, 818 and 819) contained waterlogged assemblages and these were stored in water prior to sorting. Both the wet retents and dried flots were scanned under a binocular microscope at magnifications up to x 16 and the plant macrofossils and other remains noted. Nomenclature within the table follows Stace (1997). Waterlogged macrofossils are denoted in the table by a lower case 'w'. Modern contaminants including fibrous roots, seeds and arthropod remains were noted within the charred assemblages.

27.2 Results

Of the charred assemblages, four (samples <600>, <601>, <807> and <809>) contained very high densities of charcoal/charred wood fragments but very few other remains. Within two of these assemblages (samples <600> and <809>) the charcoal was heavily coated with reddish-brown mineralised concretions, and soil concretions were also noted within the assemblage from the burnt mound (sample <807>). Sample <816> was taken from a highly organic deposit within the kiln (Area 56-7). The assemblage was largely composed of moss fronds and very well preserved root/stem fragments, possibly indicating a relatively recent date. Samples <818> and <819> were both described as being from organic deposits within a cauldron. The assemblage from sample <818> largely consisted of small wood/twig fragments, but sample <819> contained a moderate density of seeds of grassland herbs (principally buttercup (*Ranunculus* sp.) and tree/shrub macrofossils, most notably bramble (*Rubus* sect. *Glandulosus*) 'pips'. The latter assemblage also contained a single charred cereal grain.

27.3 Conclusions

Although burnt mounds have now been recorded from a number of sites within Britain and Ireland (in the latter referred to as *Fulachta Fiadh*), their precise function is still uncertain. It would appear that they were primarily associated with the heating of water by the immersion of hot stones, although it is not known whether this was for food preparation, for 'industrial' use or for other more esoteric purposes (for example, sweat lodges). However, the plant macrofossil assemblages from these features are almost invariably largely composed of charcoal/charred wood fragments (for example, Fryer 2004) with very few other remains ever being recorded, as with the current example. The significance and/or antiquity of the 'cauldron' samples is not known at present, as few site details were available at the time of writing. However, if the plant macrofossils are indicative of the local environment, the predominance of damp, scrubby grassland conditions can be inferred.

27.4 Recommendations for further work

As none of the assemblages contain sufficient material for quantification (i.e. 100+ specimens), no further analysis is required. However, a written summary of this assessment should be included within any publication of data from the site.

Part 16

Waterlogged Wood Assessment

Maisie Taylor

28 Waterlogged wood: Pannal-Nether Kellet pipeline 2006

MAISIE TAYLOR: DECEMBER 2006

28.1 Description of material

Two large planks were lifted, although shattered. The remaining material was in very poor condition but some samples were taken.

28.1.1 Provenance

The wood was all derived from a 'tank' associated with a burnt mound.

28.1.2 Range and variation

All the wood is part of a 'tank' structure.

28.1.3 Condition

Using the scoring scale developed by the Humber Wetlands Project (Van de Noort, Ellis, Taylor and Weir 1995 Table 15.1) the material scores 1 or 2.

	Museum conservation	Technology analysis	Woodland management	Dendro- chronology	Species identification
5	+	+	+	+	+
4	-	+	+	+	+
3	-	+/-	+	+	+
2	-	+/-	+/-	+/-	+
1	-	-	-	-	+/-
0	-	-	-	-	-

28.2 Statement of potential

The wooden tanks associated with burnt mounds are rarely preserved, making this one very important despite its poor condition.

28.2.1 New research questions and potential of data

Very few burnt mounds have been excavated, and even fewer of the wooden tanks associated with them have been examined in detail. Many different uses have been suggested for them, but no definitive report has yet been published. Only by detailed recording and analysis of as many as possible will their original form and function be determined.

28.2.2 Recommendations

There is only a small quantity of material from this structure. For the maximum to be made of the data it needs to be laid alongside detailed contextual information and dating evidence. A careful comparison with other similar structures needs to be made.

28.3 References

Van de Noort, R., Ellis, S., Taylor, M. and Weir, D. Preservation of archaeological sites in Van de Noort, R. and Ellis, S. 1995 Wetland Heritage of Holderness: an archaeological survey. Humber Wetlands Project

28.4 Catalogue

Context 5256

Timber, tangential split?, with toolmarks: 58:4; 12:2, oak? (*Quercus* sp.) L668-794mm x 154-280 x 8-29mm

Context 5284

Timber, radial split?, with toolmarks 38:3; ?oak *Quercus* sp.) L792 x 234-394 x 7-22mm
Samples:

5260}

5283 } ?from verticals??

5277 }

Part 17

Assessment of conservation needs

29 ASSESSMENT OF CONSERVATION NEEDS

Conservation work has been carried out to meet the objectives outlined by the MAP2 documentation for the project. These objectives were:

- to render the material stable by a combination of interventive remedial conservation treatment (where needed), and appropriate packaging and provision of micro-environments;
- to assist the interpretation of those elements of the assemblage which have obscured morphology, so that accurate archive reporting and assessment of potential for analysis can be undertaken.
- to enable and inform the work of the artefact researcher associated with the project, in their archive reporting.

In the case of this group the following tasks were carried out by Lincoln Conservation Laboratory to meet these criteria and reflect the specific requirements of Network Archaeology and the receiving organisation: Craven Museum, having regard to discussions and exchanges of emails between these three parties.

29.1 Registered finds

FERROUS including possible knife with bone handle from context 13001.

Remedial treatment of active deterioration or unstable structures has been carried out for items within the group where delamination or spalling of surface layers was evident. Appropriate packaging has been provided, including adequate physical support and provision of micro-environment.

X-Radiography imaging of all items using incremental exposures through at least two elevations was carried out, because of the level of obscuring accretion on this material, allowing the deteriorated morphology, including corrosion envelopes, to be properly assessed and potentially revealing the presence of subtle (for example, metalworking) evidence.

COPPER ALLOY FINDS, INCLUDING COINS

Appropriate packaging and provision of micro-environment has been provided for all items within this group, involving, as with the ferrous finds, bespoke support where necessary. Remedial treatment of active deterioration or unstable structures was carried out on those items within this group which displayed evidence for active corrosion sites.

X-Radiography imaging of all items was carried out, as for the ferrous finds above (except in the case of coins which did not require elevations), with the exception of finds 350, 351, and 352 which were imaged as for non-registered material.

LEAD

Appropriate packaging and provision of micro-environment has been provided for all items, as described for metalwork referred to above.

GLASS, BONE AND CERAMIC

Appropriate packaging and provision of micro-environment has been provided for all items, as described for metalwork referred to above.

Remedial treatment was carried out on all active deterioration and unstable structures, in particular, bone items were in an unstable condition requiring structural consolidation.

29.2 Bulk finds

FERROUS

Suitable outer boxing and appropriate microclimates have been provided, but finds in this category have not necessarily been packaged singly with individual support, because of the low archival value placed on this material. For the same reasons, evidence for active deterioration or unstable structures has not been explicitly addressed.

X-Radiography imaging of all items in this category, from two elevations, but only single exposure, has been carried out. This is a less rigorous coverage than used for registered ferrous finds above.

CU ALLOY COINS

Packaging: Outer boxes and appropriate microclimates have been provided only as for non-registered ferrous items, as above.

X-radiography has been carried out on items as for non-registered ferrous finds, as described above (except in the case of coins where elevations are not required). No x-radiography was deemed necessary for the shot gun cartridges from contexts 13111 and 5101. The coin from context 7044 was treated as for the registered copper alloy finds described above.

LEAD

Outer boxes and appropriate microclimates have been provided only as for non-registered ferrous items, as above.

29.3 Recommendations for future conservation

All registered finds and non-registered metal finds are considered to be stable and have received an appropriate level of conservation. The provision of a stable micro-climate should arrest corrosion and deterioration of non-registered metal finds.

Other bulk finds, such as pottery, animal bone, ceramic building material and production wastes will not require any special treatment beyond secure storage in self-sealing polythene bags stored in standard archive quality boxes.

Appendix D

Topographic Survey

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1 TOPOGRAPHIC SURVEY

1.1 General

The field survey report recommended that selected earthwork sites along the proposed pipeline route, identified by the field reconnaissance survey, should be recorded by topographic survey. In total, forty-three areas were targeted, comprising thirty areas of earthwork ridge-and-furrow and thirteen other earthwork sites. (For tables of targeted sites see Network Archaeology Ltd 2005b).

1.2 Objectives and methodology

The purpose of the topographic survey was to record accurately any significant earthwork remains certain or likely to be affected by the construction of the pipeline. The agreed methodology was to survey the earthworks within the pipeline working width using dGPS; beyond the working width, measured sketches would be drawn by hand, showing the extent of the earthworks in the rest of the plot. The surveys were carried out to Level 2 standard as defined by RCHME (RCHME 1999) and included Level 2 optional item 15: the production of profiles illustrating salient vertical and horizontal differences in the ground surface across each site (Network Archaeology Ltd 2005e).

1.3 Summary of results

In total, thirty areas were surveyed, of which seventeen areas of ridge and furrow and nine earthwork sites are illustrated in the report. There were a number of reasons for the disparity between the number of targeted areas and those actually surveyed: in some cases, the targeted survey areas were judged to be natural geological features when re-examined; several features either did not encroach on the pipeline working width or did so only marginally; elsewhere, the survey results indicated that the remnant earthworks were insufficiently substantial to be accurately recorded or to justify further survey. All the topographic survey sites are listed in the table below; their locations (with FSU reference numbers) are shown on the main report text figs. 2a to 2e, and the results of the surveys are presented in survey figs. 1 to 17.

Where a site required both topographic survey and trench evaluation, the topographic survey was carried out first. This occurred in Plots 21-18; 35-10, and 41-2. Plot 6-7 was surveyed without being evaluated; it was later excavated after archaeological remains were noted during the watching brief.

Earthworks were targeted for evaluation at two other sites in Plots 12-3 and 34-2, but not initially for topographic survey, because of the uncertain nature of the earthworks. This decision was re-assessed later and these two sites were surveyed immediately prior to evaluation trenching. The site in Plot 12-3 was thought to be a possible barrow mound, but the evaluations revealed it to be a natural geological formation and it is not therefore presented in this report. The evaluations in Plot 34-2 revealed a former D-shaped enclosure without internal features, probably the remains of a medieval stock pen.

As part of the earlier stages of work in 2005, a topographic survey had also been carried out on the site of a supposed cairn and enclosure in Plot 7-23 (HER site NHER MN22099). A subsequent trench evaluation revealed a relatively modern stone dump and relict field boundary ditch. The results have already been presented in a separate report (Network Archaeology Ltd 2005d).

1.4 Recommendations

The full results of the topographic survey currently await publication. The results will comprise, on a plot by plot basis:

- a basic description of the location, landuse and setting of the plot;
- a text-based description and interpretation of the recorded remains, including any visible chronological relationships between elements;
- an annotated contour plan, with an accompanying location plan
- a statement of the condition and significance of the remains, and
- relevant information from other sources, such as the results of the desk-based assessment, survey, excavation.

Cross-referencing of the survey areas with the landscape types identified in the Lancashire Historic Landscape Characterisation for the Craven area (Darlington n.d.), will assist in the landscape analysis of the relict field systems and surviving earthworks. It will allow, for example, assessment of whether there are similar or divergent patterns of field systems between different character areas, such as ancient and post-medieval enclosure.

The survey data and associated metadata, including the date of the survey and the unique identifier for the surveyed site, will be made available to the appropriate county HERs.

1.5 Illustrated Topographic Survey Sites

Table 1: Topographic survey: ridge and furrow sites in North Yorkshire 2006

Reference	Plot	NGR
FSU 015	46-10	365644 471110
	46-9	365808 471282
	46-8	365879 471362
	46-7	366119 471364
FSU 034	40-3	372908 470385
FSU 037	39-4	373250 470181
FSU 057	34-5	377393 466941
FSU 062	34-4	378260 465998
FSU 107	24-5,6 & 7	385984 454019
FSU 168	15-9	402576 454003
FSU 180	14-1	404814 453528
FSU 183	13-20	405249 453136
FSU 185	13-15	406119 452285

Table 2: Topographic survey: ridge and furrow sites in North Yorkshire not surveyed or too indistinct to be surveyed

Reference	Plot	NGR
FSU 046	36-2	375089 469703
FSU 050	35-10	376147 467034
FSU 053	35-6	376779 466996
FSU 070	33-1	378291 464744
FSU 081	28-14	378699 459528
FSU 099	26-1	383492 454354
FSU 113	24-3	386484 453611
FSU 131	20-9	394563 451983
FSU 135	20-5	395670 452460
FSU 138	20-3	395886 452911

Table 3: Topographic survey: other earthwork sites in North Yorkshire

Reference	Plot	Description	NGR
FSU 029	41-2	Enclosure	370611 470991
FSU 040	38-2	Strip field system	373645 469458
FSU 106	24-5, 6 & 7	Possible hollow-way	386034 453993
FSU 115 FSU 116 FSU 117 FSU 118	21-18	Banks and ditch D-shaped bank Strip lynchet Earthen bank	390150 452090 390271 452055
FSU 179	14-1	Strip field system	404707 453519
FSU 182	13-20	Hollow-way	405204 453146
FSU 192	12-3	Mound/Barrow	408397 450410
FSU 196	11-6	Hollow-way	409810 450646
FSU 214	6-7	Irregular earthwork	418520 448886

Table 4: Topographic survey: ridge and furrow sites in Yorkshire Dales National Park not surveyed

Reference	Plot	NGR
FSU 142	19-6	396315 453315

Table 5: Topographic survey: ridge and furrow sites in Lancashire

Reference	Plot	NGR
FSU 003	56-1	355155 468544
FSU 004	56-4	355751 463942
FSU 006	51-2	360450 470720
FSU 011	48-9	363096 471731

Table 6: Topographic survey: other earthwork sites in Lancashire

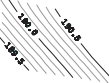
Reference	Plot	Description	NGR
FSU 009	51-1	Possible tramway associated with Melling Tunnel	360550 470750

Table 7: Topographic survey: earthwork sites in Lancashire not surveyed


Reference	Plot	Description	NGR
B76 (northern projection)	48-9	Earthwork representing former field boundary	363170 471720



Key

 Contours at 0.10 m vertical intervals

2.0	Final	Topographic Survey	DW	SN	DC
Ver	Date	Description	DM	Chk	App



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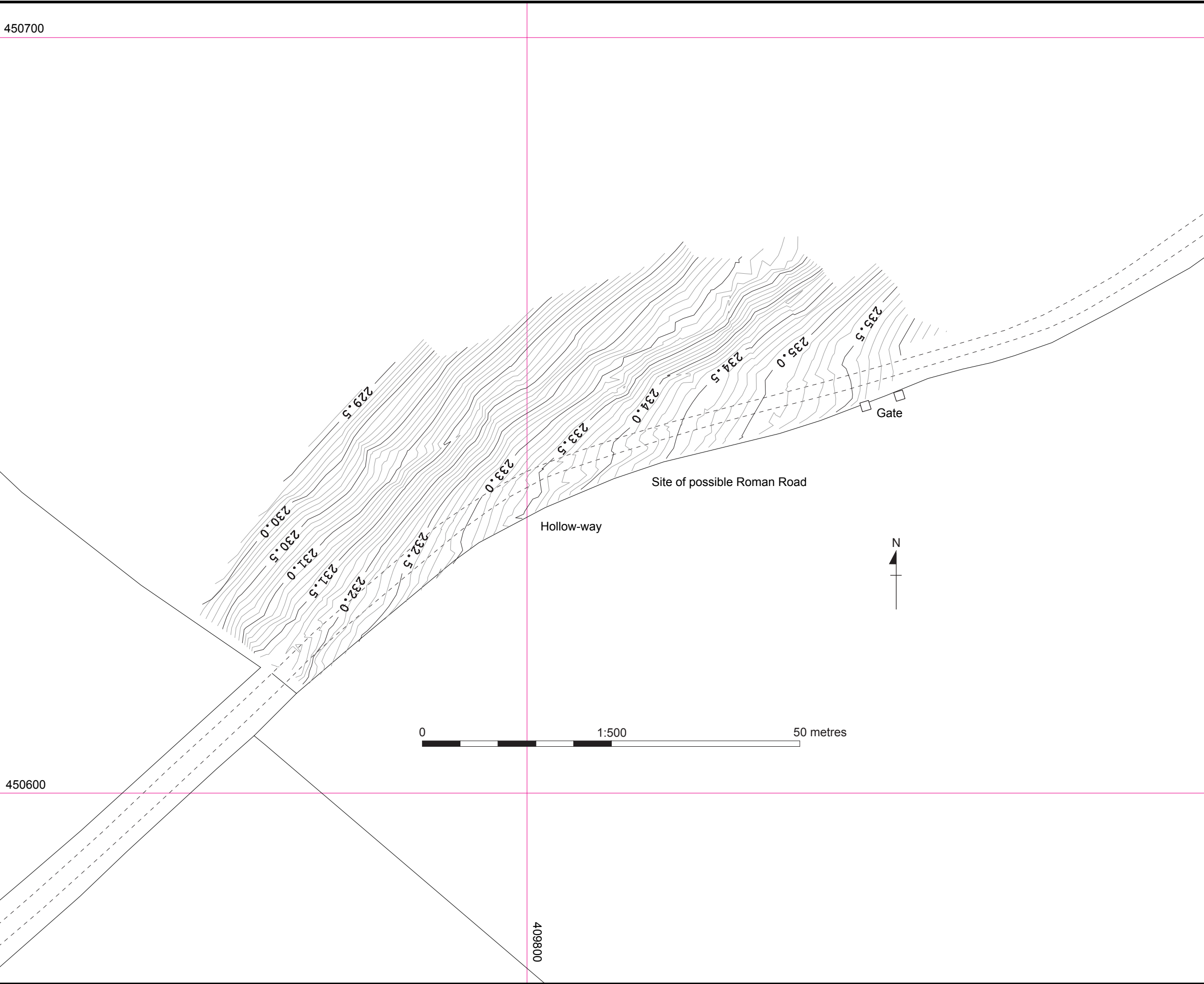
Pannal to Nether Kellet Gas Pipeline

Appendix D

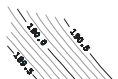
Figure 1:

Plot 6-7

Topographic survey



Key



Contours at 0.10 m vertical intervals

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Ver	Date	Description	DM	Chk	App



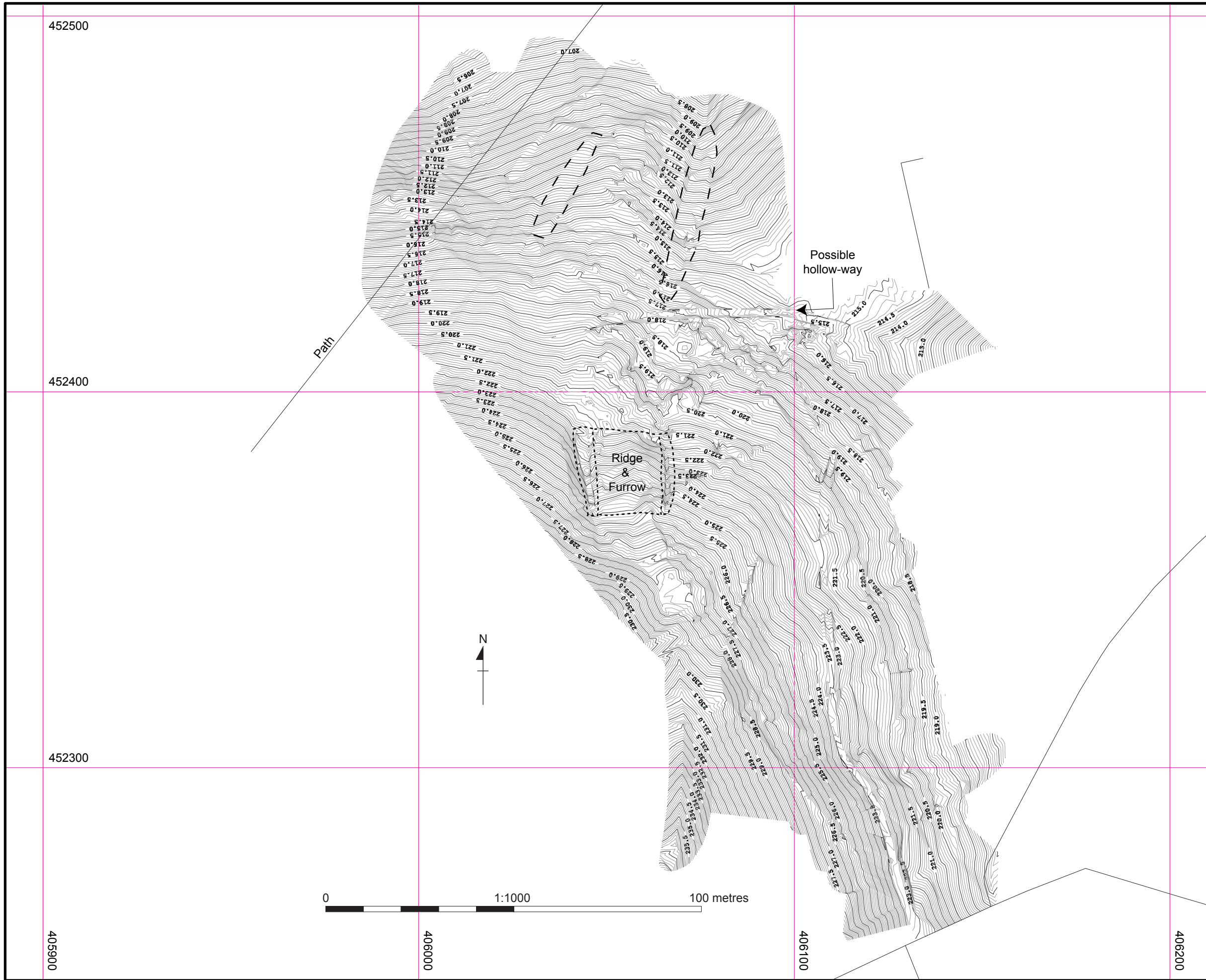
Pannal to Nether Kellet Gas Pipeline

Appendix D

Figure 2:

Plot 11-6

Topographic survey

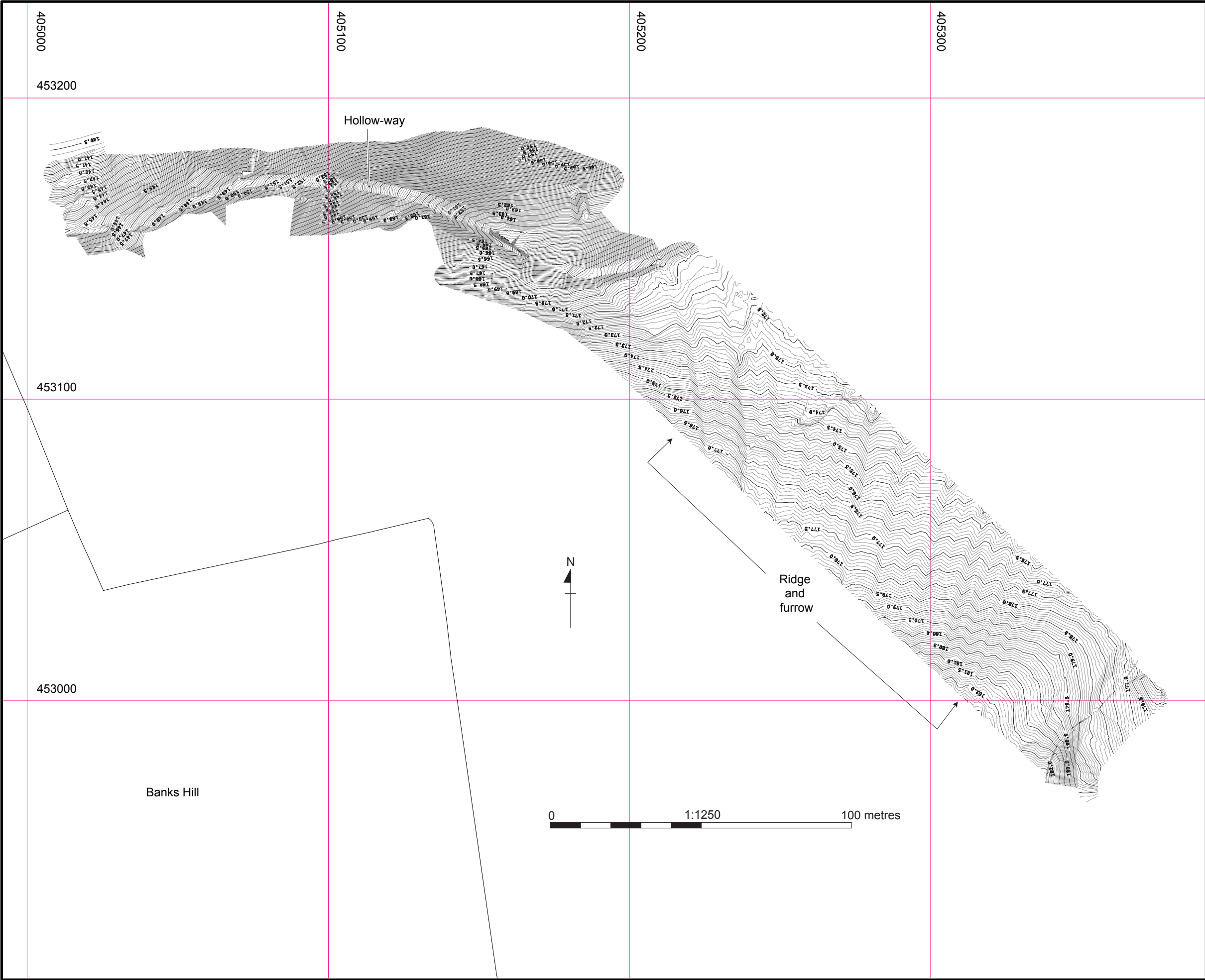


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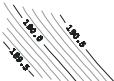
- Contours at 0.10 m vertical intervals
- Possible mining scars
- Lynchets / ridge and furrow

2.0	Final	Topographic Survey	DW	SN	DC
Ver	Date	Description	DM	Chk	App

Pannal to Nether Kellet Gas Pipeline
Appendix D
Figure 3:
Plot 13-15
Topographic survey



Key

 Contours at 0.10 m vertical intervals

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Ver	Date	Description	DM	Chk	App



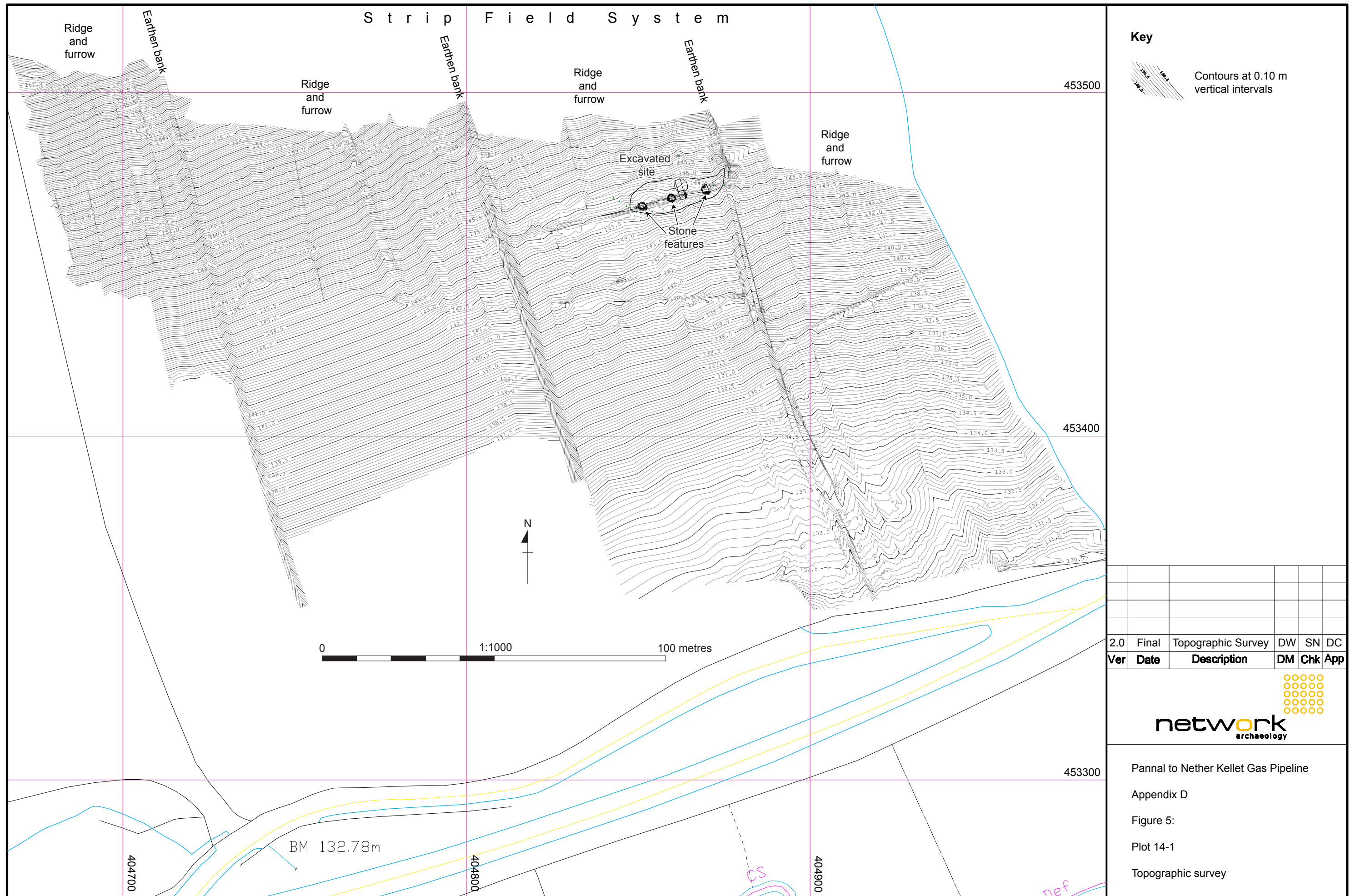
Pannal to Nether Kellet Gas Pipeline

Appendix D

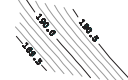
Figure 4:


Plot 13-20

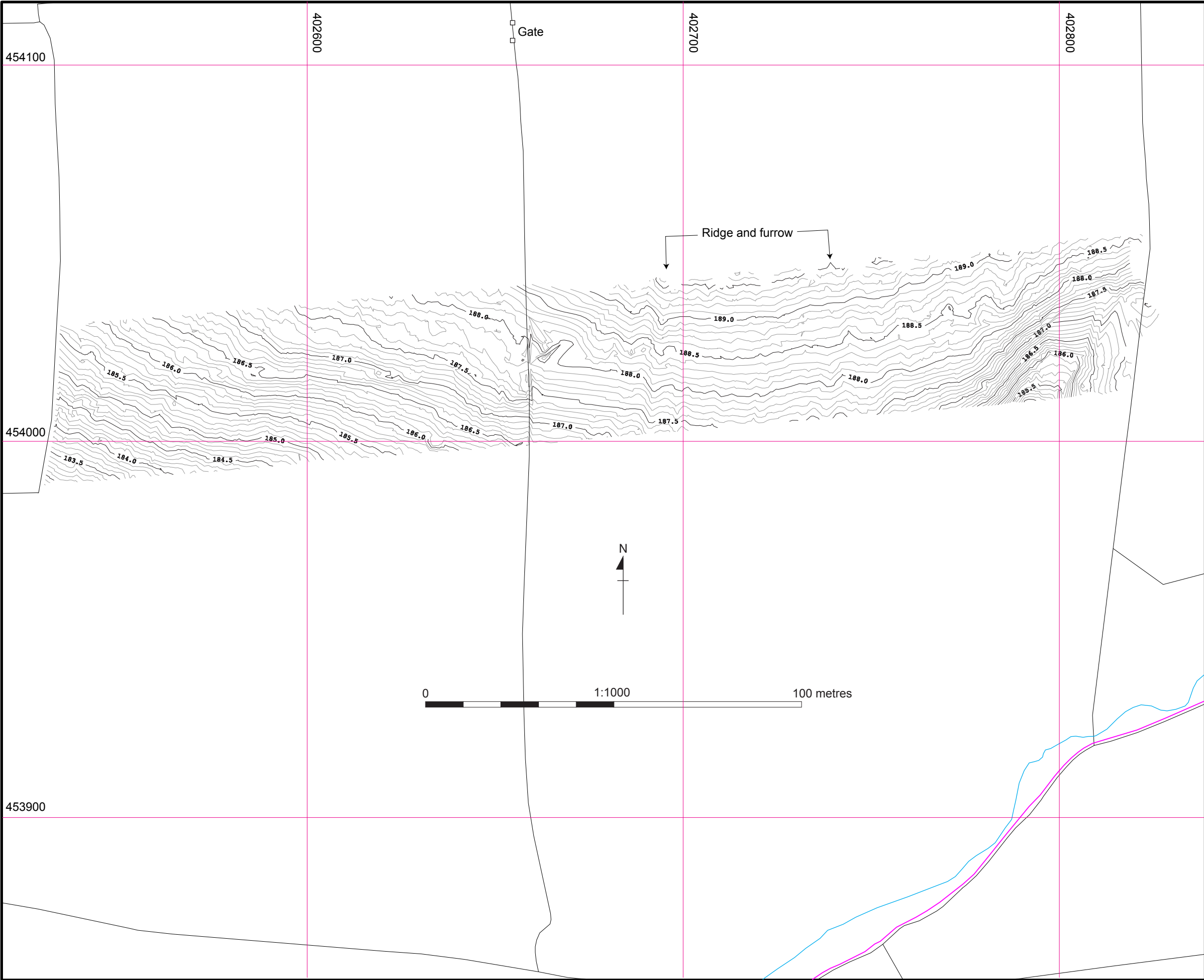
Topographic survey



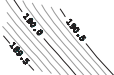
Key

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Ver	Date	Description	DM	Chk	App
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Pannal to Nether Kellet Gas Pipeline					
Appendix D					
Figure 5:					
Plot 14-1					
Topographic survey					



Key

 Contours at 0.10 m vertical intervals

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Ver	Date	Description	DM	Chk	App



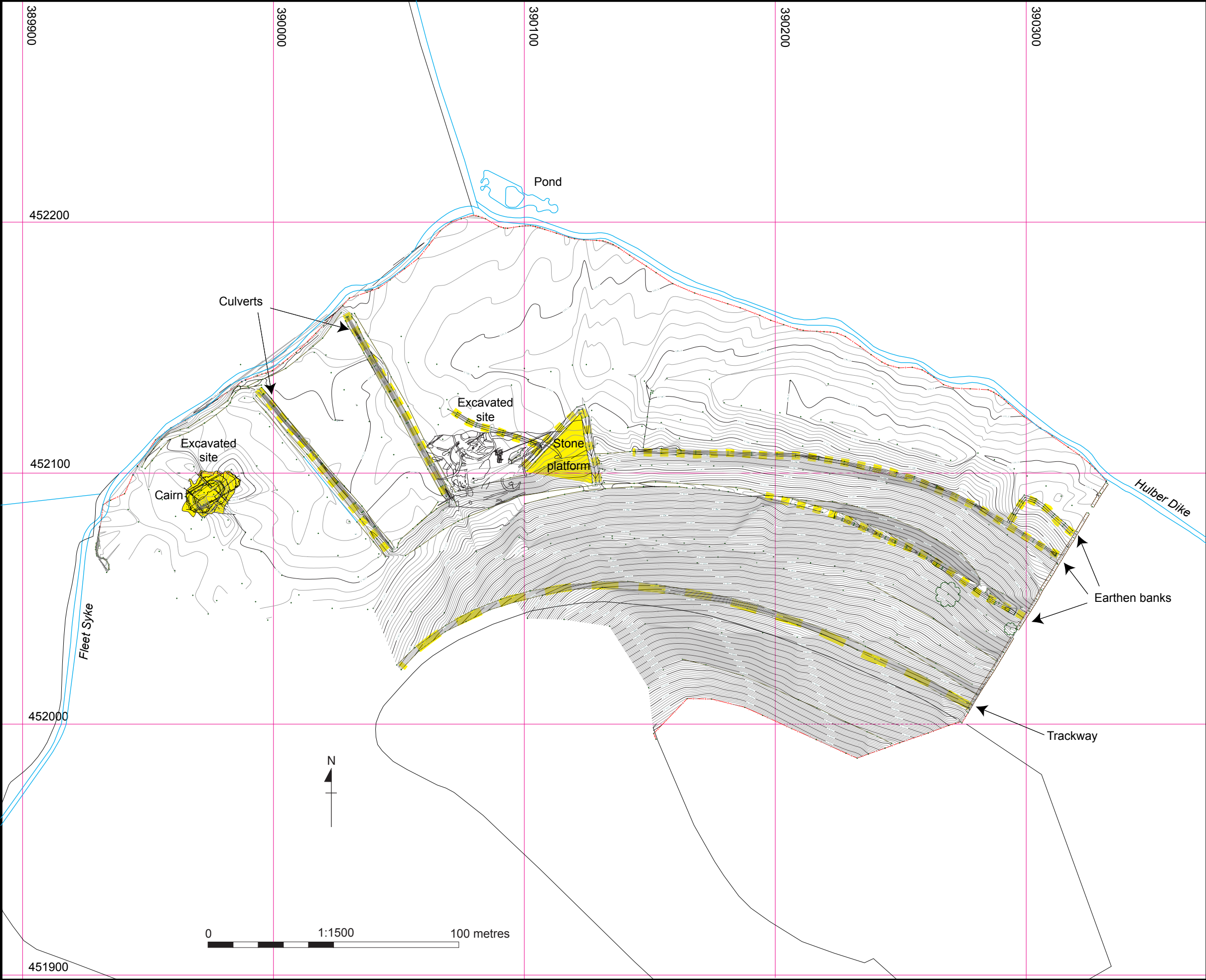
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Appendix D




Figure 6:

Plot 15-9


Topographic survey



Key

-  Contours at 0.10 m vertical intervals
-  Tree
-  Hedgerow

2.0	Final	Topographic Survey	DW	SN	DC
Ver	Date	Description	DM	Chk	App



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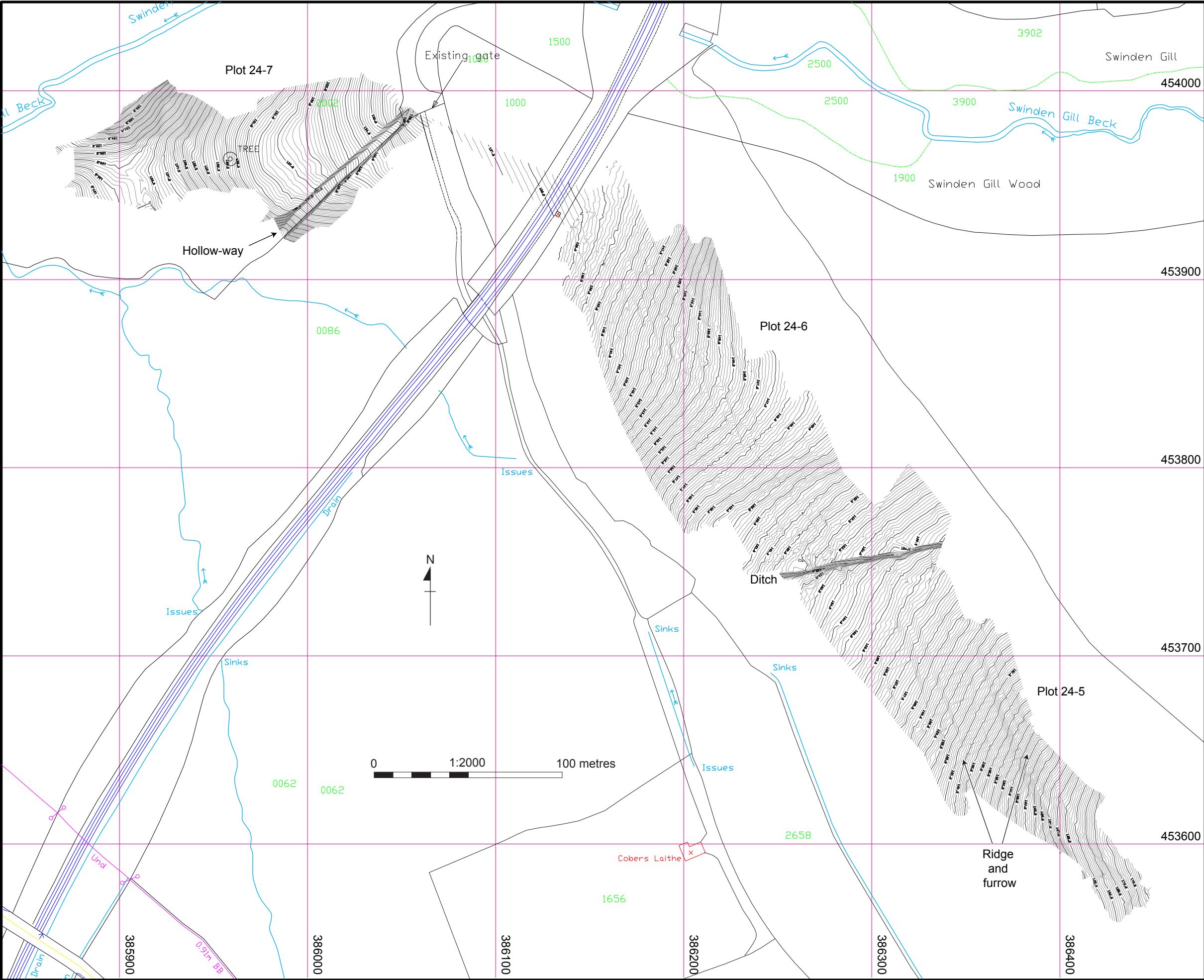
Pannal to Nether Kellet Gas Pipeline

Appendix D


Figure 7:

Plot 21-18


Topographic survey



Key

 Contours at 0.10 m vertical intervals

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Ver	Date	Description	DM	Chk	App



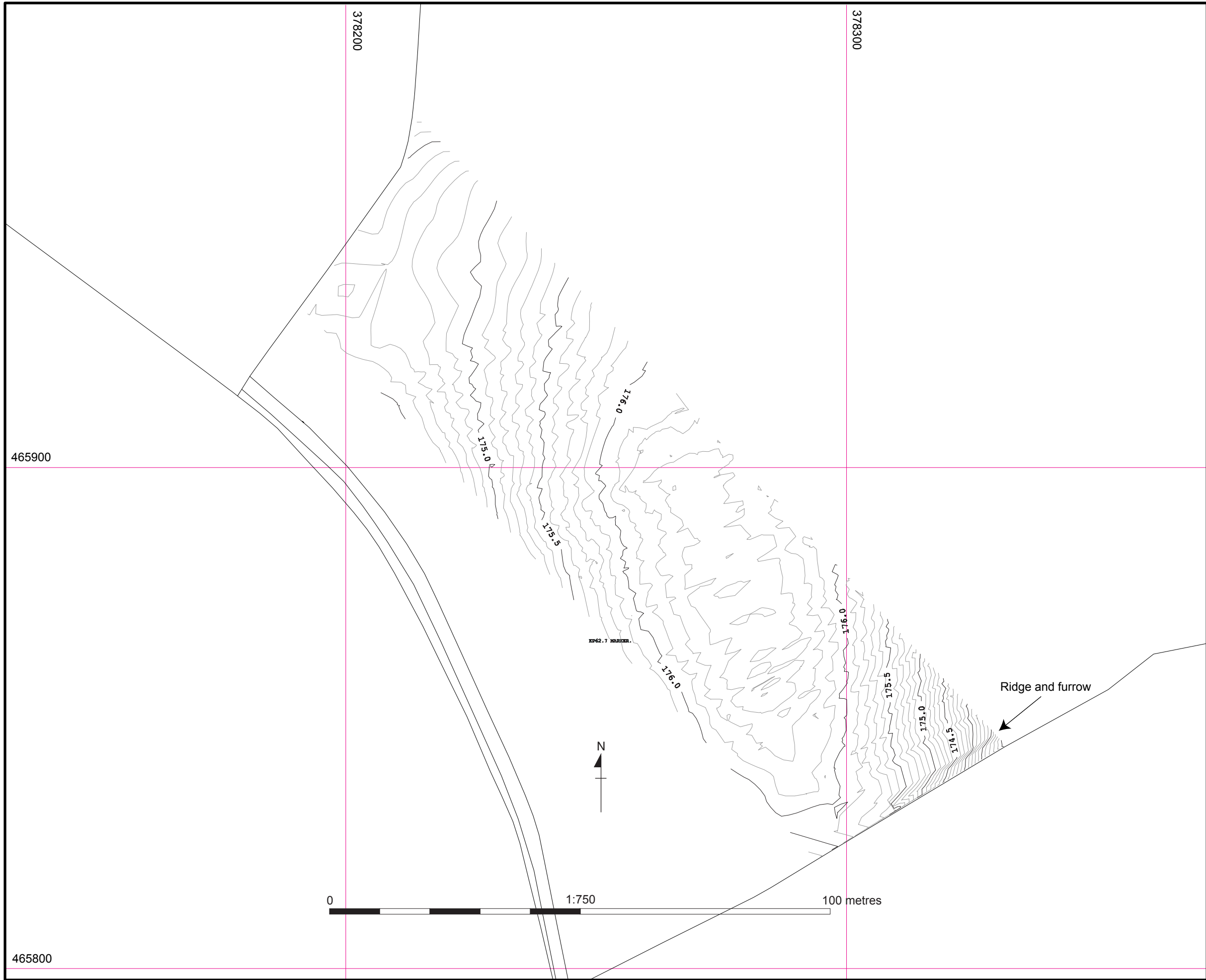
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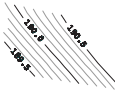
Appendix D

Figure 8:


Plot 24-5, 24-6 & 24-7

Topographic survey

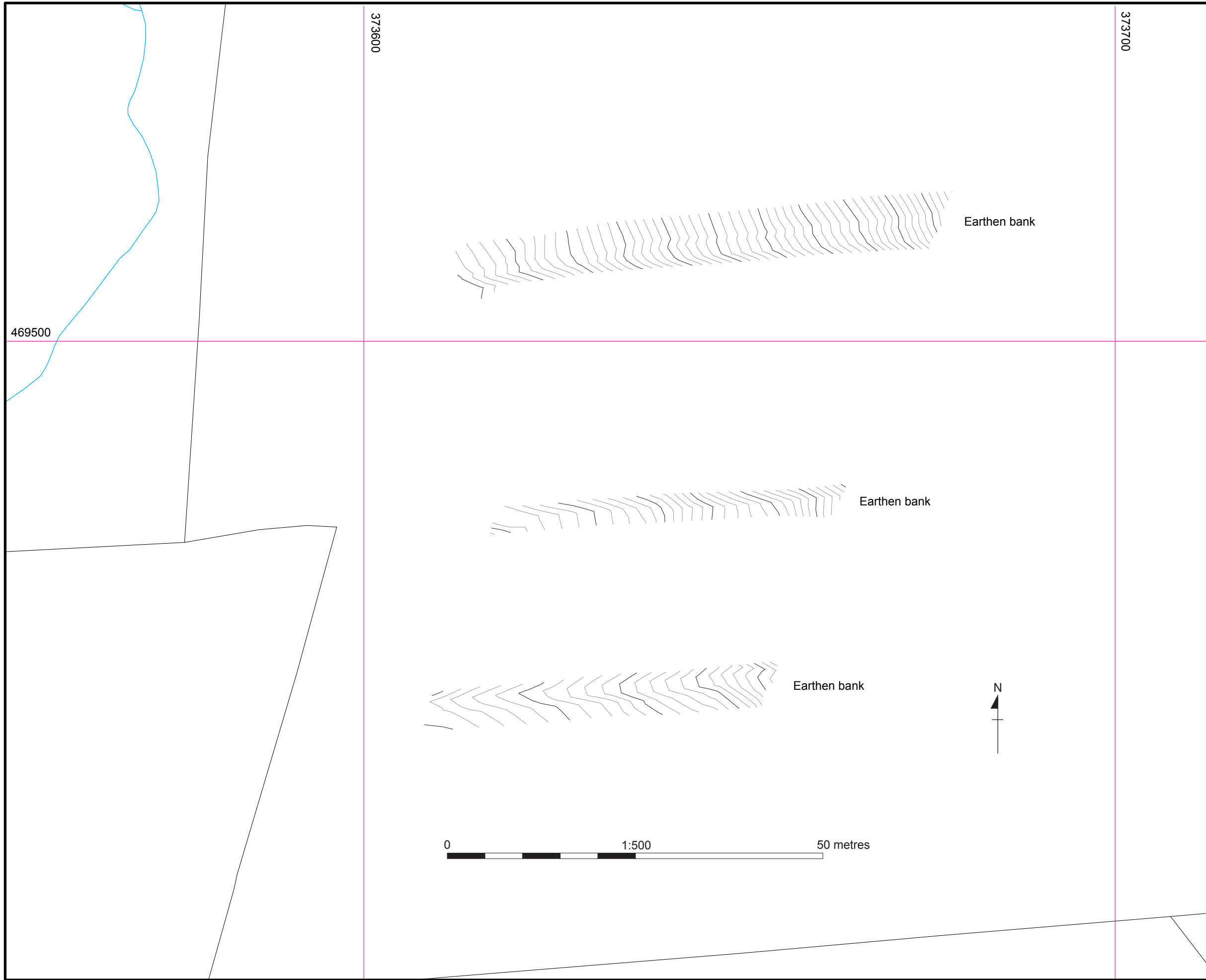


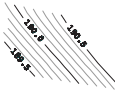
Key
 Contours at 0.10 m vertical intervals

2.0	Final	Topographic Survey	DW	SN	DC
Ver	Date	Description	DM	Chk	App




Pannal to Nether Kellet Gas Pipeline
Appendix D
Figure 9:
Plot 34-5
Topographic survey



Key
 Contours at 0.10 m vertical intervals

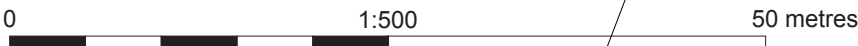
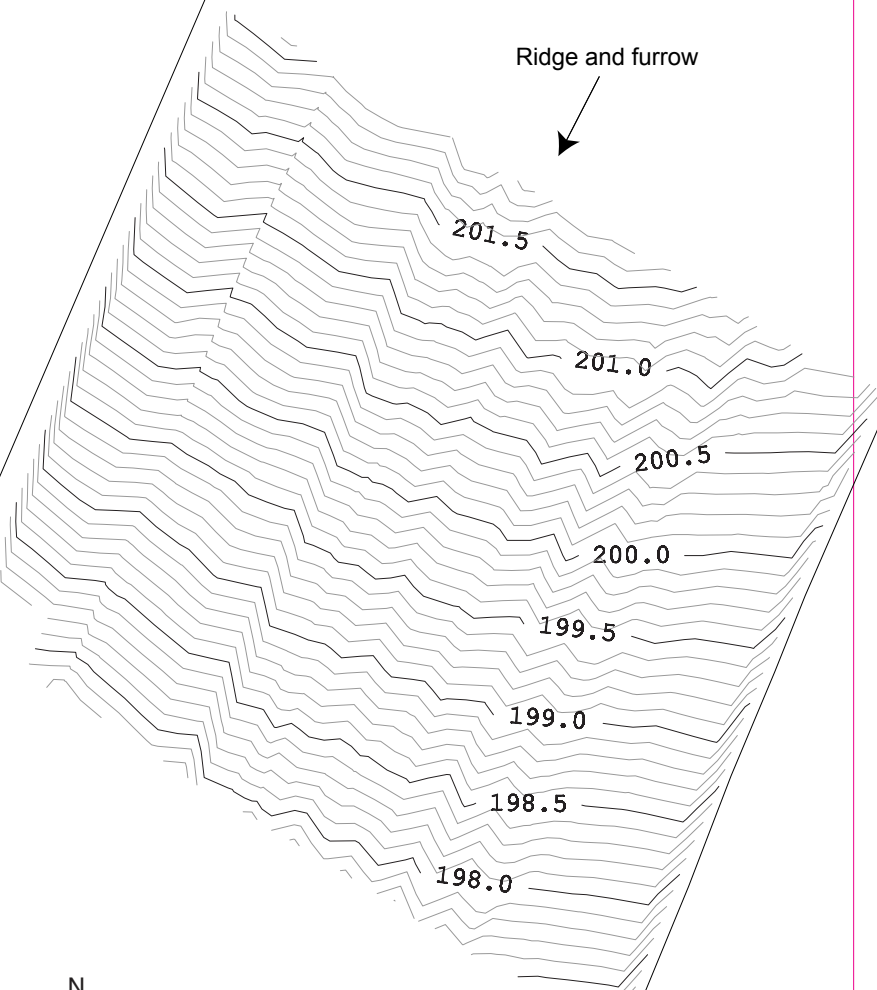
2.0	Final	Topographic Survey	DW	SN	DC
Ver	Date	Description	DM	Chk	App



Pannal to Nether Kellet Gas Pipeline
Appendix D
Figure 10:
Plot 38-2
Topographic survey

470400

372900



Key



Contours at 0.10 m vertical intervals

2.0	Final	Topographic Survey	DW	SN	DC
Ver	Date	Description	DM	Chk	App



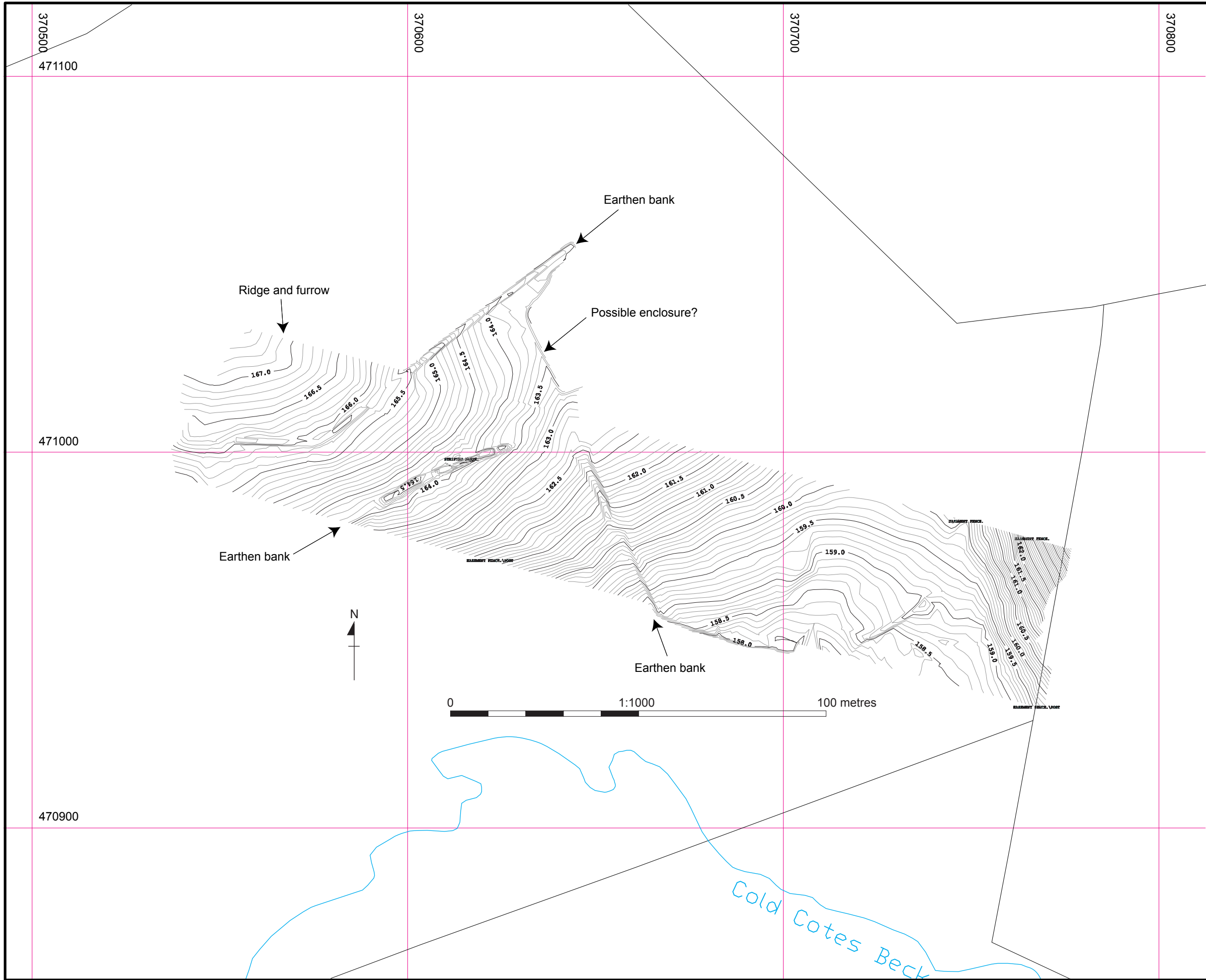
Pannal to Nether Kellet Gas Pipeline

Appendix D

Figure 11:

Plot 40-3

Topographic survey

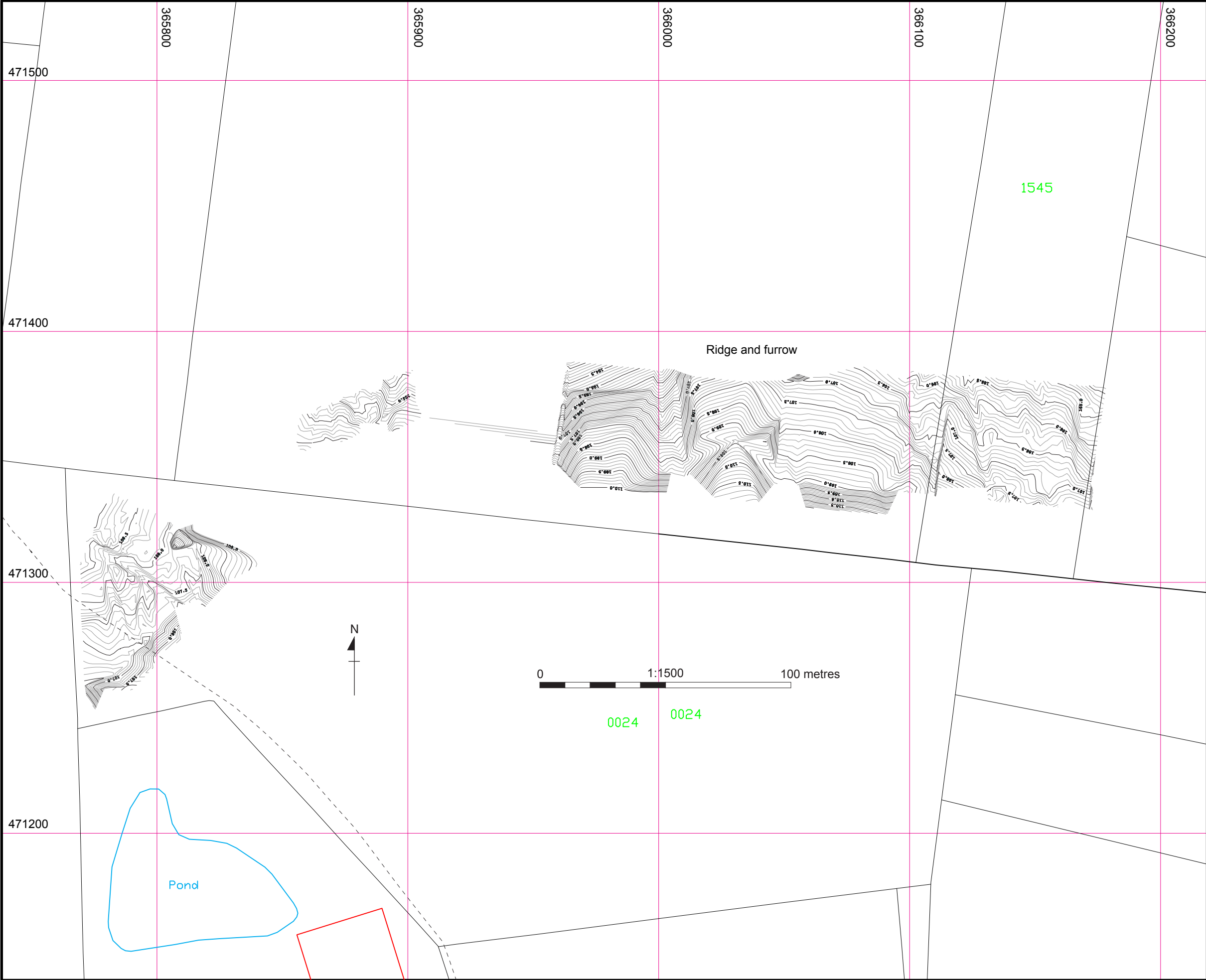


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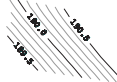
Contours at 0.10 m vertical intervals

2.0	Final	Topographic Survey	DW	SN	DC
Ver	Date	Description	DM	Chk	App

Pannal to Nether Kellet Gas Pipeline
Appendix D
Figure 12:
Plot 41-2
Topographic survey



Key

 Contours at 0.10 m vertical intervals

2.0	Final	Topographic Survey	DW	SN	DC
Ver	Date	Description	DM	Chk	App



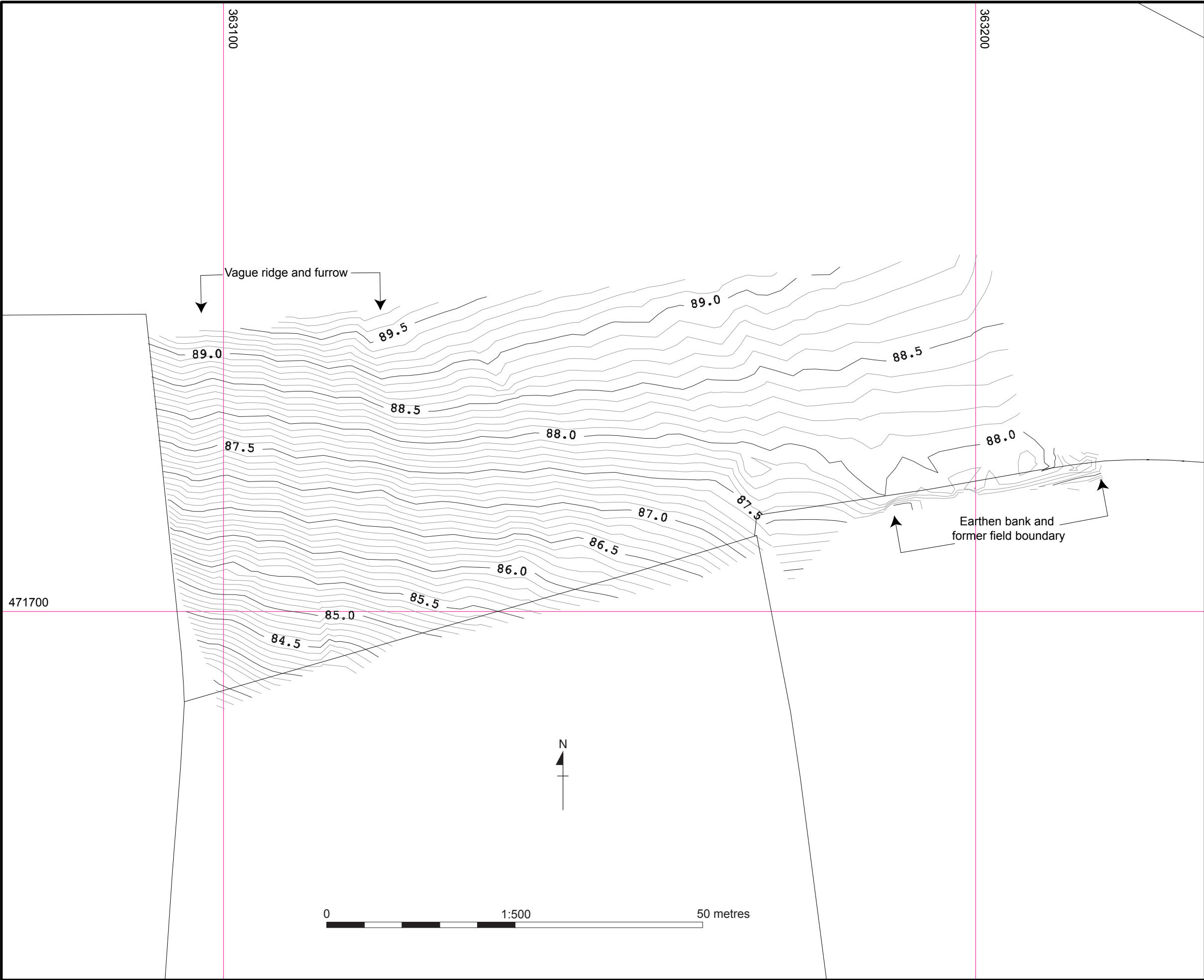
Pannal to Nether Kellet Gas Pipeline

Appendix D

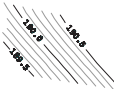
Figure 13:

Plot 46-10,9,8,7

Topographic survey



Key

 Contours at 0.10 m vertical intervals

2.0	Final	Topographic Survey	DW	SN	DC
Ver	Date	Description	DM	Chk	App



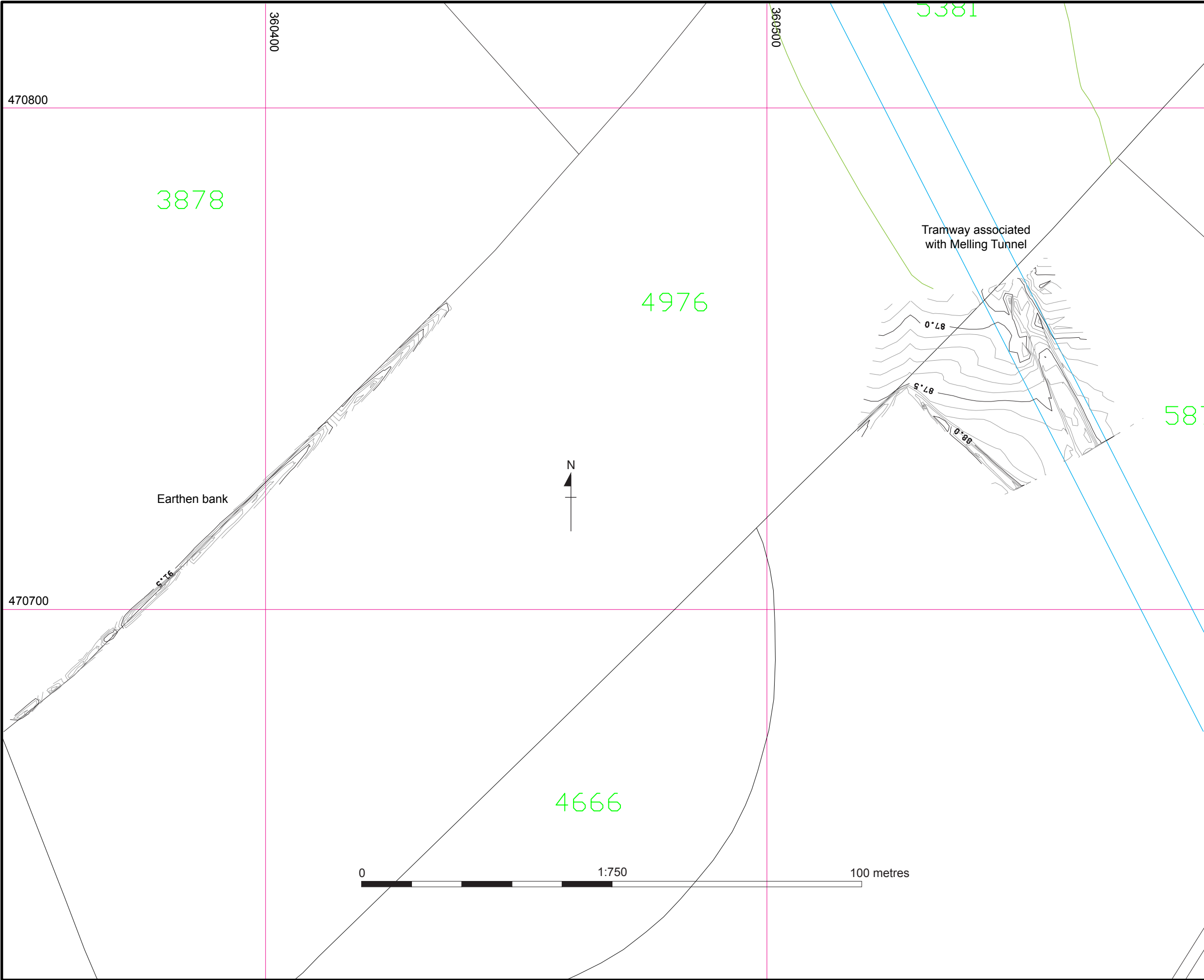
Pannal to Nether Kellet Gas Pipeline

Appendix D

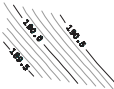
Figure 14:

Plot 48-9


Topographic survey



Key

 Contours at 0.10 m vertical intervals

2.0	Final	Topographic Survey	DW	SN	DC
Ver	Date	Description	DM	Chk	App



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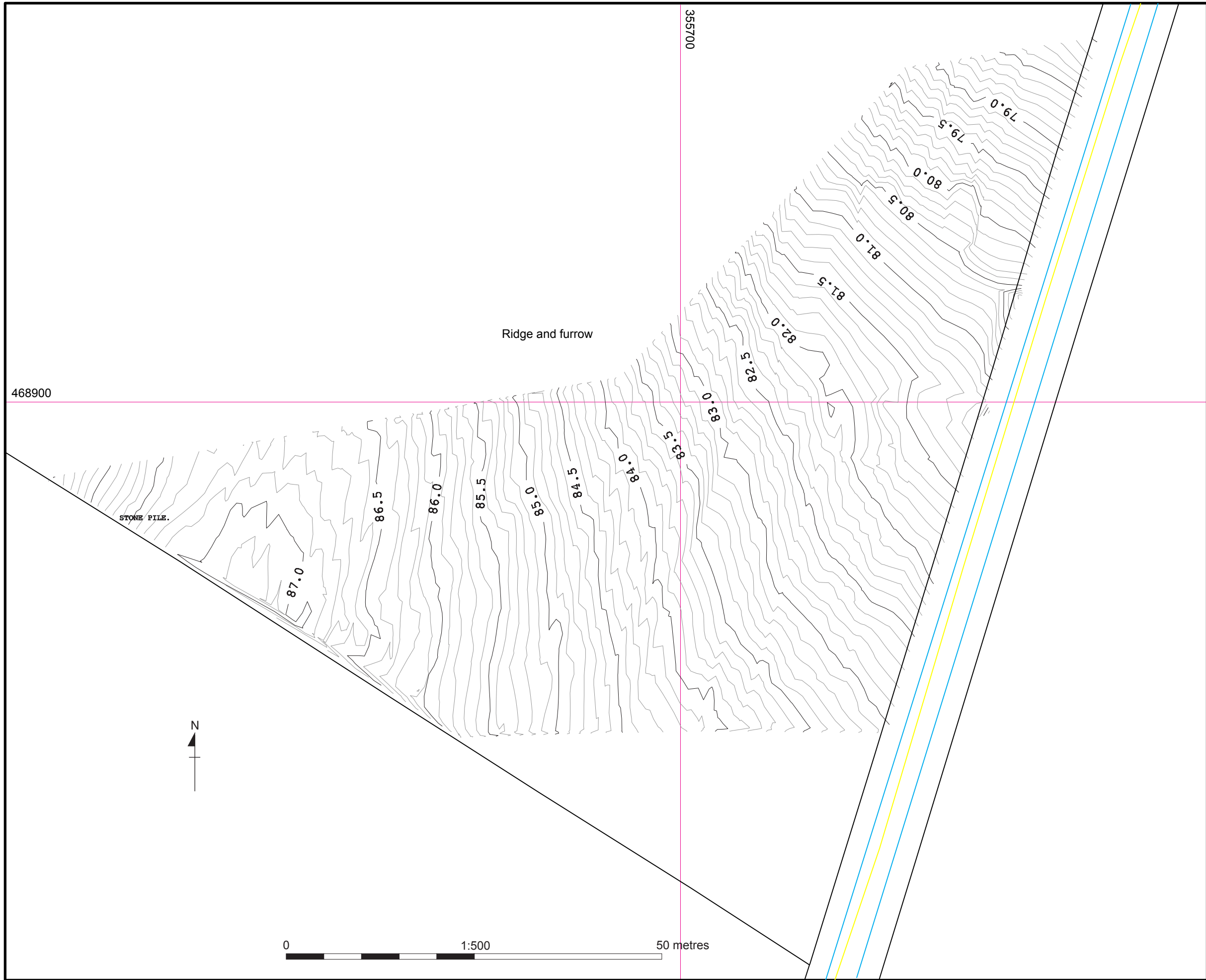
Pannal to Nether Kellet Gas Pipeline

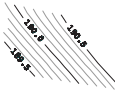
Appendix D

Figure 15:


Plot 51-1 & 51-2

Topographic survey

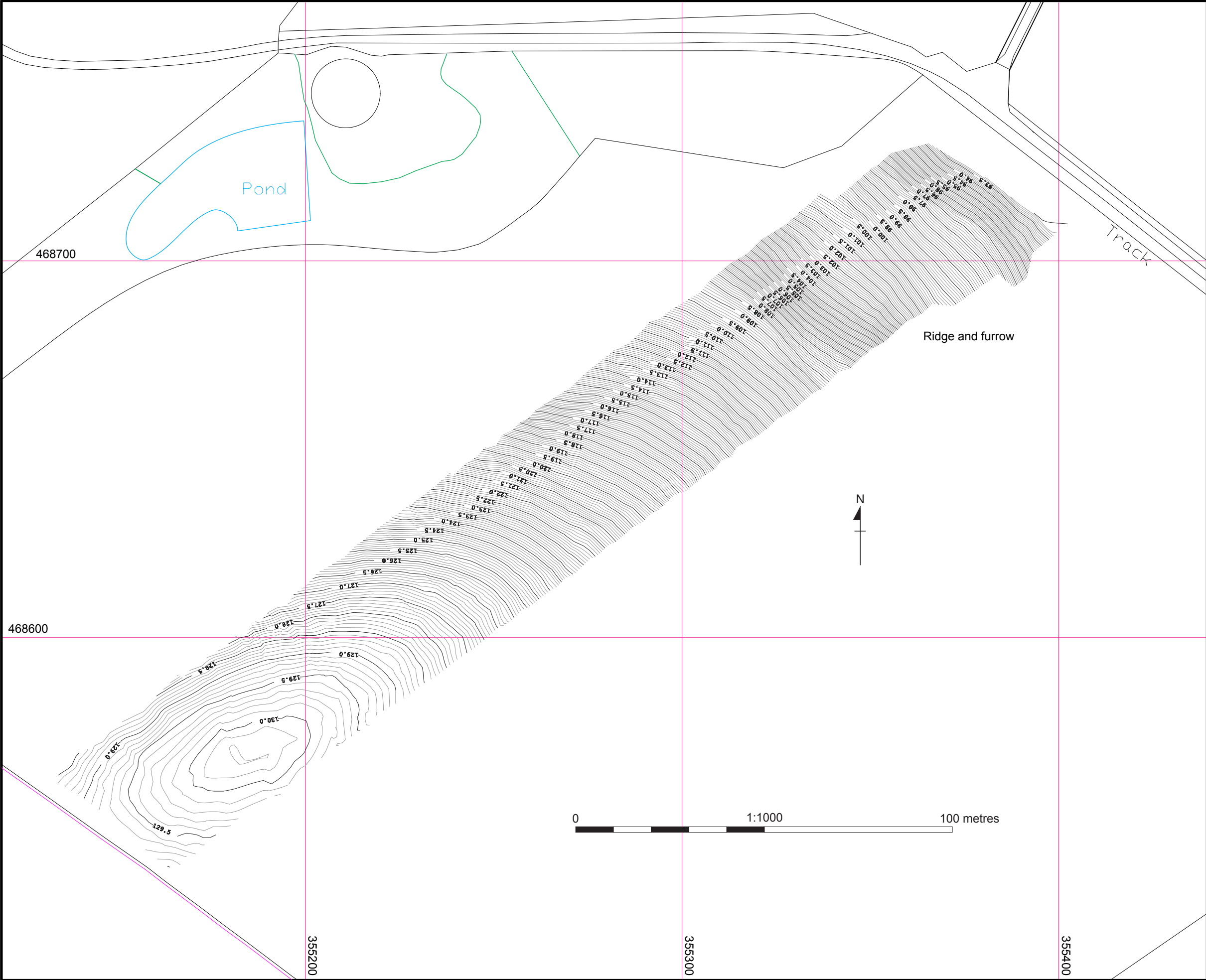


Key
 Contours at 0.10 m vertical intervals

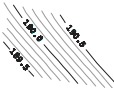
2.0	Final	Topographic Survey	DW	SN	DC
Ver	Date	Description	DM	Chk	App



Pannal to Nether Kellet Gas Pipeline
Appendix D
Figure 16:
Plot 56-1
Topographic survey




Key



Contours at 0.10 m vertical intervals

2.0	Final	Topographic Survey	DW	SN	DC
Ver	Date	Description	DM	Chk	App



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Pannal to Nether Kellet Gas Pipeline

Appendix D

Figure 17:

Plot 56-4

Topographic survey

Appendix E

Palaeoenvironmental Programme

1 INTRODUCTION

The desk-based assessment drew attention to the potential for palaeoenvironmental evidence associated with the floodplains of a number of rivers: the Lune, Greta, Wenning, Ribble, Aire and Wharfe, along with those of smaller streams, and stressed that these areas, together with a number of recorded palaeochannels present particular difficulties in terms of managing archaeological risk. Twenty-six specific areas with palaeochannels were identified by the desk-based assessment, mainly from aerial photographs.

This need for a separate palaeoenvironmental assessment was incorporated into the Environmental Statement (MWH 2005), which stated that because of the difficulties in detecting archaeological remains in areas of deep alluvium in advance of construction, and because of the potential cost of recovering and analysing organic and palaeoenvironmental remains, adequate resources would be put in place for dealing with unexpected remains of this kind during construction. It was agreed that the palaeoenvironmental assessment would include:

- a review of previous project documents: desk-based assessment and field survey report
- familiarisation with the landscape of the route: topography, hydrology, geology, soils and landuse
- a review of available data: boreholes, aerial photos, geophysical survey (PCG 2005), LiDAR (Challis 2005)
- an assessment of potential of watercourse channels and palaeochannels
- recommendations for further work: walkover, auger survey, pre-construction sampling and sampling during construction watching brief.

James Rackham of the Environmental Archaeology Consultancy was commissioned to carry out this assessment in May 2005. It included one day spent walking five of the river-crossing floodplains and prospecting for the survival of organic deposits by the selective hand augering of palaeochannel deposits. All works were undertaken in accordance with the recommendations outlined in recognised environmental standards documentation (Association for Environmental Archaeology, 1995, Working Papers of the Association for Environmental Archaeology, Number 2; English Heritage, 2002; EIR 2005). The accumulated evidence is presented in Table 1 below.

2 PALAEOENVIRONMENTAL ASSESSMENT

James Rackham

The locations of all palaeochannels noted from air photographs in the archaeological desk-based assessment (ADBA) were cross-referenced to the geophysical data and the LiDAR images, and scored for positive or negative indications of a palaeochannel or other palaeoenvironmental potential. At all locations where the geophysical survey recorded evidence for the presence of channels or boggy ground, the LiDAR plots were also scanned for indications of topographic evidence for a former channel. The results of the analysis of the LiDAR data of the major crossing points (Challis 2005) has been reviewed and the data further scanned for evidence of possible channels on the minor tributary streams that cross the route.

Finally five of the river crossings were reviewed on the ground by walking the route of the pipeline across their floodplains. At each location, a hand auger was used to assess the character of the sediments underlying the floodplain or within a palaeochannel to a maximum depth of 2.0m. Local exposed river bank sections were also observed where accessible, to assess the nature of the floodplain sediments further.

This survey methodology was limited by a number of factors. LiDAR can only discern a channel which still shows a topographic signature on the ground surface. Ancient palaeochannels may also exist at the major river crossing points and have left no surviving topographic signature. The LiDAR

data has insufficient resolution to pick up palaeochannels on the smaller streams. Also, the geophysical survey was not continuous, so several areas where palaeochannels have been recognised from the air photographs and the LiDAR data have no corresponding geophysical data.

2.1 Upland Palaeochannels identified during the ADBA

Several of the palaeochannels recorded during the ADBA are noted as soil marks but were not observable on the LiDAR plots. These almost certainly reflect former run off or erosion channels where soils are deeper and retained moisture but may never have been permanent stream channels. They are consistently located near existing streams but not close enough to represent former channels of that stream. Precise definition can only be assessed by consideration of the topography on site, a sloping context indicating a run-off channel, while a floodplain context would suggest a former stream channel.

Most of the palaeochannels noted in the ADBA (Table 1) are located in the upper reaches of the tributary streams where soil depth is minimal and floodplain deposits are extremely limited except in areas of bog. It is very unlikely that any of these run-off or palaeochannels would yield deposits of palaeoenvironmental value, because they are likely to be well drained, shallow and inorganic. The most promising areas for palaeoenvironmental evidence along the pipeline route where it crosses the hills are likely to be hollows, bogs and boggy areas where a suspended water table has encouraged the formation of raised bog or peat formation, rather than the stream valleys. Of the palaeochannels recorded in the ADBA, only the oxbow channels adjacent to the Clapham and Austwick Becks in Plots 36-5, 36-6 and 36-7 have any significant potential for palaeoenvironmental study.

2.2 Geophysical Data

Most of the palaeochannels identified during the ADBA were located in areas which were not surveyed using geophysics; however, the geophysical survey identified several locations where palaeoenvironmental deposits might be expected.

Geophysical evidence can give a positive indication of potentially suitable deposits for environmental study, and on the available evidence, the area of highest potential is in the vicinity of the Clapham and Austwick Becks on the northern floodplain of Kettles Beck. The ADBA notes several oxbows in this area, while the geophysics plots indicate palaeochannels crossing the route, perhaps five in number. Waste Beck near Cold Cotes and Wigglesworth Beck, may also be worthy of study. A possible feature in the geophysics on the east bank of the River Wharfe probably reflects a bank edge rather than a channel, and is unlikely to be productive. Other locations have either produced no evidence for palaeochannels or very doubtful geophysical readings suggesting little potential, while no survey was possible in two boggy areas.

Key to table 1 below:

X	Location recorded or present in the survey plots
no	No palaeochannel recognised in the data
yes	Palaeochannels identified (?or possibly present)
doubtful/very doubtful	Likely to produce no useful palaeoenvironmental deposits on this particular evidence
poss (possible)	May possibly have palaeoenvironmental deposits
poor	Will almost certainly have deposits with some palaeoenvironmental potential
OK	Has deposits of palaeoenvironmental potential
off-route	Channels present but not on the pipe alignment

Table 1: Locations of palaeochannels and boggy areas identified from the ADBA, Geophysics and LiDAR evidence

Crossing	Plot	Type	ADBA	Geophysics	LIDAR	Walkover
1.Middle Highfield	57-1	palaeochannel: soil mark	X: yes, doubtful	-	X: no	
2. Snab Beck, Higher Snab Farm	56-2, 56-2a	palaeochannel: soil mark	X: yes, doubtful	-	X: no	
3.Lune Crossing	52-1 to 52-6, 53-1	river floodplain, palaeochannels		-	X: poor, at least 7 channels	X: poss
4. Spinks Gill Beck	51-9a	palaeochannels: soil mark	X: yes, doubtful	X - no	X: no	
5. Willie Gill, Melling	51-7	palaeochannels	X: yes, doubtful	-	X: no	
6. Waste Beck, Cold Cotes	41-1, 40-15	stream		X- yes?, poss/doubtful	X: 1 channel? doubtful	
7. Clapham & Austwick Beck	36-5, 36-7	river floodplain, palaeochannels	X: yes	X: yes 4/5 channels	X: 4 channels:-poss/poor	X: poor
8. Storth Gill Beck	East 32-2	palaeochannel	X: off route	X: no	X: no	
9. Swainstead Knot, Rathmell	31-2	palaeochannels	X: yes, doubtful	X: no	X: no	
10. Rathmell Beck, Rathmell	30-4	palaeochannels	X: yes, doubtful	X: no, v doubtful	X: no	
11. Hesley Beck, Rathmell	28-16, 29-1	stream		-	X: yes?, doubtful	
12. Boostagill, Rathmell	28-9, 28-10	boggy area, former beck?		X: no, v doubtful	X: yes?, poss	
13. Wigglesworth Beck, W'worth	27-4, 27-5	stream, palaeochannels		X: no, poss/ doubtful	X: yes?, poss	
14. Deep Dale Syke, Deep Dale	26-4 to 26-9	stream		-	X: no	
15. Ged Beck, Halton West	25-12, 25-13	palaeochannels: 2 places	X: yes, doubtful	-	X: no, doubtful	
16. Ribble Crossing, Swinden	25-1, 25-2	river floodplain		X: no, doubtful	X: no, doubtful	X: doubtful
17. Aire crossing	North 20-7	palaeochannel	X: off route	-	X	
18. Aire crossing	20-5, 20-6	floodplain & palaeochannels		-	X: yes	X: OK
19. Woomber Beck, Thorlby	19-6	palaeochannel	X: off route?	-	X	
20. Ings Beck, Draughton	13-21	stream		-	X: no	
21. Wharf Crossing, Addingham	12-3	river floodplain		-	X: no, doubtful	X: doubtful
22. Wharfe Crossing , east side	12-2	channel edge?		X: yes?, doubtful	X: no	
23. Dean Beck, Langbar	11-3, 11-4	boggy area		X: no, doubtful	X: no	
24. Bow Beck, Middleton	9-1, 9-2, 9-3, 9-4	stream		X: yes?, v doubtful	X: no	
25. Hob Beck?, Denton	7-22, 7-23, 7-24, 7-25	palaeochannels	X: off route	-	X: no	
26. Hundwith Beck, Askwith	7-18	stream		X: no	X: no	
27. Hundwith Beck, Askwith	7-18	palaeochannel	X: yes?, doubtful	X: no	X: no	
28. River Washburn, Farnley	3-2	river		X: no	X: yes?, poss	
29. Holbeck, Leathley	2-4	stream		X: yes?, v. doubtful	X - poor	

2.3 LiDAR Survey

The LiDAR survey identified significant palaeochannels at three locations, and possible channels at four other locations. The latter include Waste Beck, Boostagill, Wigglesworth Beck and the River Washburn (Table 1), with two of these being recorded by the geophysics surveyors as boggy. The three major palaeochannel complexes on the pipe route identified from the LiDAR data (Challis 2006) are located at the Lune Crossing, the Clapham and Austwick Beck crossings and the Aire crossing. At each of these locations palaeochannels are clearly visible and multiple (see Figs 1, 5 and 11).

2.4 Walkover survey

Five locations were chosen for a walkover, to confirm the results of the documentary searches and superficially assess the character of the landscape and floodplain sediments.

2.4.1 Lune Crossing

At the Lune crossing the length of floodplain crossed by the pipeline is approximately 1.25 km. and the LiDAR shows several channels (Plate 1). There are three clearly visible channels on the north bank, two in Plot 52-6 (the northern one is illustrated in Plate 2) and one in Plot 53-1 with a possible second. The western channel in Plot 53-1 appears to be a former channel of the tributary stream running in from the west while the second possible channel to its east appears to be part of the Lune system. The two channels in Plot 52-6 reflect channels associated with the main river. A borehole sunk in the hollow of the channel illustrated in Fig. 2, the western of the channels in Plot 52-6, was cored to a depth of two metres. The top 1.75 metres was composed of brown oxidised silts, with the lower 0.25m becoming progressively more sandy. The auger was stopped by stone at 2.0m. There were no palaeoenvironmentally important deposits in this sequence, and the water table was not reached.

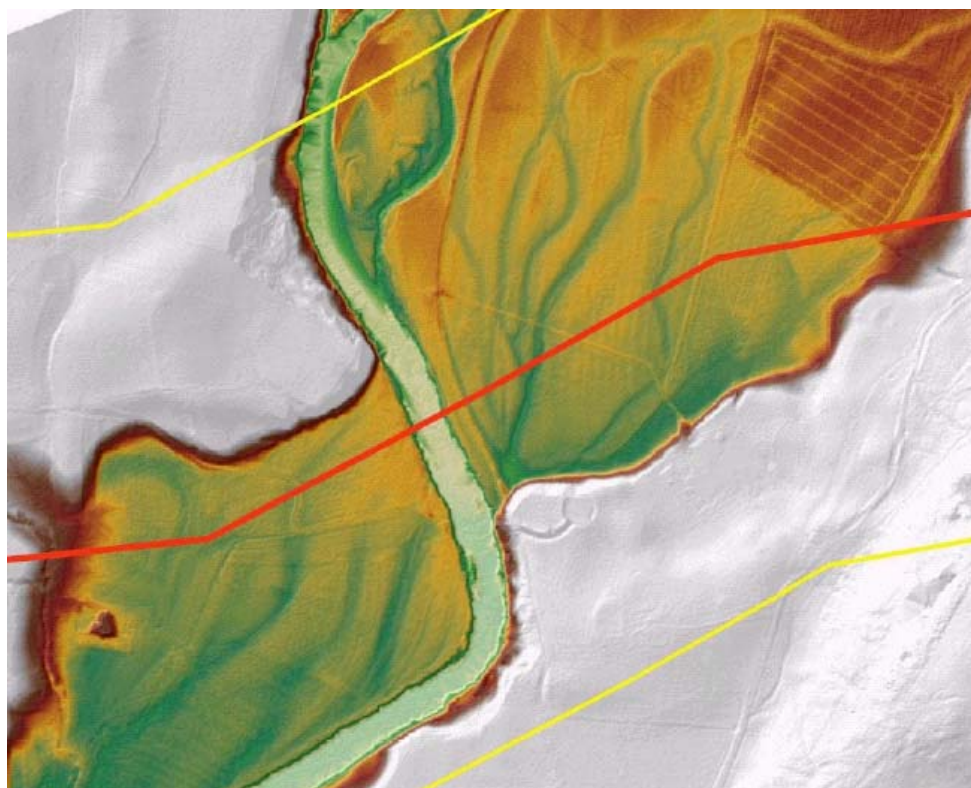


Plate 1: LiDAR plot of the Lune crossing taken from Challis 2006, Fig. 22 (no scale)



Plate 2: Plot 52-6, looking north-west. A palaeochannel crosses the picture from the sheep in the centre right to the fence line on the roadside.

An exposure in the present river bank gives a good illustration of the upper 2.5m of alluvial sediments on the floodplain floor (Plate 3). Approximately 2.5m of the profile is made up of brown alluvial silts with rare cobbles. Beneath these silts, beds of river cobbles are visible, evidence of rapid flow or spate conditions, probably representing an earlier river bed now being eroded out by the modern river.



Plate 3: Exposed section of the bank of the River Lune just west of the proposed crossing point, illustrating over two metres of brown alluvial silts with occasional cobbles, overlying beds of cobbles and pebbles.

The walking-stick placed in the centre of the picture as a scale is 1m long.

On the south bank of the Lune, the LiDAR suggests at least five palaeochannels (Plate 1), all of which are visible on the ground. Three of these channels lie in Plot 52-5, two appearing to meet at a point that the pipeline crosses the field (plate 4). These may relate to the main channel of the river, although they appear on the LiDAR plot to derive from a subsidiary stream entering the valley from the east,

which may be a former course of the Willie Gill on the floodplain and perhaps the Old Lune. A fourth channel is visible on the eastern side of Plot 52-4 and appears to be another channel of the same system. Another two palaeochannels are visible in Plots 52-1 to 52-3. These fields are very slightly raised above the adjacent floodplain, and the channels are associated with former courses of the Spinks Gill Beck.



Plate 4: The palaeochannel runs down the centre of the picture west towards the bridge; a second is visible in the grass to the right. The pipeline crosses where these two channels meet.

The channel visible in Plate 4 was augered to a depth of 1.7m through clean brown silts with no evidence for any anaerobic conditions.

A characteristic of almost all of these channels is that they may be flood scour channels rather than former main channels of the River Lune. Very clear old courses of the River Lune are visible as substantial meanders north of the pipeline corridor, but not on its alignment. The channels visible on the LiDAR are fairly linear, and may represent scour channels made by flood waters from the main river and its tributary streams during periods of high run-off. The present river channel is at its maximum west to east meander, hugging the valley side upstream on the west side and downstream on the east side, and no oxbow or cut off channels similar to those immediately to the north occur. The palaeochannel in Plot 52-6, illustrated in Plate 1, may be a candidate for a former course of the main river.

The LiDAR survey is unable to discern palaeochannels that are completely filled and no longer showing a surface topographic signature. The form of the valley suggests that, at some point in the past, the river flowed in an opposite meander, and such a channel may be buried beneath the floodplain silts.

2.4.2 Clapham and Austwick Becks

The ADBA, the LiDAR and the geophysical survey all indicate the presence of palaeochannels at the point where the pipeline crosses the Clapham and Austwick Becks on the northern floodplain of the Kettles Beck, a tributary of the River Wenning (Table 1, Plate 5). This stretch of the pipeline route, approximately 720m in length, was walked through Plots 36-5 to 36-7. Plot 36-7 lies at a slightly higher elevation than Plots 36-5 and 36-6, and has two former channels that drained what is now a dry valley immediately north. In Plot 36-6, a series of meanders are visible from the LiDAR and on the

ground (Plate 6), indicating a former course of the Clapham Beck crossing the floodplain of the Kettles Beck.

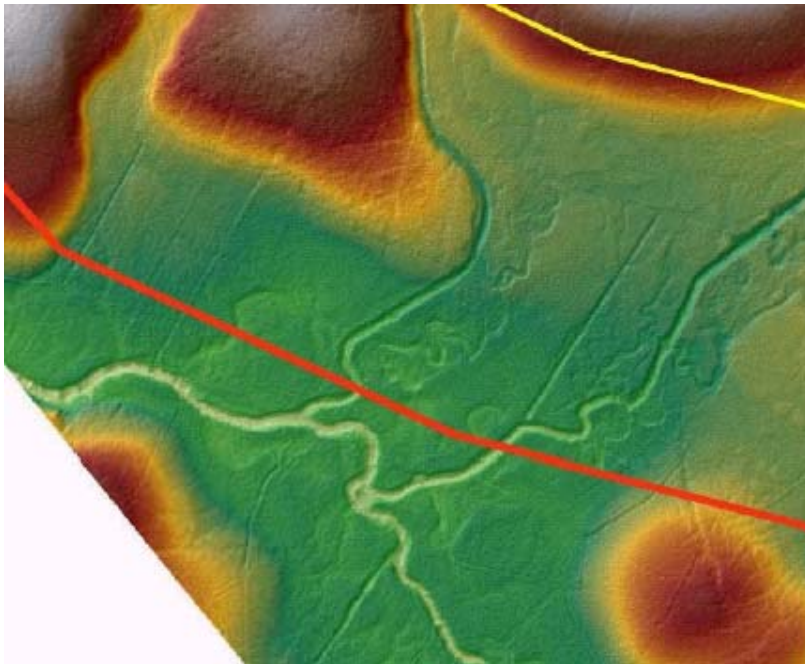


Plate 5: LiDAR plot for the Clapham and Austwick Becks, taken from Challis 2006, Fig. 24 (no scale)



Plate 6: Palaeochannel meander of the Clapham Beck in Plot 36-6. The Kettles Beck lies in the middle distance where the trees are, and the pipe route crosses at the far end of the bend.

This channel was hand-augered, revealing brown silts onto sandy silts, and stopped by stones at approximately 0.7m. No evidence of unoxidised waterlogged sediments was evident. Where the pipeline crosses the Clapham Beck the deposits are visible in section (Plate 7). Only 0.5m of silts were visible, overlying water-rolled pebbles and cobbles.



Plate 7: Section exposed in the bank of the Clapham Beck, showing 0.5m of silts over well-rounded pebbles and cobbles.

In Plot 36-5, the visible palaeochannels are associated with the Austwick Beck, which shows a similar meandering former channel crossing the floodplain. This channel is clearly visible on the ground (Plate 8) but other possible courses are also present. The deposits on the floodplain were observed near the mouth of the Austwick Beck, a little south of the actual pipeline route (Plate 9). At this location, it is clear that the floodplain deposits were laid down by the Kettles Beck (Plate 9): occasional dark grey horizons suggest some traces of organic material in the deposits, but no waterlogged sediments were visible. The water level of the Austwick and Clapham Becks at the time of the field work on 24th March 2006 was approximately 2.0m below the surface of the floodplain.

A former course of the Kettles Beck is visible on the surface on the southern edge of the pipeline easement in Plot 36-5: this channel, which is being filled in with rubbish by the farmer, is beyond the area affected by the pipeline works. The LiDAR shows several other oxbow and cut-off channels of the Kettles Beck, but they all lie south of the pipeline route. There is one probable palaeochannel of the Kettles Beck on the pipeline route in Plot 36-5, midway between the Clapham and Austwick Becks, probably a continuation of the channel that the farmer is infilling. Both Plots 36-5 and 36-6 have land drains laid at a depth of between 1 and 1.5m, which were showing a flow into Kettles Beck at the time of the visit.



Plate 8: A former meander of the Austwick Beck, with the present stream visible behind.



Plate 9: The east bank of the Austwick Beck, several metres above its confluence with the Kettles Beck. The bank comprises approximately 2m of brown silts with the bedding dipping to the south (right), indicating that the sediments were deposited by the Kettles Beck as it migrated southwards.

Although Plate 9 (above) illustrates that over 2m of silts occur on the floodplain of the Kettles Beck, the deposits are probably shallower a little to the north, where the pipeline crosses the fields. The channels at this site are clearly former courses of the two becks joining the main channel, which have been cut off, probably through artificial straightening in an effort to drain the adjacent fields, and a former channel of the main river. This drainage and the land drains may well have resulted in the loss of any organic sediments that developed in the palaeochannels after they were cut off.

2.4.3 Ribble Crossing, Swinden



Plate 10: The extent of the Ribble floodplain at the pipeline crossing at Swinden.

At the Ribble crossing at Swinden, the valley narrows: there is only 40m of floodplain on the east side of the river, and no more than 5-10 metres on the west side (Plate 10). At the pipeline crossing point, the Mallardale Beck enters the Ribble from the east, and is likely to have disrupted any channel deposits of the main river at this point. The auger penetrated through 0.8m of brown silts before hitting stones, and the present river level at the time of the visit was approximately 1.5m below the surface of the floodplain. It is very unlikely that any channel deposits survive at this location, since the main channel will have moved by lateral migration depositing against its banks, but some organic sediments within this sequence cannot be ruled out.

2.4.4 The Aire Crossing

The pipeline route crosses the Aire valley just north of Broughton Copy Farm, towards Thorlby on the north side of the valley. At this location, the route crosses approximately 500m of the floodplain of the River Aire, including the railway embankment and the canalised river on the north side (Plate 11). The valley was only walked on the south side of the railway line. The LiDAR plot shows that the route crosses two minor channel features and one major palaeochannel of the River Aire. Cut-off oxbow palaeochannels of the River Aire are prolific in this stretch of the valley, north-west of the pipeline route, but only one major channel is evident on the route, in Plot 20-7 (Plate 12). This channel was augered, but penetration was only possible through the top 0.8m before stone was encountered. The ground surface on the floor of this channel was wet, and the deposits extracted from the core included dark grey, unoxidised, slightly organic silts. This same channel was flooded at the time of the LiDAR Survey.

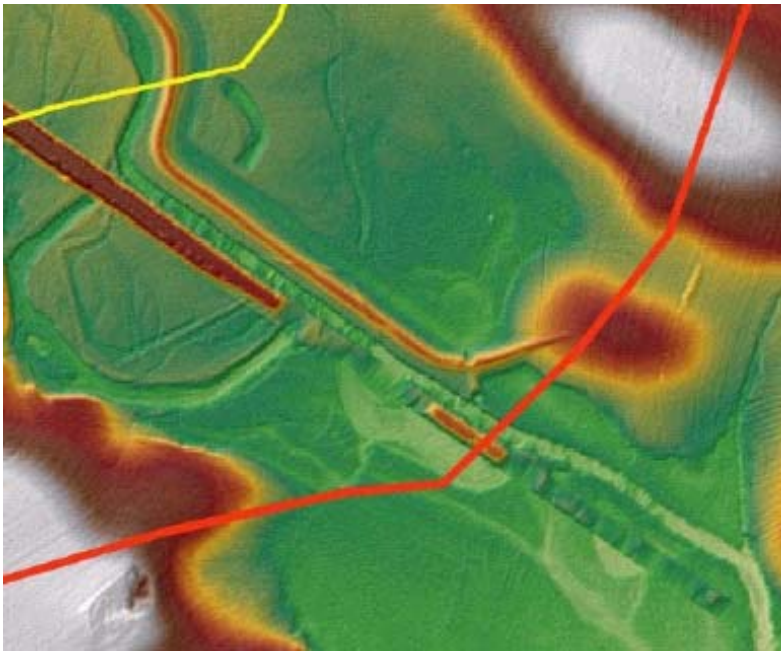


Plate 11: LiDAR plot of the Aire Crossing, taken from Challis 2005, Fig. 28 (no scale)

On the north side of the railway embankment, no palaeochannels are apparent on the LiDAR plot, although a broad drainage channel drains the land to the north of the flood bank, through the bank into the Aire. No clear features are visible where the pipeline route crosses the northern strip of the floodplain, although the meandering palaeochannels (Plate 11) suggest that a former channel is probably located on this stretch of the floodplain.



Plate 12: The eastern end of a palaeochannel meander of the River Aire in the southern floodplain. The whole of the area between the bank in the foreground and the railway embankment lies in the channel.

The palaeochannel visible in Plate 12 is the only major former course of one of the main rivers that appears to have remained sufficiently wet to preserve organic sediments in its upper fills. It is quite clearly a cut-off channel, but it may not be very ancient, and may represent the course of the river prior to its canalisation north of the railway embankment. The putative channel to the north of the modern river is likely to have similar conditions.

2.4.5 Wharfe Crossing

The pipeline crosses the Wharfe just north of Addingham, at a pinch point in the valley where the floodplain, with the river, is no more than 130 metres wide (Plate 13). On the western side, the 90m floodplain shows no evidence for channels on the LiDAR survey, and, with the valley so narrow at this point, the situation is similar to the Ribble crossing (Plate 14). The river migrates from side to side of the floodplain, but with insufficient space to create any cut-off channels. The floodplain on the eastern side of the river is very narrow. The present river level lies approximately 1.5m below the floodplain, and there is some evidence for ridge-and-furrow on the western floodplain, although this cannot be seen in the LiDAR plot.

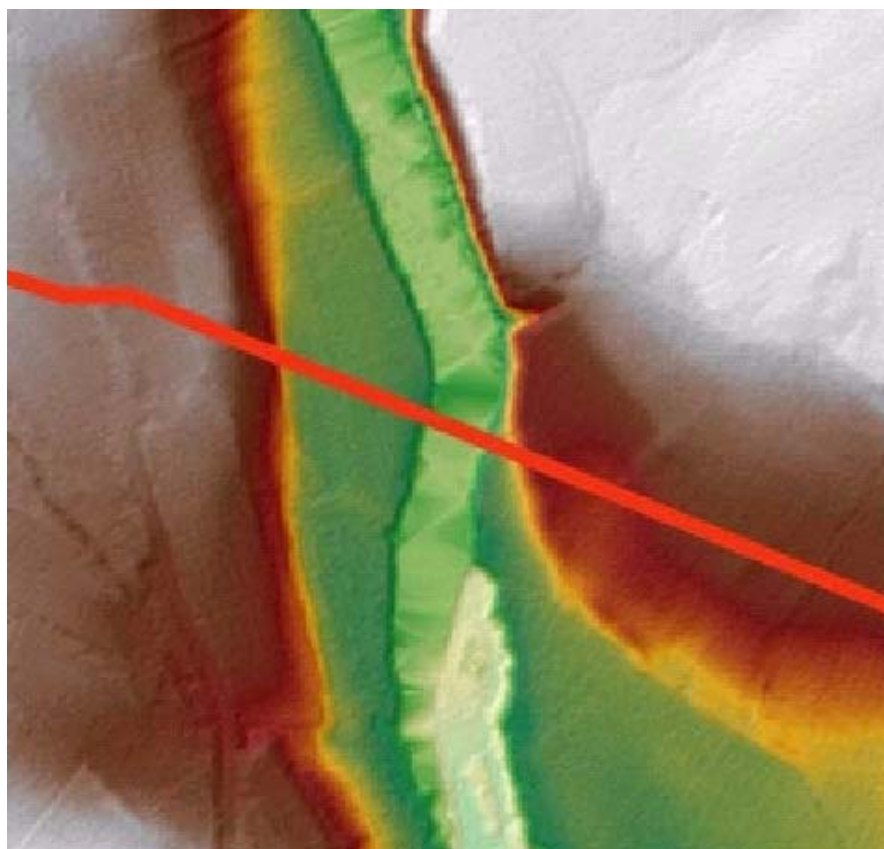


Plate 13: LiDAR plot of the River Wharfe crossing point.



Plate 14: The western floodplain of the River Wharfe at the crossing point, looking east. The photograph has been taken from the sharp terrace edge on the western edge of the floodplain.

The deposit sequence visible in the river bank at the crossing point shows brown silts over river cobbles (Plate 15).



Plate 15: The sediment exposures on the west bank of the River Wharfe at the crossing point: silts overlying river cobbles and pebbles.

2.5 Discussion

In general, the river crossing locations would appear to have a limited palaeo-environmental potential. Apart from the River Aire crossing, the floodplains are well-drained sheep pastures or arable fields, and the modern river levels at the time of the walkover were between 1.5m and 2m below the floodplain surface. The limited auger survey and prospection of the exposed sediments in the modern river banks show that the floodplains are composed of a uniform brown silt to depths of over 2 metres, with occasional pebbles and cobbles and underlying cobble beds. Only the River Aire palaeochannel has shown a positive potential, while the others may lack any suitable waterlogged sediments.

Secondly, the character of the channels identified from the LiDAR is not clear. While the Aire and Kettles Beck palaeochannels are clearly cut-off channels of the main river, and the palaeochannels of the Clapham and Austwick Becks are probably meanders cut off by straightening of the beck courses, the Lune Valley channels may be flood scour channels of the Lune and tributary streams. Scour channels through the silts of the floodplain at times of high run-off are much less likely to result in organic sediments forming at their base than are oxbow and other cut-off channels, which are likely to be much deeper. At the Wharfe and Ribble crossings, there is no evidence for palaeochannels, and in the confined space of the valleys at these pinch points, organic sediments are likely to be limited to thin lenses sandwiched between other sediments deposited by the laterally migrating channel.

Two major aspects of the engineering programme are of relevance when considering the impact of the pipeline on the palaeoenvironmental sediments along its route. It should be noted immediately that the 1.2m bore gas pipe will be laid in a trench approximately 2.5m deep. However at the major river crossings the pipe will be laid through a tunnel under the rivers. The tunnelling will commence at a distance from the modern channel and rise at some distance past it, such that the floodplain each side of the present river courses is technically not under threat. However at the tunnelling entry points the earthworks may be quite large and will be much deeper than elsewhere on the route. The works associated with the tunnelling may have more impact upon the floodplain and any palaeoenvironmental deposits than the pipe-trench.

3 FURTHER WORK

It was recommended that organic or other palaeoenvironmental deposits located during the excavation of the pipe-trench should be sampled when found (Rackham 2006, 15). Because of health and safety considerations, however, it was not possible to do this from the side of the pipe-trench and a written scheme of investigation (WSI) for the palaeoenvironmental sampling of palaeochannels and peat deposits in selected areas was compiled as a response to the access restrictions (Network Archaeology Ltd. 2007). This proposed a strategy of removing 100mm-diameter core samples from the palaeoenvironmental deposits after the backfilling of the trench, the work to be conducted by a qualified geoarchaeologist.

However, the unpredictability of the occurrence of suitable deposits coupled with the exceptionally poor weather and, hence, ground conditions at the time of construction, meant that safe access for the necessary coring equipment could not be arranged and, consequently, the coring could not be carried out. In the absence of the retrieval of core sample sequences, field observations made during the watching brief may have some utility as a guide to any future research or developer-funded fieldwork and these are summarised in the next section. If access to these areas becomes available in the future, they could be targeted for auguring or trial trenching. Otherwise, the extrapolation from comparative data sets may be used to provide some information on the palaeoenvironment of the pipeline route.

4 EVIDENCE FOR PALAEOCHANNELS SEEN DURING THE WATCHING BRIEF

Stuart Noon and Paul Flitoft

4.1 Summary of results

4.1.1 The 2006 construction season

During the 2006 groundworks, palaeochannel evidence was identified and recorded in nine of the areas in the western part of the pipeline classified as having potential (Rackham 2005). Three areas were river crossings under which the pipeline was tunnelled and, as a consequence, palaeochannels could not be observed. In five other areas no palaeochannels were observed. Few deposits were sampled and no core samples were taken for palaeoenvironmental analysis, because organic preservation was generally poor. Useful environmental data may, however, be obtained from bulk samples taken from a number of sites: the cairn site (Plot 21-18) and the burnt mound (Plot 21-10); either side of the Leeds and Liverpool Canal close to the River Aire, near Bank Newton; the field kilns on the western side of the River Wharfe, near Addingham (Plot 12-4); and evaluation trench 27 (Plot 15-16) on the eastern outskirts of Embsay.

4.1.2 The 2007 construction season

During the 2007 groundworks, in addition to the previously identified palaeoenvironmental areas, a number of peat deposit areas were identified during the watching brief. The possibility of encountering peat deposits had already been highlighted by James Rackham: *‘the area east of the Clapham and Austwick Becks and just east of Orcaber Lane where it crosses the pipeline route is also an area of low lying ground which should be watched during excavation in case peat deposits occur in this area’* (2006, 14). Peat and palaeochannels were not identified during the top soil strip as they were masked by subsoil, but were identified during pipe-trenching, with deep peat deposits within a relict oxbow lake being considered to have particularly high potential.

4.1.3 Limitations

The accurate recording of palaeochannels was limited by several factors: depth limitation imposed by construction constraints; access to deep excavations causing Health and Safety issues; and the type and size of machines used to excavate the pipe trench, which affected the degree of smearing of the trench sections and consequently the visibility of deposits exposed.

4.1.4 Results by plot

Plot	Description
1-3	Waterlogged, very dark brown peaty silt topsoil was recorded in a boggy area next to West Beck.
1-12	A boggy area to the south of a stream, with a palaeochannel that appeared to have been modified; further interpretation of this feature was not possible.
2-4	The friable, dark brown silt topsoil became more waterlogged and peaty towards the Holbeck. A ditch was recorded, following the line of the beck on its eastern bank. Between the ditch and the beck was an area of marshy ground.
2-5	The western bank of the Holbeck was recorded: the topsoil and ground conditions were the same as those in Plot 2-4, although the subsoil became less sandy up the slope.
3-3	The plot lies on the western bank of the River Washburn: it appeared to be heavily disturbed. There was evidence of dumping and burning, and a trackway which may be related to quarrying in the area.
4-2, 4-3 & 4-4	All three plots were recorded as ‘boggy ground’.
6-1	The subsoil was a mid-yellowish-brown silty clay, becoming more waterlogged towards the boundary with Plot 6-2.

Plot	Description
6-2	Evidence of waterlogging was also recorded in this plot, whose north-western boundary is formed by a watercourse identified as the Dean Beck.
6-7	The watching brief noted earthworks relating to drainage ditches; water management in this plot may have been associated with the operation of a brick kiln (see main report section 9.3).
7-19	The Hundwith Beck separates Plots 7-18 and 7-19. Dark bluish-grey clay was recorded at this junction but no subsoil was seen.
7-23	A ditch at the boundary with Plot 7-24 appeared to be draining a marshy area to the north.
8-1	Recorded as boggy ground, possibly with a stream at the boundary with Plot 8-2.
8-5	The excavated features in this plot were probably part of a broader area of industrial activity (see main report section 9). Deposits of slag were seen on the limits of the excavation to the east, and ditches and banks preserved as standing earthworks beyond the construction area may have been part of a water management system. The gully [1150] pre-dates the construction of the furnace, but may be related to the earlier activity beyond the limit of the excavation.
9-2	The ground becomes peatier towards the western boundary of the plot, formed by the Bow Beck.
9-4	A stream was recorded as forming part of the field boundary between Plots 9-4 and 9-3.
10-1	A pond was recorded towards the south-eastern part of the plot. It was filled by a very dark organic deposit.
11-3	The boundary between Plots 11-2 and 11-3 is formed by the Dean Beck (not connected to the Dean Beck that borders Plot 6-2). The topsoil was recorded as a heavy, black organic peaty loam.
12-2	<i>Trench 5</i> - The solid geology consisted of sub-angular and sub-rounded stones of varying size, derived from glacial activity. The largest boulders were up to 0.40m across. <i>Trench 1</i> - The southern end of the trench was very sandy (209).
12-3	The River Wharfe forms the boundary between this plot and Plot 12-4. The subsoil was a dark reddish-brown sandy loam, the drift geology consisted of stones of varying size. May suggest that the post-glacial meltwater channel of the river lies on the eastern side of the present water course. <i>Trench 6</i> - The drift geology consisted of orange sand (209) and large cobbles.
12-4	Two field kilns were excavated on the western bank of the River Wharfe (see excavation report). They were found between an upper and lower terrace, suggesting that the kilns were located within a palaeochannel above the current course of the river.
13-21	The watching brief recorded a partially canalised stream, constructed at the same time as the railway line but following the line of a pre-existing beck.
14-4	A former river course was recorded in the plot at the boundary with Plot 14-3. The base of the palaeochannel consisted of alluvial clay deposits. A large number of stone-lined field drains had been constructed through the top of the channel.
15-6	A stream was recorded between this plot and Plot 15-5.
15-7	The presence of a palaeochannel was noted between this plot and Plot 15-8.
15-8	A palaeochannel was observed running south-west to north-east across the eastern side of the plot. Two field kilns were excavated close to the western scarp of the channel (see report).
15-16	<i>Trench 27</i> - Below the subsoil (708) was a clay layer, (709), which had formed above an organic deposit, (705). The highly organic remains were spread along the eastern side of the trench, and there were frequent fragments of wood. Fragments of bone and hazelnut shell were also present. The organic layer was above a deposit of tightly packed, rounded sandstone and limestone lumps or boulders, (706), and it is thought that this deposit may have formed the base of a palaeochannel; however, the excavator also interpreted the stony deposit as a potential trackway. The site is perhaps significantly located at the base of Embsay Moor, by Rowton Beck, where flood water naturally runs off the higher ground into the floodplains of the River Aire and the River Wharfe, to the east of Skipton. (Trenches 28 and 29 could not be excavated due to flooding.)
15-17	A stream was noted between Plots 15-16 and 15-17, with another stream to the north and centre of the plot. The subsoil consisted of silty clay, with patches of buried peat showing through the subsoil.
16-1 to 16-7	<i>Test Pits 1 to 11</i> - The topsoil ('A' Horizon) was generally greyish-brown silty clay, with few inclusions and a high organic content. The humic components of the topsoil probably resulted from modern farming methods and muck-spreading. The subsoil ('B' Horizon) varied across several of the test pits. Below the topsoil was mid orangish-brown silty clay (3022) and (3006), above a band of yellowish-brown clay silt, (3007). The banding noted in the subsoil was often indistinct from the upper horizon of subsoil, and was not consistent in all the test pits. The drift geology ('C' horizon) was orangish-brown boulder clay, except for Test Pit 9, which was located on the upper terrace of Embsay Beck. The centre line of the pipe trench between Test Pits 4 and 7 intersected a spring line to the south. Test Pit 5 was located in the dry bed of a palaeochannel. The northern edge of the channel (3012) was partially excavated. Above it were banded layers of silty clay (3011) and (3010), and subsoil (3009). The subsoil (3022), in the base of Test Pit 7, was cut by a stone culvert. No datable evidence was retrieved from the test pit, but the culvert was seen to follow the line of the palaeochannel to the east.
17-6	A beck and two ponds were noted to the west of the plot.

Plot	Description
17-10	Eller Beck runs through the western edge of the plot, but the area appeared to have been altered by modern intervention. This may possibly have included landfill and partial redirection of the water course, perhaps associated with the construction of the nearby railway.
19-6	A former watercourse lies to the west of the earthwork noted in this plot.
20-14	A stone culvert was noted during the watching brief.
20-15	Many stone culverts were noted within the plot. These appear to feed into a linear earthwork consisting of a ditch and bank, possibly contemporary with the construction of a nearby road, but otherwise undated.
21-9	A peaty deposit with good organic preservation was recorded between two hollow-ways.
21-10	The area of archaeological potential was first observed during the topsoil strip on the north-eastern part of Plot 21-10, on the 26th of June 2006. The site was located 675m east of the Leeds to Liverpool Canal, 1.5 km north east of East Marton and at the bottom of Turners Hill. The area of excavation was situated at the base of a frequently waterlogged valley, implying that a high level of organic material preservation was likely. The 210m-square site was initially characterised by deposit (5257), a dark grey peaty silt clay with fire-cracked and degraded gritstone, containing frequent inclusions of charcoal. The deposit was subsequently hand-cleaned, which revealed that the spread formed the base of a burnt mound. During the cleaning process, other sub-circular features were detected within and in very close proximity to the base spread. Once the extents of the features had been revealed, a 5m grid was established across the site. An excavation strategy of half-sectioning the satellite features and excavating a slot through the burnt mound spread was devised, in order to maximise data retrieval with a limited time allowance.
21-16	A small beck was recorded near the site of the 'ring cairn' in Plot 21-18.
21-18	Excavation in this plot indicated that periodic flooding had eroded the sides and bases of the surrounding drumlins: the downhill movement of the eroded material had built up layers of colluvium on the site, and the collapse of a hillside had buried a Romano-British settlement. A stone structure in the shape of an oval ring was excavated at the eastern end of the plot. The sand and silt deposits on the western side of the 'ring cairn' structure appear to have been deposited by flood events. A water course running close to the structure proves there is a possibility that the structure was seasonally flooded. It may be the reason why no features were found within or around the stone ring. The environmental samples retrieved from the buried soil in the centre of the structure may demonstrate whether the interior of the structure was periodically waterlogged or inundated.
22-1	An assessment report on the evidence for interglacial and post-glacial depositional processes has been written by a geoarchaeologist (Lancaster 2006).
23-2	Stone drains, spaced 7m apart, were recorded in this plot.
23-4	A large ovoid feature was found, thought to be a filled-in pond, towards the east of the plot. The feature appeared as a stone spread and may be associated with land reclamation, but no dating evidence was found.
24-3	Black peaty topsoil on the southern edge of the spread marked the extent of a marshy area to the south.
25-4	The plot is bordered by a tree-covered ravine above a watercourse, close to a sunken trackway called 'Green Lane', which pre-dates a nearby railway line.
25-11	A dyke was recorded on the edge of this plot, adjoining Plot 25-5.
25-12	The topsoil was a peaty loam, and palaeochannels were noted in the DBA. A ditch was recorded next to Plot 25-10, and may be related. Other features in the plot included a ditch and bank, interpreted as being a defunct field boundary.
25-13	The plot contained a deep drainage ditch and peaty areas on the edge of a palaeochannel. There is also the possibility of alluvial deposition, as the peaty deposits were mixed with clay.
25-14	A deep ditch and a substantial peaty area on the edge of a palaeochannel were identified. The channel is possibly defined by the extent of the peat, with ditches cut into it at a later time, to help with land drainage.
26-1	Alluvial deposition was recorded in this plot, with a drainage ditch and a stream.
26-4	A pond was noted lying outside the area of works. The drift geology is recorded as stony high areas with peaty channels, and a boggy area to the south of the pipeline route.
26-5	The subsoil is multicoloured sandy gravel; a deep, curvilinear ditch divides Plots 26-4 and 26-5.
26-8	Divided from Plot 26-4 by a deep, curvilinear ditch. The ADBA lists a pond in this plot, but no pond was seen at the time of the survey.
26-12	A palaeochannel was recorded as a 'beck' between Plots 26-8 and 26-9.
26-14	This plot contained numerous stone-lined drains.
27-4	The plot consisted of a boggy area to the north-west and dry areas formed from brownish-red sandy gravel.
52-1	A beck was located in the southern part of the plot, whose subsoil was the same brownish-red sandy gravel as that in Plot 27-4.
52-2	Dark grey, richly organic silty clay deposits with inclusions of wood were observed in the pipe trench at a depth of 2.5m: no dating evidence was retrieved

Plot	Description
52-3	All deposits visible in the pipe-cut trench were alluvial in origin, representing a previous, more easterly course of the River Lune.
52-4	The drift geology consisted of greyish-brown, laminated alluvial clayey silts sealing numerous bands of well-rounded water-worn cobbles. Observations suggested that the deposits were within a palaeochannel up to 50m across, and sealed a charcoal-rich organic deposit at a depth of 3m from the western end of the pipe trench. It is possible that this was the side of the palaeochannel.
52-5	There was a greater depth of topsoil in this area, but the subsoil, where it was observed, appeared to be made up of alluvial silts.
52-6	There was further evidence of palaeochannels on the eastern bank of the Lune, behind the current flood defences. After the topsoil in the field had been removed, at least two parallel curvilinear channels were observed.
53-1	The cut of the access pit showed deposits of alluvial silts up to a depth of 0.8m. The silting sealed a layer of cobbles at least 1.2m thick, which was observed to a depth of 2m. The plot was heavily disturbed by previous construction activities and by modern agricultural improvements.

5 ACKNOWLEDGMENTS

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Appendix F

Dry Stone Wall Survey

1 DRY STONE WALL SURVEY

1.1 Introduction

'Dry stone walls are the most extensive man-made feature in the Dales landscape. Many have been allowed to fall into disrepair as farms amalgamate, or have been removed altogether to make larger fields, but over 8000km of walls still existed in the Yorkshire Dales National Park in 1988' (White 2005, 73-4).

The survey carried out by Network Archaeology Ltd (2005b) found that dry stone walls formed, or were incorporated into, 335 of the 648 recorded boundaries crossed by the proposed pipeline route, including 27 identified as the possible pre-enclosure 'wide-top' type.

The walls are found along the entire route, but tend to occur more frequently at higher altitudes, generally above 140m OD. The two densest concentrations of walls occur in North Yorkshire, to the north of Lawkland and on Middleton Moor.

This distribution is a typical pattern, reflecting historical practice in this region. Natural stone, often outcropping, would have been more accessible at these heights, and may have been the only locally available material for the construction of boundaries sufficiently sturdy to restrict the movements of livestock. The stone might also have been a by-product of upland field clearance, as opposed to being dug or collected for the purpose of walling.

1.2 Comparative evidence

Surveys carried out in the Peak District National Park have shown that the majority of dry stone walls were constructed before 1800. Physical examination of the walls proved to be a poor dating tool, since wall structure is very locally specific. Map evidence was found to be the best source of dating walls (Ken Smith in YDMT 2002).

Surveys of dry stone walls in the Yorkshire Dales and North York Moors found the majority of wall types to be of the kind specified in many nineteenth century enclosure awards, incorporating two bands of 'through stones', which occupy the full thickness of the wall and help to maintain stability. Such walls were generally found in the straightest field boundaries above 300m OD, and were built from local stone, divided by the bands of through stones into three roughly equal parts. A combination of field and cartographic evidence suggested that they could be dated to the eighteenth or early nineteenth centuries, and were chiefly associated with enclosure (Dennison 2002).

A survey carried out on 136 km of dry stone walls at Malham in the Yorkshire Dales, on behalf of the National Trust, categorised the double walls encountered according to differences in cross section. The survey identified two principal forms, using differences in the width of the top of the wall beneath the coping. Wide-top double walls were defined as having a consistent width of 0.50m or more beneath the coping, and narrow-top double walls a width at the base of 0.45m or less, narrowing to the top. The survey identified 495 double wall sections; of these, 389 were 0.40m wide or less, 87 were 0.50m wide or more, and only 19 were 0.45m wide beneath the coping. The coping on wide-top walls was more variable. The commonest style was similar to the coping on most narrow-top walls, but was quite different on wide-top walls built on limestone bedrock, where the structures were especially well preserved. There, the top stones were laid flat across the top of the wall, either flat and end-flush with edge of the wall or projecting by about 150mm on one side, making a continuous lip possibly intended to deter jumping animals. Some of these wide-top walls were provisionally identified as potentially medieval or early post-medieval in date, and associated with the monastic exploitation of the area (Lord 2002).

The wall section, the basic survey unit, is a length of wall with the same dimensions, profile and structural characteristics. In theory each section should match a length of wall originally built to a particular set of specifications, especially when a walling frame was used, and it

should be possible to identify a length of wall built to the same specification, providing enough of the original wall survives to be confident of its dimensions, profile and structural characteristics. Walls are vulnerable to various decay processes that have been formalised in the following table.

Table 1: Destructive factors (Lord 2002)

Main Categories	Processes	Key Variables
Geomorphic	Soil Creep Solifluction Talus Creep Rockslide Mudflow Fluvial	Relationship to slope Nature of substrate: bed-rock <ul style="list-style-type: none"> • alluvium • glacial drift • peat Vegetation cover
Climatic	Wind Snowfall Freeze-thaw Desiccation	Microclimate Aspect Nature of substrate: bed-rock <ul style="list-style-type: none"> • alluvium • glacial drift • peat
Biological	Burrow activity Sheep jumping Humans climbing Tree disturbance Management history	Earthworm density Rabbit and mole density Sheep behaviour and stocking rates Proximity of trees to walls Value of wall to land manager Vegetation cover Nature of substrate: bed-rock <ul style="list-style-type: none"> • alluvium • glacial drift • peat

1.3 Objectives and methodology

1.3.1 Aims of the survey

- Mitigation of impact on or avoidance of walls found to be of regional or national importance
- Avoidance of complete or almost complete field systems
- Provision of sufficiently detailed data, including regional variations in construction style and material, for future, non-developer-funded landscape characterisation
- Recording of presently under-represented wall furniture, such as stone water troughs and carved stone gate stoups.

1.3.2 Survey procedures

A Dry Stone Wall Record form was produced by Network Archaeology Ltd, following liaison with the curators, the client, and Tom Lord of Winskil Farm Visitors' Centre, an authority on dry stone walls local to the pipeline route. Prior to commencing the survey, the field team received on-site training in the identification and recording of general dry stone wall characteristics and features.

In the field, a photographic and written record was made of each wall and of any associated features such as troughs, stiles or entrances. Subsequently, the raw data was analysed and used to grade each wall in terms of its significance or potential significance and, where

possible, to assign a date. The condition of each wall was assessed using a classification adopted by the Countryside Commission for a survey of all walls in England in 1996. Walls in excellent condition were classified as 'A', whilst remnant walls were classified 'F'. Of the 338 walls recorded along the Pannal to Nether Kellet pipeline route, 274 (81% of all walls) were in excellent to fair condition (still stock-proof: A-C), whilst the other 64 (19%) were in poor to remnant condition (not stock-proof: D-F). The 1996 Countryside Commission survey indicated that only 51% of all walls in England were class A-C, which suggests that the walls recorded along the pipeline route are in much better overall condition than in England as a whole.

1.3.3 Constraints

The survey could only investigate walls crossed by the pipeline route and, of them, only a 42m length of each wall, of which 15m was dismantled in the pre-construction breakthrough, could be examined. The characteristics of an entire wall and relationships between adjoining walls and wall systems therefore could not be recorded. This limited the possibility of dating walls which have no historic record, but which could have been dated by analogy with similar, documented walls beyond the area of investigation. This would also limit the identification of complete field systems.

For these reasons, reliably placing all the walls over the full length of the pipeline route in their historical context would be an undertaking beyond the scope of this project. However, it may be possible to define the importance of some of the walls by dating them from map sources and examining their relationships with known sites on the SMR. The importance of some walls may come to light within the analysis stage, if a relationship to features recorded during excavation can be shown to exist.

1.4 Results

1.4.1 Construction

Dry stone walls can be divided into two main types: double-faced wall, built with two faces and a central core; or single-faced wall, built as a single block with no core. Double-faced walls can themselves be divided into 'wide-top' or 'narrow-top' walls. Wide-top walls were built more or less vertically, usually with a wider coping, possibly to prevent livestock jumping over, while narrow-top walls tapered from base to top.

All of the dry stone walls along the proposed pipeline route were double-faced walls, and, as is common elsewhere in the UK, were made up of the narrow-top walls, with two hundred and ninety-seven being recorded, while thirty-eight walls were initially identified as being possibly wide-topped. The possible wide-top walls were targeted during construction, but when cross sections were examined during the pre-construction breakthrough works none of these appeared to be genuinely wide-topped. Rather, they were initially identified as wide tops because they were wider or higher than the majority of the walls encountered in the field survey. It is possible that the greater height and width could be associated with a particular local landscape with steep slopes. It is also possible that these walls represent a local variation in double-faced wall construction.

The walls across the route were constructed in limestone, sandstone, gritstone, or a combination of sandstone and gritstone; some limestone walls included occasional sandstone or gritstone elements. A few walls also possessed isolated igneous or metamorphic rocks. The type of rock used reflects the local geology. Raw materials would have been collected either by clearing loose stones from the land surface or by quarrying close to the wall site. The igneous or metamorphic stones are probably glacial erratics. There is nothing to suggest that stone was being transported long distances.

1.4.2 Associated features

A total of fifty-seven walls had associated features or structures within the working width of the pipeline, some walls having more than one feature (See table 2 for examples). These comprised: forty gates, seven of these on re-routes; five step-through stiles; one wooden stile; five sheep creeps; one sheep corral; three troughs; two barns; and four rabbit ‘smoots’, which are small, narrow openings to allow rabbits to be trapped. These features are not concentrated in any particular county or location along the route, and are not confined to either wide-topped or narrow-topped walls.

1.4.3 Association with historical landscapes and boundaries

Some, but not all, of the clusters of walls coincide with fossilised landscapes, represented by ridge-and-furrow field systems and associated features, which are likely to be primarily medieval to early post-medieval in date (Network Archaeology Ltd 2005a). These occur to the south of Halton East; between Rathmell and Wigglesworth; between Lawkland Green and Lawkland; and to the east of Newby. This might suggest that many of these boundaries may have medieval or early post-medieval origins, though it could also be that walls were built at a later date to replace an earlier boundary marker.

No recorded shire boundaries appeared to be crossed by the route, but twelve walls ran along parish boundaries. The presence of such a boundary raises the value of the associated wall, since it increases the possibility that the wall has more ancient foundations than its current construction might suggest, and because it raises the likelihood of archaeological features or deposits lying beneath, or adjacent to, the existing wall. Medieval dry stone walls may contain artefacts deliberately enclosed within their foundations, while burials have been found under township boundary walls (R. White, YDNP, *pers. comm.*, 2006). However, all the dry stone walls marking parish boundaries on the pipeline route proved to be narrow-topped, and so were not considered, in themselves, to be of greater than local significance.

1.4.4 Dating and significance

Ascribing accurate dates, or specific typologies, to dry stone walls is problematic, but identification of a wall as narrow- or wide-topped is a useful indication of its approximate age. Regional dry stone wall specialist Tom Lord suggests that wide-top walls (with overhanging coping) may represent a standard medieval wall type, with narrow-top walls possibly replacing them after the break-up of the monastic estates and the subsequent wider reorganisation of the upland landscape (*pers. comm.* 2006).

The details of the possible wide-topped dry stone walls targeted as a result of the field survey are presented in Table 2, below; these are identified by the reference number used in the field survey report. A full record of all boundaries on the pipeline route can be found in the field survey report (Network Archaeology 2005b).

The walls were graded in terms of their overall significance or potential significance, in the same way that all of the other field survey sites were graded. In this case, all the walls have been placed in the D category: that is, they are currently regarded as being of local importance. In terms of degree of impact, since only a small stretch of each wall, as little as 6m in most or all cases, was affected, all impacts were regarded as minor.

Table 2: Details of possible wide-topped dry stone walls identified by the field boundary survey

Ref. no.	Plot	Wall furniture	Additional boundary	Condition	Import.	Impact: significance	Additional Details
B19	56-8		Hedge, fence & bank	F	D	min: low	Adjacent to a trackway; shallow bank between wall and track. Partially replaced by a hedge and fence.
B158	45-10/11		Wall	F	D	min: low	Initially identified as narrow-top; later queried as a wide top, but its condition was too poor to be certain.
B235	37-4		Fence partially replacing wall	D	D	min: low	Possible double-faced, wide-topped wall of quarried sandstone and limestone; incorporates one dressed stone, possibly a re-used building stone.
B257	36-1		Bank, ditch & hedge	C	D	min: low	Possible double-faced, wide-topped wall of quarried limestone. Adjacent to a road, on a bank above a roadside ditch
B263	35-10	Sheep creep, blocked by orthostat		C	D	min: low	Possible double-faced, wide-topped wall of quarried limestone; butted by a much-deteriorated wall bounding a small wood.
B270	35-4	Stone trough		C	D	min: low	Possible double-faced, wide-topped wall of quarried limestone with trough built in; adjacent to a stone-built barn.
B273	35-1		Hedge	B	D	min: low	Possible double-faced, wide-topped wall of quarried limestone.
B300	32-10			D	D	min: low	Possible double-faced, wide-topped wall of quarried millstone grit.
B303	32-10/11			C	D	min: low	Possible double-faced, wide-topped wall of quarried millstone grit and limestone.
B312	32-3			A	D	min: low	Quarried millstone grit possible double-faced wide-topped wall
B326	31-6/5		Earthen bank, hedge & fence		D	min: low	Possible wide-topped dry stone wall.
B464	21-20				D	min: low	Possible wide-topped dry stone wall.
B468	21-17				D	min: low	Possible wide-topped dry stone wall.
B469	21-16				D	min: low	Possible wide-topped dry stone wall.
B470	21-15				D	min: low	Possible wide-topped dry stone wall.

Appendix F
Dry stone wall survey

Ref. no.	Plot	Wall furniture	Additional boundary	Condition	Import.	Impact: significance	Additional Details
B472	21-14	Barn	Fence		D	min: low	Possible wide-topped dry stone wall.
B474	21-12	Wall heads	Hedge and bank; wire fence	D	D	min: low	Possible wide-topped dry stone wall. The wall runs along the side of a hedge and bank. Wall heads derelict.
B492	21-1		Stone-faced bank/fence		D	min: low	Possible wide-topped dry stone wall
B521	19-7		Ditch/fence		D	min: low	Possible wide-topped dry stone wall
B563	15-18		Fence		D	min: low	Possible wide-topped dry stone wall
DSW 101	13-17		Ditch with stream	B	D	min: low	Possible wide-topped dry stone wall partially repaired in narrow-topped style. Projecting stones on the side near the ditch.
DSW 665	10-13		Associated with boundary 665a, an adjacent narrow-topped wall	C	D	min: low	Possible double-faced, wide-topped wall of quarried millstone grit
DSW 666	10-12			F	D	min: low	Possible double faced, wide-topped wall of quarried millstone grit
DSW 668	10-10			C	D	min: low	Possible double faced, wide-topped wall of quarried millstone grit and sandstone; appears to have been lowered, possibly for hunt horses to jump.
B670	10-8		Post-and-wire fence on top of wall	C	D	min: low	Quarried millstone grit and sandstone; appeared to be a wide-topped wall reconstructed as a narrow-top.
B672	10-7		Post-and-wire fence on top of wall	C	D	min: low	Possible double faced, wide-topped wall of quarried millstone grit and sandstone.
B672a	10-7		Post-and-wire fence on top of wall	A	D	min: low	Associated with wide-topped wall 672; quarried sandstone; appeared to be a wide-topped wall reconstructed as a narrow-top.
DSW 676	10-5			E	D	min: low	Possible double faced, wide-topped wall of quarried millstone grit and sandstone.
B678	10-5		Post-and-wire fence	E	D	min: low	Possible double faced, wide-topped wall of quarried millstone grit and sandstone.
DSW 680	10-5		Associated with boundary 680a, an adjacent narrow-topped wall	C	D	min: low	Possible double faced, wide-topped wall of quarried millstone grit and sandstone.

Appendix F
Dry stone wall survey

Ref. no.	Plot	Wall furniture	Additional boundary	Condition	Import.	Impact: significance	Additional Details
DSW 681	10-4		Associated with boundary 681a, an adjacent narrow-topped wall	E	D	min: low	Possible double faced, wide-topped wall of quarried millstone grit and sandstone.
DSW 683	10-3			D	D	min: low	Possible double faced, wide-topped wall of quarried millstone grit and sandstone.
DSW 684	10-2		Associated with boundary 684a, an adjacent narrow-topped wall	C	D	min: low	Possible double faced, wide-topped wall of quarried millstone grit and sandstone.
B686	9-7		Fence replacing the wall where it abuts the barn	F	D	min: low	Possible double faced wide topped wall of quarried millstone grit and sandstone. Barn adjacent.
B728	7-17		Bank & fence	E	D	min: low	Possible double faced, quarried sandstone wide-topped wall.
B752	6-6/6-7	Gate & wall-heads	Wire fence (supporting remains of wall)	E	D	min: low	Possible double faced, quarried sandstone wide-topped wall. Identification speculative, due to its poor condition.
B763	5-8/5-9		Ditch in plot N477; wire fence either side	D	D	min: low	Identification as a wide-topped wall uncertain; projecting stones on one side.
B817	1-4/1-5		Post-and-wire fence on one side, barbed-wire fence on the other	D	D	min: low	Quarried sandstone wide-topped wall; appears to have been lowered.

Appendix G

Trial pits and evaluation trenches

Table 1: Test pit survey plots	3
Table 2: Trench evaluation areas.....	5

Introduction

A series of test-pits were hand excavated along the parts of the route that were in the Yorkshire Dales National Park. The procedures followed those used by the Yorkshire Dales Hunter-Gatherer Research Project.

Aims of the test-pit evaluation

The overall purpose of the test-pit evaluation was to determine whether or not there were any significant below-ground archaeological remains along the pipeline route within the YDNP, and to assist the client with the planning and construction of the pipeline.

The specific objectives were to:

- locate, sample excavate and record any archaeological remains exposed by the evaluation
- locate, recover, identify and conserve, as appropriate, any archaeological artefacts
- locate, recover, assess and analyse, as appropriate, any palaeo-environmental, palaeo-economic and organic remains
- recommend measures for preservation in situ of archaeological, palaeo-environmental, palaeo-economic and organic remains, where feasible and desirable
- recommend measures for mitigation (e.g. excavation), where preservation in situ was not feasible or desirable
- compile an appropriate report/publication
- produce a paper and digital archive which will be deposited with the appropriate repositories.

Procedures

Test-pits measuring one metre square were opened at 100m intervals along the centre-line of the two stretches of route within the YDNP, giving a total of 45 test-pits. Where a test-pit coincided with an obstacle, such as a field boundary or track, it was shifted slightly.

Each test-pit was excavated entirely by hand. Following turf removal, deposits were excavated down to the natural, archaeologically-sterile C-horizon. This was not normally greater than 0.75m beneath the ground surface. Careful attention was paid to any possible archaeological remains, and a sufficient proportion of any such archaeological deposits were hand-excavated in a stratigraphic manner, in order to meet the stated objectives. Where cut linear features were found, a 0.5m-wide slot was excavated through them, in order to establish their date and character. Discrete cut features, such as pits and postholes, were half-sectioned and recorded.

Provision was made for additional, contingency test-pits, arranged at 2m intervals from the initial pit, in order to assess the extent and density of any flint scatters, and to enlarge any test pits where significant archaeological features had been identified.

Summary of results

Of the 45 test pits excavated, 35 produced no features or finds. Of the others, one produced a single flint flake and two others each yielded a small fragment of burnt flint. Modern or late post-medieval drainage features

were observed in three pits and two had shallow linear marks identified as plough scars. Two undated, shallow linear features continued the line of possible linear surface features.

The locations of the test pits are given in the table below.

Table 1: Test pit survey plots

Plot	Test Pits	Features or finds	NGR to centre of pit
16-1	Pit 1	Flint flake	396011.81, 452996.95
	Pit 2	None	396093.65, 453076.34
	Pit 3	Burnt flint fragment	396165.38, 453146.02
16-2	Pit 4	None	396237.10, 453215.70
	Pit 5	Burnt flint fragment	396311.22, 453282.84
16-4	Pit 6	None	396380.47, 453354.98
16-5	Pit 7	Stone-lined drain	396465.14, 453408.19
16-6	Pit 8	None	396549.80, 453461.41
16-7	Pit 9	None	396634.46, 453514.62
	Pit 10	None	396719.13, 453567.84
	Pit 11	Pit was not excavated	396803.79 453621.05
17-1	Pit 12	None	396888.46, 453674.27
	Pit 13	None	396973.12, 453727.48
17-2	Pit 14	Feature interpreted as plough disturbance	397057.79, 453780.70
	Pit 15	None	397356.13, 453769.74
17-3	Pit 16	Shallow curvilinear feature, visible on the field surface	397256.70, 453780.36
17-4	Pit 17	None	397157.26, 453790.98
17-5	Pit 18	None	397455.57, 453759.12
	Pit 19	None	398581.44, 453861.50
	Pit 20	None	398661.71, 453921.14
17-6	Pit 21	None	398750.58, 453966.97
	Pit 22,	Feature interpreted as plough disturbance	398825.64, 454005.17
17-7	Pit 23	None	398913.67, 454050.00
17-8	Pit 24	None	399029.12, 454053.68
	Pit 25	None	399128.10, 454039.48
	Pit 26,	Narrow linear cut: possible beam slot or field drain	399238.07, 454034.51
17-9	Pit 27	None	399327.85, 454040.29
19-1	Pit 28	None	399427.71, 454045.67
	Pit 29	None	399527.57, 454051.05
19-2	Pit 30	None	399627.42, 454056.44
	Pit 31	None	399717.33, 454061.41
19-3	Pit 32	Shallow linear feature, doubtfully visible on the field surface	399827.13, 454067.19
	Pit 33	None	399926.98, 454072.58

Plot	Test Pits	Features or finds	NGR to centre of pit
19-4	Pit 34 Pit 35 Pit 36	None None None	400026.84, 454077.96 400126.69, 454083.35 400225.56, 454098.35
19-5	Pit 37 Pit 38	None None	400304.99, 454100.53 400414.21, 454107.05
19-6	Pit 39 Pit 40 Pit 41 Pit 42	None None None None	400510.39, 454109.50 400625.24, 454114.38 400725.16, 454118.39 400823.15, 454138.17
19-7	Pit 43 Pit 44	None None	400920.67, 454160.49 401019.80, 454173.63
19-8	Pit 45	None	401119.35, 454183.12

Evaluation trenches

In all 119 evaluation trenches were excavated in advance of construction.

Those evaluation trenches which produced significant archaeological remains and were subsequently incorporated into excavation sites have been summarised in the main body of this report (Section 4.5). The results from them are described in the relevant site excavation report.

In most of the other trenches there were either no archaeological remains recorded, or any features present were undated or modern and were judged to be of minimal archaeological importance.

The results from all of the evaluation trenches are summarised in the table on the following pages

Table 2: Trench evaluation areas

Plot	Plot analysis	Trench	Topsoil, subsoil and natural	Archaeological remains	Fig.	NGR (both ends of trench)
1-9	DBA CUV: ridge-and-furrow (R&F) Geophysical anomalies: ditch	41	Brownish-grey sandy silt topsoil 200, 0.20m deep; reddish- to greyish-brown sandy clayey silt subsoil 900, 0.10m deep; orange boulder clay natural 901.	None		423675.7 449767.9; 423657.5 449716.3
1-9	"	42	Mid brownish-grey sandy silt topsoil 200, 0.18m deep; mid brownish-grey sandy clayey silt subsoil 902, mottled orange, 0.35m deep; orangish-grey sandy clay natural 903.	None		423668.7 449732.9; 423657.5 449716.3
1-9	"	43	Mid brownish-grey sandy silt topsoil 200, 0.30m deep; mid brownish-grey sandy silt subsoil 904, mottled orange, 0.35m deep; banded light grey and mid orangish-grey sandy clay natural 905.	None		423642.8 449707.0; 423659.3 449695.7
2-6	Geophysical anomalies: ditches and earthworks	17	Dark brownish-grey clay topsoil 200, 0.24m deep; compact, light brownish-orange clay subsoil 501, 0.23m deep; yellowish-orange clay natural 500.	None		423101.1 448508.5; 423112.9 448492.3
2-6	"	18	Dark brownish-grey clay topsoil 200, 0.20m deep; compact, light brownish-orange clay subsoil 502, 0.16m deep; yellowish-orange clay natural 500.	Sub-circular burnt feature, 503, 0.56m in diameter and 0.10m deep; fill 505 contained charcoal and large stones, possibly post-packing. Area of hard-standing or metalised track 504, possibly associated with feature 503, and two ephemeral linear features, possibly hedgerows, not further recorded.	1	423129.1 4484526; 423153.3 448543.6
2-6	"	19	Dark brownish-grey clay topsoil 200, 0.25m deep; light brownish-orange clay subsoil 506, overlying or incorporating yellowish-orange gritty clay layer 507; yellowish-orange clay natural 509 incorporating sandstone outcrop 508.	None		423101.1 448554.3; 423186.8 448572.2

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Trial pits and evaluation trenches

Plot	Plot analysis	Trench	Topsoil, subsoil and natural	Archaeological remains	Fig.	NGR (both ends of trench)
2-6	"	20	Dark brownish-grey clay topsoil 200, 0.20m; yellowish-orange gritty clay subsoil 510, 0.20m deep; yellowish-orange clay natural 511.	None		423220.2 448571.7; 423239.9 448594.2
2-6	"	21	Dark brownish-grey clay topsoil 200, 0.30m deep; compact, light brownish-orange clay subsoil 513, up to 0.70m deep overlying yellow clay layer 512 containing stony deposit 515, in turn overlying limestone bedrock 514.	None		423263.2 448602.4; 423292.9 448598.0
3-4, 5, 6	DBA CTF: R&F, Geophysical anomalies ditches and R & F	44	Dark organic topsoil 200, 0.28m deep; mid-brown silty clay subsoil 1000, 0.30m deep; light orangish-grey sandy clay natural 1001.	None		422030.5 448274.3; 422032.1 448254.4
3-4, 5, 6	"	45	Dark organic topsoil 200, 0.22m deep; mid brown friable silty clay subsoil 1002, 0.32m deep; light orangish-grey sandy clay natural, 1003.	None		422078.3 448238.1; 422074.0 448267.8
3-4, 5, 6	"	46	Dark organic topsoil 200, 0.22m deep; mid brown silty clay subsoil 1004, 0.30m deep; light orangish-grey sandy clay natural, 1005.	None		422114.5 448251.8; 422134.3 44829.3
3-4, 5, 6	"	47	Dark organic topsoil 200, 0.20m deep; mid brown silty clay subsoil 1006, 0.16m deep; light orangish-grey sandy clay natural, 1007.	None		422161.5 448241.8; 422180.8 448236.4
3-4, 5, 6	"	48	Mid brownish-grey topsoil 200, 0.14m deep; mid brownish-grey sandy clay subsoil 1008, 0.14m deep; natural 1009 largely medium sand, with a band of yellowish-grey sandy clay.	None		422292.6 448209.1; 422292.6 448189.1

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Trial pits and evaluation trenches

Plot	Plot analysis	Trench	Topsoil, subsoil and natural	Archaeological remains	Fig.	NGR (both ends of trench)
3-4, 5, 6	"	49	Brownish-grey sandy silt topsoil 200, 0.16m deep; mid brownish-grey silty clay subsoil 1044, 0.20m deep; mid orange-grey sandy clay natural 1045.	Ditch 1010 was 1.10m wide and 0.50m deep, and ditch 1016 was 1.0m wide and 0.56m deep. Both ditches ran north-south on the same alignment, and were sealed by the same stone capping, 1012, but did not intercut. Each ditch had a single, sandy silt fill: fill 1011 in ditch 1010 produced a flint flake and a samian sherd. Ditch 1010 cut sub-oval pit 1028, which was 2.50m long, 0.50m wide and 0.32m deep, with a dark greyish-brown sandy silt fill which produced no finds.	1	422311.1 448176.8; 422330.3 448171.5
3-4, 5, 6	"	50	Mid brownish-grey sandy silt topsoil 200, 0.26m deep; mid brown sandy clay subsoil 1046, 0.28m deep; light orangish-grey sandy clay natural 1047.	None		422348.7 448174.8; 422348.7 448194.8
3-4, 5, 6	"	51	Mid brownish-grey sandy silt topsoil 200, up to 0.40m deep; mid brown sandy clay subsoil 1027, up to 0.40m deep; mid brownish-grey sandy clay natural 1024.	Part of a small burnt feature, 1013, measuring 0.27m long, 0.30m wide and 0.08m deep, with two fills: a fired clay lining, 1014, below a charcoal-rich deposit, 1015. The remainder of this feature could not be found when this site went on to full excavation. Also, a N-S running ditch, 1021, 1.60m wide and 0.60m deep, with a single fill. Neither feature produced dating evidence; both cut a sequence of redeposited subsoils and agricultural banks underlying subsoil 1027.	1	422374.9 448172.0; 422394.2 448166.6
3-4, 5, 6	"	52	Mid brownish-grey friable sandy silt topsoil 200, 0.10m deep; loose, mid orangish-brown, sandy silt subsoil 1034, 0.90m deep; light orangish-grey sandy clay natural 1033.	A bank, 1036, visible in the field as a rectilinear earthwork, associated with an inner ditch, 1035. No dating evidence, but the ditch cut subsoil 1034.		422422.5 448172.5; 422417.1 448153.3
3-4, 5, 6	"	53	Mid brownish-grey friable sandy silt topsoil 200, 0.16m deep; friable orangish-grey sandy silt subsoil 1032, 0.42m deep; grey silty clay natural 1031, overlying orangish/yellowish-grey sandy clay 1030 in a sondage at the western end of the trench.	None		442433.6 448142.9; 422452.8 448137.6
3-4, 5, 6	"	54	Mid brownish-grey friable sandy silt topsoil 200, 0.20m deep; mid brownish-grey silty clay subsoil 1038; brownish-grey sandy clay natural 1039.	None		422487.8 448149.0; 422506.2 448141.3

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Trial pits and evaluation trenches

Plot	Plot analysis	Trench	Topsoil, subsoil and natural	Archaeological remains	Fig.	NGR (both ends of trench)
3-4, 5, 6	"	55	Mid brownish-grey friable sandy silt topsoil 200, 0.20m deep; mid brownish-grey silty clay subsoil 1040, up to 0.42m deep; light brownish-grey sandy clay natural 1041.	None		422522.1 448155.6; 422542.0 448156.5
3-4, 5, 6	"	56	Mid brownish-grey friable sandy silt topsoil 200, 0.15m deep; mid brownish-grey sandy silty clay subsoil 1042, 0.50m deep; light brownish-grey sandy clay natural 1043.	None		422576.5 448152.3; 422568.8 448133.8
7-19	FSU 206: drainage leat, DBA DFO: ring ditch	64	Greyish-brown silty topsoil 200, 0.20m deep, directly overlying greyish-orange sandy clay natural 1102.	E-W aligned linear feature 1104, 1.20m wide and 0.50m deep, with a grey/greyish-yellow mottled silty clay fill producing no finds.	1	415600.7 450481.9; 415599.5 450462.0
7-19	"	65	Greyish-brown silty topsoil 200, 0.30m deep, directly overlying mottled light grey/mid yellow clay natural 1105.	None		415559.0 450476.1; 415589.0 450474.2
7-19	"	66	Greyish-brown silty topsoil 200, 0.30m deep, directly overlying greyish-orange sandy clay natural 1101.	None		415550.4 450487.7; 415549.1 4504467.7
8-2	FSU 203: earthen bank and ditch, Geophysical anomalies: earthworks, ditches and field systems	70	Greyish-black silty topsoil 200, 0.30m deep; dark orangish-brown sandy silt subsoil 1210, 0.15m deep; brownish-orange clayey sand natural 1211.	Ridge-and-furrow running NE-SW; not further recorded.,		413706.8 450662.8, 413726.7 450664.9
8-2	"	71	Greyish- to brownish-black silty topsoil 200, 0.30m deep; orangish-brown sandy silt subsoil 1212, 0.80m deep; brownish-orange clayey sand natural 1214.	Stony bank, 1213, between subsoil and natural. Possible field boundary.	1	413751.6 450672.6, 413761.9 450644.4
8-2	"	72	Greyish-brown silty topsoil 200; light orangish-brown clayey silt subsoil 1215; natural 1216 mixed silts and clays, light brownish-grey and brownish-orange.	None		413776.7 450644.2, 413804.9 450654.4

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Trial pits and evaluation trenches

Plot	Plot analysis	Trench	Topsoil, subsoil and natural	Archaeological remains	Fig.	NGR (both ends of trench)
11-12	FSU 193: earthen bank , DBA CJA: R&F, FSU 192: barrow/earthen mound, B 440: standing stone in dry stone wall, Geophysical anomalies: ditch/pits/R&F	11	Mid/dark brownish-grey sandy clay topsoil 200, 0.25m deep; mid-brown sandy silt subsoil 216, 0.50m deep; orange and grey banded sand natural with abundant stone inclusions 214.	None		408659.7 450294.6, 408679.1 450317.5
11-12	"	12	Mid/dark brownish-grey sandy clay topsoil 200, 0.25m deep; mid-brown sandy silt subsoil 216, 0.50m deep; light yellowish-brown boulder clay natural 217.	None		408727.9 450327.1, 408731.2 450307.4
11-12	"	13	Mid/dark brownish-grey sandy clay topsoil 200, 0.25m deep; mid-brown sandy silt subsoil 216, 0.60m deep; grey sandy clay natural with abundant stone inclusions 214.	None		408790.3 450333.8, 408804.2 450348.2
11-12	"	14	Mid greyish-brown sandy silt topsoil 200, 0.25m deep; mid brownish-grey sandy clay subsoil 216, 0.50m deep; light orangish-grey sandy clay natural with abundant stone inclusions 217.	None		408825.1 450394.6, 408843.8 450387.7
11-12	"	15	Mid greyish-brown sandy silt topsoil 200, 0.20m deep; mid brownish-grey sandy clayey silt subsoil 216, 0.25m deep; light orangish-grey sandy clay natural with abundant stone inclusions 217.	None		408837.8 450406.8, 408856.6 450399.9
11-12	"	16	Mid greyish-brown sandy silt topsoil 200, 0.15m deep; mid brownish-grey sandy clay subsoil 218, 0.22m deep; light orangish-grey sandy clay natural with abundant stone inclusions 219.	None		408864.7 450434.9, 408878.6 450449.3
12-2, 3	"	3	Mid/dark brownish-grey sandy clay topsoil 200, 0.30m deep; mid-brown sandy silty clay subsoil 201, 0.40m deep; light orangish-brown silty clay natural 202, with stone inclusions.	None		408462.9 450368.5, 408481.5 450361.1

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Trial pits and evaluation trenches

Plot	Plot analysis	Trench	Topsoil, subsoil and natural	Archaeological remains	Fig.	NGR (both ends of trench)
12-2, 3	"	4	Mid/dark brownish-grey sandy clay topsoil 200, 0.30m deep; mid-brown sandy silty clay subsoil 201, 0.40m deep; light orangish-brown silty clay natural 203, with stone inclusions and lenses of purplish-red sandy silty clay.	None. The stony inclusions in the natural were noted to be lying in bands, and it was suggested that these had given rise to the geophysical anomalies in this area.		408515.6 450374.8, 408534.2 450367.4
12-2, 3	"	5	Mid/dark brownish-grey sandy clay topsoil 200, 0.30m deep; mid-brown sandy silty clay subsoil 201, up to 0.73m deep; mid orangish-brown silty clay natural 204, with extensive deposits of loose stone.	None		408571.5 450342.6, 408585.5 450328.3
12-2, 3	"	6	Mid/dark brownish-grey sandy clay topsoil 200, 0.20m deep; mid orangish-brownish-grey sandy silt subsoil 208, up to 0.60m deep; orange sand natural 209, with stone inclusions and lenses of grey clay.	Band of stones between topsoil and subsoil recorded as 205: possibly the remains of a redundant field boundary.	1	408417.7 450416.0, 408436.3 450408.6
12-2, 3	"	7	Mid/dark brownish-grey sandy clay topsoil 200, 0.20m deep; mid orangish-brownish-grey sandy silt subsoil 208, up to 0.95m deep; light brownish-yellow sandy clay natural 209, with stone inclusions and lenses of grey clay.	Collapsed remains of dry stone field wall, 206, with foundation trench 207.		408369.3 450397.8, 408396.9 450409.6
12-2, 3	"	8	Mid/dark brownish-grey sandy clay topsoil 200, 0.20m deep; mid orangish-brownish-grey sandy silt subsoil 208, 0.65m deep; light yellowish-grey sandy gravel natural 209, with extensive deposits of loose stone.	None		408323.5 450430.7, 408342.1 450423.3
12-2, 3	"	9	Mid/dark brownish-grey sandy clay topsoil 200, 0.20m deep; mid brownish-grey sandy silt subsoil 208, up to 0.70m deep; light brownish-yellow sand natural 209, varying to mid yellowish-grey sandy clay.	Band of stones, 212, possibly the collapsed remains of a dry stone field wall		408292.4 450449.9, 408309.3 450425.1

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Trial pits and evaluation trenches

Plot	Plot analysis	Trench	Topsoil, subsoil and natural	Archaeological remains	Fig.	NGR (both ends of trench)
12-2, 3	"	10	Mid greyish-brown sandy silt topsoil 200, 0.25m deep; mid brownish-grey clayey silt subsoil 208, up to 0.80m deep; brownish-grey sandy clay natural 209, with extensive deposits of loose stone.	None		408260.6 450462.7, 408279.1 450455.2
12-2, 3	Geophysical anomalies: pits and R&F	22	Mid/dark brownish-grey sandy clay topsoil 200, 0.30m deep, directly overlying light brownish-yellow natural boulder clay 608.	None		403705.8 453884.2, 403768.3 453871.1
15-1	"	23	Mid/dark brownish-grey sandy clay topsoil 200, 0.30m deep; light brown sandy clay subsoil 606, 0.40m deep; mixture of clay, sand and sedimentary rock 607, which may have been a glacial deposit or the back-fill of a quarry pit.	None definitely identified		403719.4 453882.9, 403738.5 453888.5
15-1	"	24	Mid/dark brownish-grey sandy clay topsoil 200, 0.46m deep; light brown sandy clay subsoil 605, 0.44m deep; light brownish-yellow boulder clay natural 608.	Kiln 602, roughly circular (excavated in quarter-section only) with clay lining 603 under back-fill with burnt stone inclusions 604. No dating evidence was found during the evaluation.	2	403705.8 453911.6, 403696.2 453894.0
15-1	"	25	Mid/dark brownish-grey sandy clay topsoil 200, 0.40m deep; light brownish-orange sandy clay subsoil 601, 0.50m deep; mixture of yellow clay and deteriorated sedimentary rock 600, which may have been a glacial deposit or the back-fill of a quarry pit.	Doubtfully identified ridge-and-furrow running NW-SE across centre of trench; not further recorded.		403668.9 453935.0, 403686.4 453925.4
15-16	FSU 151: Culvert and barn; FSU 152: Earthen bank and ditch; FSU 153: Embankment; FSU 154: Earthen bank; FSU 155: R&F; FSU 156 R&F; FSU 157: Embankment; FSU 158: Furlong; FSU 159: Earthen bank; FSU 160: R&F; FSU 161: Earthen bank; FSU 162: R&F; FSU 163: Wall; FSU 164: R&F, and FSU 165: R&F , Geophysical anomalies: ditches, pits and R&F	26	Mid/dark brownish-grey sandy clay topsoil 200, 0.30m deep; mid brownish-orange sandy clay subsoil 710, 0.40m deep; mottled yellow/grey clay natural 711.	None		401534.7 454034.3, 401554.7 454034.8

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Trial pits and evaluation trenches

Plot	Plot analysis	Trench	Topsoil, subsoil and natural	Archaeological remains	Fig.	NGR (both ends of trench)
15-16	"	27	Mid/dark brownish-grey sandy clay topsoil 200, 0.30m deep; mid brownish-orange sandy clay subsoil 708, 0.30m deep; drift geology probably 705, 706 and 709 (adjacent).	Clayey and stony deposits 705, 706 and 709, apparently representing a relict river channel, although it was also suggested that stony deposit 706 might represent a trackway or area of hard-standing. A possible pit, 707, adjacent to deposit 706, was noted, but could not be excavated due to flooding.	2	401575.8 454035.6, 401576.2 454015.6
15-16	"	28	-	Not excavated, due to flooding and the presence of overhead cables.		401602.5 454016.2, 401622.5 454016.7
15-16	"	29	-	Not excavated, due to flooding and the presence of overhead cables.		401640.4 454023.9, 401639.9 454043.9
15-16	"	30	Mid/dark brownish-grey sandy clay topsoil 200, 0.32m deep; mid brownish-orange sandy clay subsoil 704, 0.24m deep; drift geology probably 700, 701 and 702 (adjacent).	Clayey, silty and gravelly deposits 700, 701 and 702, probably representing waterlogging or running water.		401668.1 454016.6, 401688.1 454017.1
21-18	FSU 115: banks/ditch, FSU 116: D-shaped bank and ditches, FSU 117: strip lynchet, FSU 118: earthen bank and ditches, MON 593718: enclosure, Geophysical anomalies: ditches/pits/boundaries/R&F	32	Mid/dark brownish-grey sandy clay topsoil 200, 0.25m deep; orange clay subsoil 300, 0.22m deep; mid-grey sandy silt natural 301.	Stony deposit, not recorded at the time, but later interpreted as part of the stone ringwork.	2	389980.9 452111.5, 389997.2 452086.3
21-18	"	33	Not recorded	None		390032.2 452099.7, 390031.0 452079.8
21-18	"	34	Dark brown silt topsoil 200, 0.15m deep; mid orangish-brown clay subsoil 300, with stony inclusions, 0.22m deep; brownish-grey clay natural 301.	Ditch 302: 0.80m wide and 0.34m deep, E-W oriented; mid-grey silty clay fill 303 produced prehistoric pottery.	2	390062.2 452131.3, 390096.1 452078.4
21-18	"	35	Dark brown silt topsoil 200, 0.15m deep; mid orangish-brown and brownish-grey clay subsoil 300, up to 0.75m deep; orangish-grey sandy clay natural 301 with lenses of grey clay.	None		390169.5 452075.4, 390171.3 452105.4

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Trial pits and evaluation trenches

Plot	Plot analysis	Trench	Topsoil, subsoil and natural	Archaeological remains	Fig.	NGR (both ends of trench)
21-18	"	36	Dark brown sandy silt topsoil 200; yellow sandy clay subsoil 300; light grey clay natural with frequent stone inclusions 301.	Shallow ditch 304, 1.30m wide and 0.30m deep, oriented E-W within the trench, but visible outside it as an earthwork following the base contour of the hill. Filled by yellowish-brown sandy clay 305, probably eroded from associated bank 306, c. 3m wide and 0.6m high.	2	390239.3 452072.7, 390250.8 452089.0
21-18	"	37	Mid greyish-brown sandy silty topsoil 200; light orangish-grey silty clay subsoil 300; mid orangish-grey silty clay natural with abundant water-worn stones and gravel 301.	Stone ringwork 307, crossing the trench in two places c. 15m apart, with cobbled area 308 in the centre.	2	389983.2 452097.6, 389964.9 452083.6
25-3	Geophysical anomalies: ditches and R&F	61	Dark brownish-grey silty topsoil 200, 0.20m deep; mid orangish-brown sandy silt subsoil 400, 0.40m deep; mottled brownish-orange clayey sand natural 401	Small feature 403: 0.80m diameter and 0.29m deep, with charcoal-flecked fill.,	2	385065.3 454075.1, 385062.8 454055.3
25-3	"	62	Dark brownish-grey silty topsoil 200, 0.20m deep; mid brownish-red clayey sandy silt subsoil 404, 0.45m deep; light brown clayey sand natural 405.	Small feature 408: 0.80m wide and 0.48m deep, with stony fill. A layer of dark brown clayey sand, 406, underlying subsoil 404 at the northern end of the trench may have been a buried soil filling a shallow geological feature.	3	385021.3 454079.8, 385039.6 454056.1
25-3	"	63	Dark brownish-grey silty topsoil 200, 0.25m deep; light brownish-grey sandy silt subsoil 409, 0.30m deep; mottled brownish-orange clayey sand natural 410	None		384995.7 454062.0, 385015.5 454059.4
27-1	DBA ABI: Great Teanley. , MON 590998: enclosure , MON 590999: lime kiln, FSU 90: track; FSU 91: drainage leat	57	Topsoil 200, 0.10m deep; mid reddish-brown clayey sand subsoil 1501, 0.15m deep; mottled grey and yellow clayey sand natural 1500.	None		380792.5 457975.1, 380811.2 457967.8
27-1	"	58	Topsoil 200, 0.20m deep; mid reddish-brown clayey sand subsoil 1502, 0.30m deep; mottled grey and yellow clayey sand natural 1503.	None		380845.7 457968.4, 380838.4 457949.8
27-1	"	59	Topsoil 200, 0.20m deep; mid reddish-brown clayey sand subsoil 1504, 0.22m deep; mottled grey and yellow clayey sand natural 1505.	None		380860.5 457933.9, 380879.1 457926.7

Appendix G
Trial pits and evaluation trenches

Plot	Plot analysis	Trench	Topsoil, subsoil and natural	Archaeological remains	Fig.	NGR (both ends of trench)
27-1	"	60	Topsoil 200, 0.20m deep; mid reddish-brown clayey sand subsoil 1506, 0.22m deep; mottled grey and yellow clayey sand natural 1507.	None		380898.5 457943.7, 380917.1 457936.4
28-1	Geophysical anomalies: pits	38	Dark greyish-brown silty topsoil 200, 0.20m deep; mid orangish-brown sandy clayey silt subsoil 804, 0.30m deep; plastic grey clay with lenses of orange clay natural 805.	Kiln 800: 3.30m x 2.80m in plan and 0.90m deep, with a flue at the western end. No lining was identified; the kiln appeared to have been back-filled with redeposited natural, 801. A linear feature, 806, was also excavated, but was interpreted as being of natural origin. Two shallow sub-circular depressions, resembling the surface feature visible above kiln 800 before the excavation of Trench 38, were noted to the south of the trench, but did not lie within the evaluated area.	3	380423.4 458106.2, 380409.4 458079.6
28-1	"	39	Dark greyish-brown silty topsoil 200, 0.20m deep; mid orangish-brown sandy clayey silt subsoil 802, 0.30m deep; light orangish/yellowish grey boulder clay natural 803.	None		380382.3 458109.5, 380400.0 458100.2
28-1	"	40	Dark brown silty topsoil 200, 0.20m deep; mid greyish-brown sandy silt subsoil 808, 0.45m deep; orangish-grey sandy clay natural 809.	None		380452.8 458087.2, 380470.5 458077.9
32-1,2	DBA: Palaeochannel, FSU 71: water meadow and Roman settlement, Geophysical anomalies: visible earthworks and ditches	78	Orangish-greyish-brown silty sand topsoil 200, 0.24m deep; light greyish-brown with yellow patches silty sand subsoil 1800, 0.14m deep; natural consists of various silty and sandy clays, recorded as 1802 and 1803.	Wide, shallow linear feature, 1804, E-W oriented: 2.50m wide and 0.40m deep, visible as a shallow surface earthwork between two banks. Possibly a haulage route associated with a quarry. One side of a similar feature, 1806, also E-W oriented, was exposed at W end of trench.	3	379295.8 462871.0, 379292.9 462851.3
32-1,2	"	79	Orangish-greyish-brown sandy topsoil 200, 0.24m deep; light greyish-brown with yellow patches silty sand subsoil 1811, 0.20m deep; natural consists of various silty and sandy clays, recorded as 1812, 1813 and 1814.	Small feature 1809, possibly of natural origin; one side of a wide, shallow, E-W oriented linear feature, 1815, 0.42m deep and more than 2.9m wide, possibly a haulage route or a drain.	3	379281.5 462909.8, 379300.2 462902.6

Appendix G
Trial pits and evaluation trenches

Plot	Plot analysis	Trench	Topsoil, subsoil and natural	Archaeological remains	Fig.	NGR (both ends of trench)
32-1,2	"	80	Orangish-greyish-brown sandy silt topsoil 200, 0.26m deep; light greyish-brown sandy silt subsoil 1818, 0.12m deep; natural colluvial layer, yellowish-orange sandy silt 1821, overlying light yellow with grey and brown patches natural silty clay 1822.	Shallow, unmetalled trackway 1819, running E-W, 3.16m wide and 0.20m deep. None of the linear features in this plot produced dating evidence.	3	379296.3 463048.2, 379297.5 463028.2
32-1,2	"	81	Mid- to dark greyish-brown sandy silt topsoil 200, 0.30m deep, overlying mottled mid brownish-grey clayey silt colluvial deposit 1829, 0.30m deep, overlying natural clay deposits 1833 and 1834, both only exposed in small areas.	Three stone-lined culverts: 1823, 1825 and 1827, all cutting colluvial layer 1829.		379297.3 463096.4, 379297.3 463066.4
32-1,2	"	82	Dark grey clay topsoil 200, 0.37m deep, directly overlying brownish-grey clayey silt natural 1843.	Stone-lined culvert 1838.		379264.6 463100.0, 379294.6 463100.0
32-1,2	"	83	Dark greyish-brown clay topsoil 200, 0.26m deep, directly overlying mottled yellowish-brown clayey sand natural 1850.	None		379244.4 463113.1, 379259.9 463125.8
33-3	FSU 64: banks and platform, Geophysical anomalies: field system, pit and visible earthworks	67	Topsoil 200; light to mid brown sandy silty clay subsoil 1200, 0.15m deep; light yellowish-grey sandy clay natural 1201.	Ditch 1202, 1.05m wide and more than 0.30m deep (not bottomed), containing stone culvert 1203.	3	378397.5 465253.3, 378414.8 465243.4
33-3	"	68	Topsoil 200, 0.28m deep; light to mid brown sandy silty clay subsoil 1208, 0.12m deep; light yellowish-grey sandy clay natural 1209.	None		378414.8 465243.4, 378435.6 465173.6
33-3	"	69	Topsoil 200; light to mid brown sandy silty clay subsoil 1207, 0.15m deep; light yellowish-grey sandy clay natural 1205.	Burnt layer 1206, covering a small area on the northern side of the trench.	3	378411.8 465121.3, 378431.8 465121.7
34-5a	"	87	Mid- to dark brown sandy topsoil, no number, 0.20m deep, directly overlying yellowish-orange boulder clay natural, no number.	None		377896.7 466341.5, 377908.7 466325.5

Plot	Plot analysis	Trench	Topsoil, subsoil and natural	Archaeological remains	Fig.	NGR (both ends of trench)
34-5a	"	88	Mid- to dark brown sandy topsoil, no number, 0.22m deep, directly overlying yellowish-orange boulder clay natural, no number.	None		377904.9 466316.8, 377904.9 466316.8
34-5a	Geophysical anomalies: rectilinear feature, R & F, DBA CCL: R & F	89	Mid- to dark brown sandy topsoil, no number, 0.40m deep, directly overlying yellowish-orange boulder clay natural, no number.	Shallow, irregular feature 2000: interpreted as a tree-pit.		377947.0 466299.0, 377958.9 466282.9
35-10,11	DBA DAI: 2 large circular ditches, FSU 047: Drainage leats, FSU 048: Earthwork and settlement platforms and FSU 049: Culvert, FSU: drainage leats	90	Mid-brown clayey silt topsoil 42100, 0.18m deep; peat subsoil 42101, 0.40m deep; natural 42102 consists of bands of grey and white clays and silts.	None		375572.5 467123.7, 375592.4 467124.6
35-10,11	"	91	Mid-brown clayey silt topsoil 42100, 0.18m deep; peat subsoil 42101, 0.40m deep; natural 42102 consists of bands of grey and white clays and silts.	None		375613.4 467135.1, 375638.8 467119.1
35-10,11	"	92	Mid-brown clayey silt topsoil 42100, 0.18m deep; peat subsoil 42101, 0.40m deep; mid-grey silty clay natural 42102.	None: the bank under investigation, visible as a surface earthwork, was interpreted as a natural feature.		375678.5 467141.1, 375679.7 467121.2
35-10,11	"	93	Mid-brown clayey silt topsoil 42100, 0.18m deep; peat subsoil 42101, 0.40m deep; natural 42102 consists of bands of gravel and light grey clayey silt.	Two stone-lined culverts and a natural gravel bank, not further recorded.		375705.8 467141.9, 375743.3 467128.0
35-10,11	"	94	Mid-brown clayey silt topsoil 42100, 0.40m deep; peat subsoil 42101, 0.60m deep; natural 42102 consists of bands of mid-brown and greyish-brown clays and silts.	Two stone-lined culverts, not further recorded; surface earthworks resembling a bank and ditch proved to be natural features.		375775.0 467138.4, 375804.4 467144.7
35-10,11	"	95a	Mid-brown clayey silt topsoil 42100, 0.30m deep, directly overlying light yellowish-grey gravelly clayey silt natural 42102.	None		375847.3 467139.0, 375866.4 467133.1

Appendix G
Trial pits and evaluation trenches

Plot	Plot analysis	Trench	Topsoil, subsoil and natural	Archaeological remains	Fig.	NGR (both ends of trench)
36-3	DBA CBY: enclosures, FSU 45: R&F,, Geophysical anomalies: possible pits , FSU 44 earthen banks	95b	Light- to mid greyish-brown friable silty topsoil, no number, 0.22m deep; orange sandy silt subsoil 2002, 0.43m deep; dark grey stony boulder clay natural, no number.	None: geophysical anomalies appear to have been caused by large stones.		374899.9 467264.6, 374919.2 467259.2
36-3	"	96	Light- to mid greyish-brown friable silty topsoil, no number, 0.20m deep; orange sandy silt subsoil 2002, 0.16m deep; dark grey stony boulder clay natural, no number.	Kiln 2007: circular, c. 3m in diameter and 0.45m deep, with a tapering flue to NW and the remains of an interior stone structure below several fills containing charcoal and burnt clay. Remnant of an earth bank, 2003, with an associated ditch, 2005, above the subsoil: visible as a NE-SW running surface earthwork.		A:374921.3 467252.8, 374935.1 467238.4
36-3	"	97	Light- to mid greyish-brown friable silty topsoil, no number, 0.36m deep; orange sandy silt subsoil 2002, 0.22m deep; dark greyish-brown stony boulder clay natural, no number.	None		374955.3 467247.4, 374949.9 467228.2
41-2	DBA: R&F, FSU 29: enclosure and possible pits	98	Dark brown sandy clayey silt topsoil, no number, 0.30m deep; orangish-brown sandy silt subsoil, no number, 0.40m deep; yellowish-brown sandy silty clay natural, no number.	Shallow ditch and bank, running NW-SE. The ditch cut the subsoil, and was 0.20m deep, but the feature was not further recorded: uncertain whether it was a redundant field boundary or a natural feature.		370635.1 470972.8, 370654.4 470967.6
41-2	"	99	Mid greyish-brown sandy clay silt topsoil, no number, 0.25m deep; light orangish-greyish-brown clayey silt subsoil, no number, 0.28m deep; mottled orange, brownish-white and brown clayey silt natural, no number.	Stone-lined culvert, not further recorded.		370664.3 470968.3, 370690.9 470982.2
41-2	"	100	Dark greyish-brown sandy clay silt topsoil, no number, 0.25m deep; light orangish-greyish-brown clayey silt subsoil, no number, 0.28m deep; mottled orange and brown clayey silt natural with stony banding, no number.	Geophysical anomalies appeared to have been caused by natural gravel banding.		370696.1 470981.0, 370711.8 470955.5

Appendix G
Trial pits and evaluation trenches

Plot	Plot analysis	Trench	Topsoil, subsoil and natural	Archaeological remains	Fig.	NGR (both ends of trench)
41-2	"	101	Very dark brown sandy clay silt topsoil, no number, 0.18m deep; orangish-brown sandy silt subsoil, no number, 0.28m deep; mottled greyish-brown clayey silt natural, no number.	None		370746.5 470968.5, 370746.5 470968.5
45-2,3	FSU 26: R&F, FSU 23/24: earthen bank, Geophysical anomalies: visible earthworks and modern ferrous	102	Mid brown silty clay topsoil 2100, 0.37m deep, directly overlying soft orangish-greyish-brown clay natural 2101.	Stone-lined drain 2102		368484.1 471072.9, 368472.1 471056.9
45-2,3	"	103	Mid brown silty clay topsoil 2109, 0.20m deep, directly overlying light brownish-red clayey silt natural with gravel banding, 2110.	None		368524.2 471077.2, 368543.8 471054.5
45-2,3	"	104	Dark brown silty clay topsoil 2112, 0.20m deep; light brown soft silty clay subsoil 2113, 0.29m; mid orange-brown sandy clayey silt natural 2115 at the SW end of the trench, adjoining light greyish-brown loose sand and gravel natural 2116 at the NE end.	Deposit of mid greyish-brown sandy clayey silt, 2114, 0.95m wide and 0.20m deep, below subsoil 2113: this deposit occupies a dip at the junction of the two types of natural, and is probably of natural origin.		368568.6 471061.8, 368582.2 471076.4
45-2,3	"	105	Dark brown silty clay topsoil 2117, 0.18m deep, directly overlying orangish-brown sandy silty clay natural 2118.	None		368607.8 471053.6, 368624.7 471043.0
45-10	Geophysical anomalies: rectilinear feature	106	Mid-brown clayey silt topsoil 32107, 0.20m deep, directly overlying natural 32108, varicoloured, very mixed silty sandy clays.	None		366914.9 471178.9, 366934.9 471179.6
45-10	"	107	Mid brownish-grey, slightly sandy, silty clay topsoil 32105, directly overlying light brownish-yellow, slightly silty sandy clay 32106.	Pit/posthole 32101: 0.20m in diameter and 0.08m deep; the light brown sandy silty clay fill produced no evidence of use or dating.	4	366941.0 471178.9, 366958.9 471192.9
45-10	"	108	Mid brownish-grey clayey silt topsoil 32102, directly overlying mid-yellow to light orange clayey sandy silt natural 32103.	Irregular layer of burnt material, 32104, covering an area c. 3.0m x 1.1m and up to 0.08m thick.	4	366965.1 471180.8, 366985.1 471181.6

Appendix G
Trial pits and evaluation trenches

Plot	Plot analysis	Trench	Topsoil, subsoil and natural	Archaeological remains	Fig.	NGR (both ends of trench)
52-1	Geophysical anomalies: ditches, pits and modern ferrous	73	Mid greyish-brown sandy silt topsoil 200, 0.30m deep; mid brownish-grey silty clay subsoil 1607, up to 0.75m deep; natural 1608 consisted of bands of clay and gravel.	None		358836.2 470206.6, 358855.9 470210.0
52-1	"	74	Mid greyish-brown sandy silt topsoil 200, 0.22m deep; mid brownish-grey, orange mottled, silty clay subsoil 1600, up to 0.57m deep; light orangish-grey silty clay natural 1601.	Shallow ditch 1602: 2.20m wide, 0.25m deep, running NW-SE, filled by mid brownish-grey sandy clay 1603 above light brownish-grey sandy clay 1604. Neither fill produced dating evidence. Shallow pit 1605, 0.52m wide and 0.12m deep, with a single charcoal-rich fill producing no finds.	4	358870.4 470209.7, 358884.2 470224.2
52-1	"	75	Mid greyish-brown sandy silt topsoil 200, 0.20m deep; mid brownish-grey silty clay subsoil 1609; natural 1610 consisted of bands of clay and gravel.	None		358901.2 470217.5, 358930.8 470222.3
52-1	"	76	Mid greyish-brown sandy silt topsoil 200, 0.25m deep; mid brownish-grey sandy silt subsoil 1611, up to 0.49m deep; mid brownish-grey sandy silt natural with abundant stone inclusions, 1612.	None		358950.4 470235.7, 358953.4 470215.9
52-1	"	77	Mid greyish-brown sandy silt topsoil 200, 0.20m deep; mid brownish-grey sandy silt subsoil 1613, 0.30m deep; light bluish-purple gravelly clay natural 1614, with patches of grey clayey silt.	Shallow linear feature 1616, running roughly N-S, possibly a furrow.	4	358978.9 470230.3, 358998.6 470233.6
Sub-total		102				
2nd stage of evaluation						
31-3	DBA ZGT: boundary	109	Dark brownish-black, very organic topsoil 2204, 0.20m deep; mid-brown clayey silt subsoil 2205, 0.15m deep; yellowish-orange sandy clay natural 2209.	Stone-lined drain 2200, cutting the fill of curvilinear ditch 2207. The ditch was 1.25m wide and 0.55m deep, and was associated with 2202, an earthen bank revetted with cobbles, 3.0m wide and 0.33m high, visible as a standing earthwork throughout the plot.	4	The NGRs for the 2 nd tier of trenches are not known.

Appendix G
Trial pits and evaluation trenches

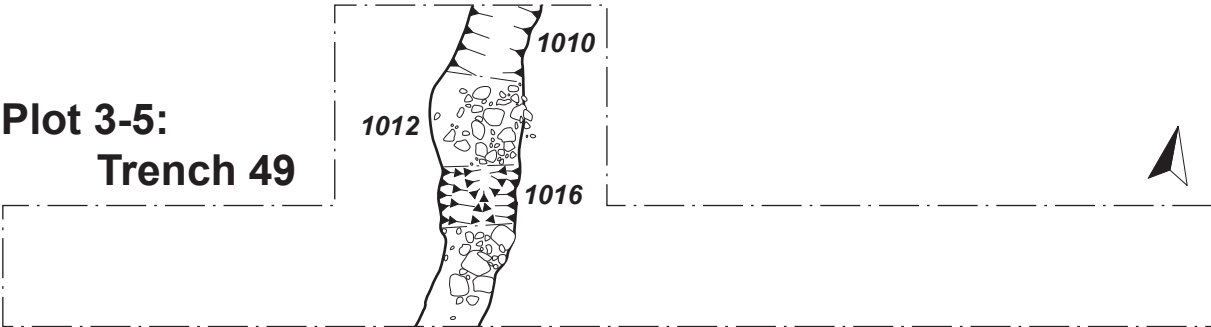
Plot	Plot analysis	Trench	Topsoil, subsoil and natural	Archaeological remains	Fig.	NGR (both ends of trench)
34-2	FSU 63: drain, Geophysical anomalies: ditch	110	Blackish-brown, very organic topsoil 2213, 0.24m deep; light grey, plastic clay subsoil 2212, 0.31m deep; base of trench formed by dark brown silty peat layer 2211.	None		
34-2	"	111	Blackish-brown, very organic topsoil 2213, 0.24m deep; light grey, plastic clay subsoil 2212, 0.31m deep; base of trench formed by dark brown silty peat layer 2211, containing wood fragments.	Shallow pit 2214, 1.20m in diameter and 0.16m deep. Light grey sandy clay fill 2215 contained large limestone fragments, but no evidence of use or date.	4	
36-12	DBA CBX: Rectilinear enclosures, FSU 41: earthen banks, FSU 42: culvert, Geophysical anomalies: visible earthworks and pits	112	Dark reddish-brown to reddish-black, very organic topsoil 2216, 0.27m deep; mottled orangish- and yellowish-grey sandy silt subsoil 2217, depth more than 0.10m; natural not exposed.	Stone-lined drain 2218, cut into subsoil 2217.		
36-12	"	113	Blackish-brown, very organic topsoil 2216, 0.22m deep; orangish-brown sandy silt subsoil 2217, 0.52m deep; grey sandy clay natural 2221.	None		
40-10	FSU 31 R&F, Geophysical anomalies: visible earthworks and R&F	114	Dark brown sandy topsoil, no number, 0.20m deep; mid-brown clayey silt subsoil, no number, 0.40m deep, overlying a second subsoil layer, no number, of dark brown silty clay 0.20m deep; dark greyish-brown silty clay natural, no number.	None		
46-5	Geophysical anomalies: archaeological potential	115	Dark brown sandy topsoil, no number, 0.10m deep; mid-brown clay subsoil, no number, 0.10m deep; yellow clay natural, no number.	Two stone-lined drains, not further recorded		
46-5	"	116	Dark brown sandy topsoil, no number, 0.15m deep; light greyish-brown silty clay subsoil, no number, 0.20m deep; mottled light orange/grey clay natural, no number.	None		

Plot	Plot analysis	Trench	Topsoil, subsoil and natural	Archaeological remains	Fig.	NGR (both ends of trench)
46-10	FSU 015: R&F, Geophysical anomalies: possible pit and R&F	117	Dark brown topsoil, no number, 0.15m deep; light greyish-brown silty clay subsoil, no number, 0.20m deep; light orange clay natural, no number.	None		
46-10	"	118	Dark brown topsoil, no number, 0.25m deep; light brown clayey silt subsoil, no number, 0.20m deep; light orange silty clay natural, no number.	None		
48-3	FSU 013: Culvert , Geophysical anomalies: pit cluster and R&F	119	Brownish-black, very organic topsoil, no number, 0.20m deep; dark brown clayey silt subsoil, no number, 0.40m deep; grey clay natural, no number, only exposed in a small area due to field drains and live services within the trench.	None		
12-2	Geophysical anomaly: possible barrow	31	Dark brownish-grey sandy silt topsoil, no number, 0.14m deep; mid orangish-brownish-grey silty sandy clay subsoil, no number, 0.25m deep; light brownish-yellow sandy clay natural, no number, with lenses of mid brownish-grey sandy silt and shale.	None		
19-3	Identified by YNDP archaeologist as potential Roman road	84	Dark brownish-grey silty topsoil 200, 0.19m deep; mid brown sandy silt subsoil 1907, 0.20m deep; mottled orange/grey sandy clay natural 1900.	N-S aligned boundary feature, consisting of bank 1905 with double ditch 1906 and 1908. A furrow, 1903, was on the same alignment. No dating evidence, but the boundary ditches cut subsoil 1907.	4	
19-6	Medieval earthworks	85	Dark grey clayey silt topsoil 200, 0.25m deep; mottled dark grey/orange silty clay subsoil, 1909, 0.15m deep; mottled orange/grey sandy silty clay natural 1910.	None		
19-6	"	86	Mid greyish-brown topsoil 200, 0.20m deep; mid- to dark orangish-brown silty clay subsoil 1911, 0.15m deep; brownish-grey clay natural 1912.	NW-SE aligned boundary feature, consisting of bank 1913 and double ditch 1915 and 1917. No dating evidence, but the boundary ditches cut subsoil 1911.	4	

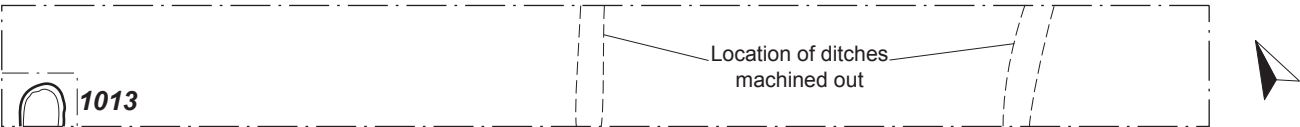
Plot 2-6: Trench 18



Plot 3-5: Trench 49



Plot 3-5: Trench 51



Plot 7-19: Trench 64



Plot 8-2: Trench 71



Plot 12-3: Trench 6



Key

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2.0	19/09/08	Evaluation Trenches	JLH	JLH	SN
Ver	Date	Description	DM	Chk	App



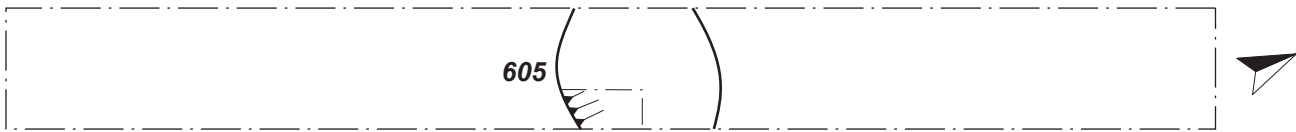
Pannal to Nether Kellet Gas Pipeline

Appendix G

Figure 1: Evaluation trench plans; trenches 18, 49, 51, 64, 71 and 6.

Scale 1:125

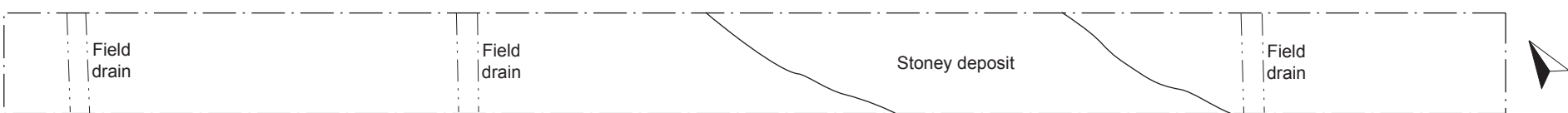
Plot 15-1: Trench 24



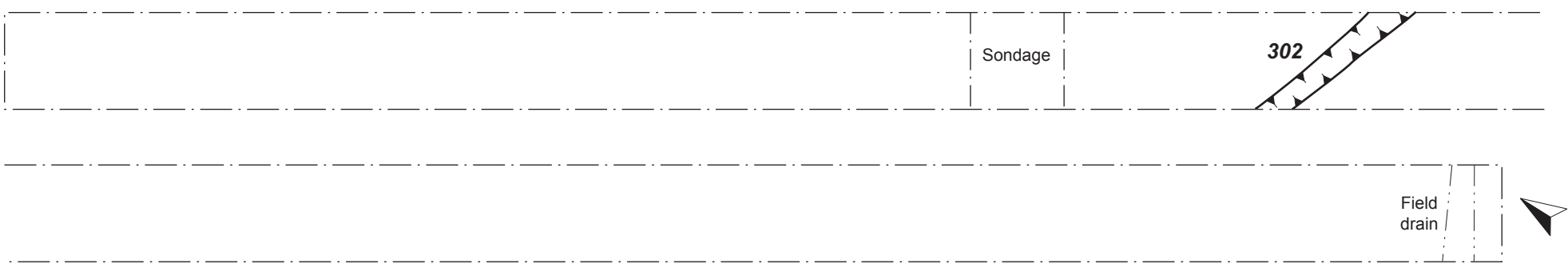
Plot 15-16: Trench 27



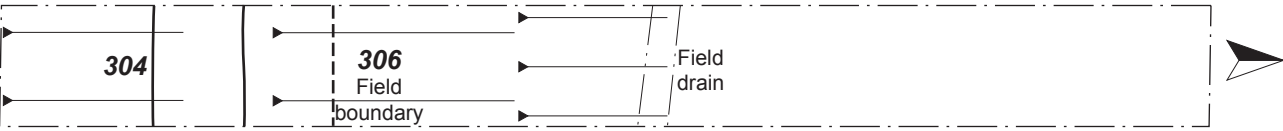
Plot 21-18: Trench 32



Plot 21-18: Trench 34



Plot 21-18: Trench 36



Plot 21-18: Trench 37



Plot 25-3: Trench 61



Key

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2.0	22/9/08	Evaluation Trenches	JLH	JLH	SN
Ver	Date	Description	DM	Chk	App



Pannal to Nether Kellet Gas Pipeline

Appendix G

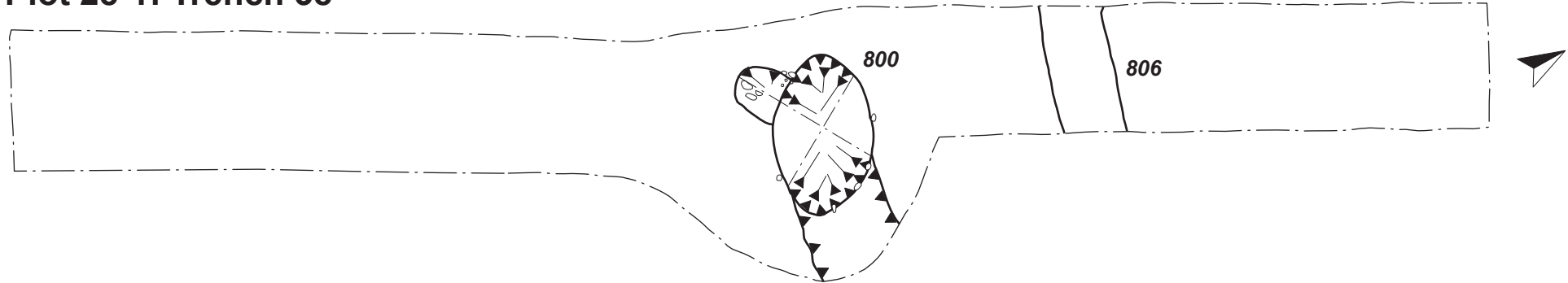
Figure 2: Evaluation trench plans; trenches 24, 27, 32, 34, 36, 37 and 61.

Scale 1:125

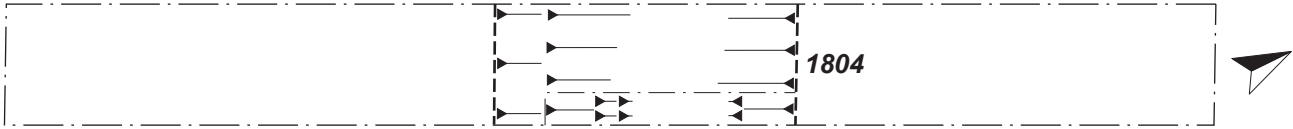
Plot 25-3: Trench 62



Plot 28-1: Trench 38



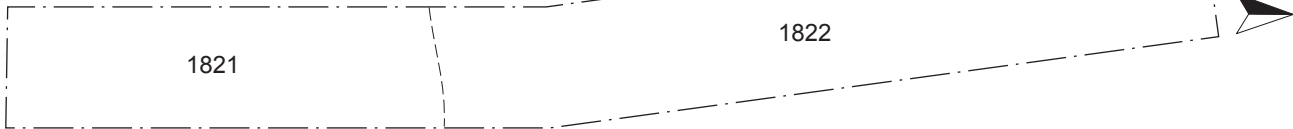
Plot 32-1: Trench 78



Plot 32-1: Trench 79



Plot 32-2: Trench 80



Plot 33-3: Trench 67



Plot 33-3: Trench 69



Key

Charcoal

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2.0	22/9/08	Evaluation Trenches	JLH	JLH	SN
Ver	Date	Description	DM	Chk	App



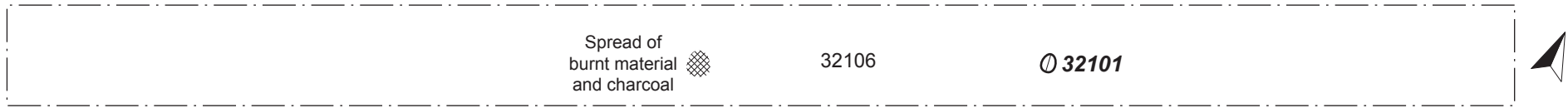
Pannal to Nether Kellet Gas Pipeline

Appendix G

Figure 3: Evaluation trench plans; trenches 62, 38, 78, 79, 80, 67 and 69.

Scale 1:125

Plot 45-10: Trench 107



Plot 45-10: Trench 108



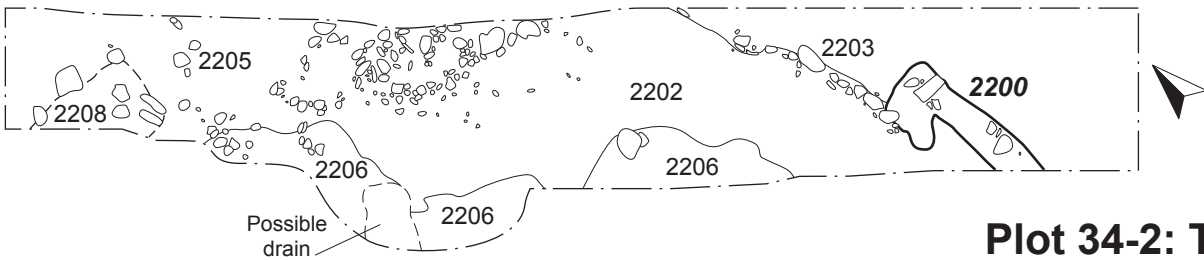
Plot 52-1: Trench 74



Plot 52-1: Trench 77



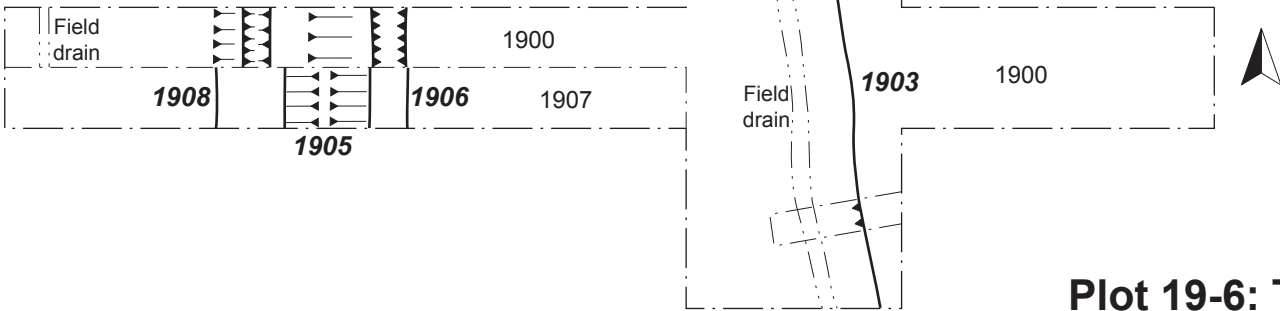
Plot 31-3: Trench 109



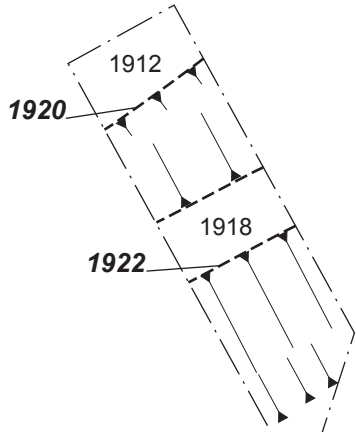
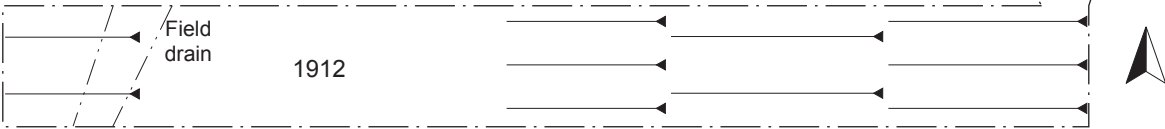
Plot 34-2: Trench 111



Plot 19-3: Trench 84



Plot 19-6: Trench 86



Key

- # Charcoal
- Area of burning

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2.0	22/9/08	Evaluation Trenches	JLH	JLH	SN
Ver	Date	Description	DM	Chk	App



Pannal to Nether Kellet Gas Pipeline

Appendix G

Figure 4: Evaluation trench plans; trenches 107, 108, 74, 77, 109, 111, 84 and 86.

Scale 1:125



Appendix H

Plot Gazetteer

Introduction

This appendix provides information locating each of the plots on the pipeline, and a brief summary of what they were found to contain during the various stages of archaeological intervention. This has been done in order to provide a ready reference to the work carried out in each of the plots and an overview of each plot's archaeological potential.

The first column heading in the table below contains the plot number, which is the main identifier of the plot, as used elsewhere in this report. The second column heading gives the Network (N) plot number: these were used in earlier stages of work, before the official pipeline plot numbering scheme had been devised and implemented. The Network plot number is given to facilitate comparison with earlier reports that utilised this scheme. NGRs in the third column locate the centre of the pipeline in each plot. Subsequent columns summarise the results from each of the stages of intervention: desk-based assessment (DBA), field survey (FSU), topographical survey etc. The positive results of a particular stage of work are described with text, whereas an 'X' indicates that a stage of work was carried out in the plot, but nothing was found. A '—' indicates that a stage of work or method of investigation was not carried out in the plot.

Plots are described from Plot 0-1 to Plot 56-5, that is, from Pannal to Nether Kellet.

Plot	'N' no.	NGR		DBA	FSU	Topographic Survey	Geophysical Survey	Metal Detecting	Test Pit	Evaluation	Excavation	Watching Brief	Comments
0-1	520	425221	450619	X	X	—	—	—	—	—	—	X	
0-2	519	425140	450489	X	Drain	—	Service	—	—	—	—	Drain	
0-3a	518	424904	450302	X	Drain	—	Pits, Service	—	—	—	—	Drain	
0-4	517	424759	450213	X	X	—	Cultivation, Land Drains	—	—	—	—	X	
1-1	516	424633	450210	X	X	—	Land Drains, Service	—	—	—	—	X	
1-2	515	424458	450137	X	X	—	—	—	—	—	—	X	
1-3	515	424299	450126	X	X	—	—	—	—	—	—	X	
1-3a	515	424210	450098	X	X	—	—	—	—	—	—	X	
1-4	515	424165	450078	X	X	—	—	—	—	—	—	Boundary	
1-4a	514	424140	450068	X	Stone-faced bank	—	Cultivation	—	—	—	—	X	
1-5	514	424105	450056	X	Stone-faced bank	—	Cultivation	—	—	—	—	X	
1-6	513	423946	450007	X	Bank	—	Cultivation, Modern Ferrous	—	—	—	—	Pit	
1-7	512	423803	449936	X	X	—	Pits	—	—	—	—	X	
1-8	512	423747	449850	Ridge and Furrow	X	—	Pits	—	—	—	—	Ridge and Furrow	
1-9	511	423667	449734	Ridge and Furrow	X	—	Ditch, Pits	—	—	X	—	X	
1-10	510	423612	449653	X	X	—	Service	—	—	—	—	X	
1-11	509	423573	449583	Ridge and Furrow	X	—	X	—	—	—	—	X	
1-12	508	423463	449369	X	Bank	—	Pits	—	—	—	—	X	
2-1	507	423378	449137	X	X	—	—	—	—	—	—	X	
2-2	506	423371	449034	X	X	—	—	—	—	—	—	X	
2-3	505	423349	448906	X	X	—	—	—	—	—	—	Bank	
2-4	504	423327	448744	Motte, Field System	X	—	Pits, Ditches, Quarry, Boundary	—	—	—	—	Field System	
2-5	503	423269	448627	X	X	—	X	—	—	—	—	X	
2-6	501	423177	448558	X	X	—	—	—	—	Burning, Track	—	X	
2-7	501	423040	448460	X	X	—	—	—	—	—	—	X	
2-8	500	422967	448405	X	X	—	—	—	—	—	—	X	
2-9	500	422898	448355	X	X	—	—	—	—	—	—	Boundary	
3-1	499	422792	448281	X	X	—	—	—	—	—	—	X	
3-2	498	422723	448195	X	Bank, Ditch	—	—	—	—	—	—	X	
3-3	497, 496	422661	448159	X	X	—	—	—	—	—	—	X	
3-4	494	422570	448120	X	X	—	Pits, Ditch, Ridge and Furrow, Burning, Earthwork	—	—	X	—	X	
3-5	494	422332	448182	Ridge and Furrow	X	—	Pits, Ditch, Ridge and Furrow, Burning	—	—	Ditches, Bank, Burning	Roman Field System, Kiln	Bank	Evaluation went to excavation
3-6	493	422081	448251	X	X	—	Pits, Ditch, Ridge and Furrow, Burning	—	—	X	—	X	
3-7	492	421882	448312	Ridge and Furrow	X	—	Ditch, Ridge and Furrow	—	—	—	—	X	
4-1	491	421751	448368	X	X	—	—	—	—	—	—	X	
4-2	490	421677	448396	X	X	—	—	—	—	—	—	X	
4-3	489	421617	448426	Ridge and Furrow	X	—	—	—	—	—	—	X	
4-4	488	421550	448454	X	X	—	—	—	—	—	—	X	
4-5	487	421452	448480	X	X	—	—	—	—	—	—	X	
5-1	486	421310	448521	Ridge and Furrow	Bank	—	—	—	—	—	—	X	
5-2	484, 485	421126	448571	Ridge and Furrow	Bank, Ditch	—	—	—	—	—	—	Bank, Ditch	
5-2a	483	420889	448600	Ridge and Furrow	X	—	—	—	—	—	—	X	
5-3	482	420858	448594	X	X	—	—	—	—	—	—	X	
5-4	481	420795	448574	Ridge and Furrow	X	—	—	—	—	—	—	X	
5-5	480	420639	448532	X	Bank, Track	—	—	—	—	—	—	X	

Plot	'N' no.	NGR		DBA	FSU	Topographic Survey	Geophysical Survey	Metal Detecting	Test Pit	Evaluation	Excavation	Watching Brief	Comments
5-6	479	420438	448519	X	Bank	—	—	—	—	—	—	Bank	
5-7	478	420171	448686	Stone	X	—	—	—	—	—	—	Bank	
5-8	477	419948	448814	Quarry	X	—	—	—	—	—	—	X	
5-9	476	419773	448820	X	X	—	—	—	—	—	—	X	
5-10	476	419675	448825	X	X	—	—	—	—	—	—	X	
5-11	475	419572	448826	X	Drain	—	—	—	—	—	—	X	
6-1	474	419424	448766	X	X	—	—	—	—	—	—	X	
6-2	473	419268	448769	X	X	—	—	—	—	—	—	X	
6-3	472	419217	448808	X	X	—	—	—	—	—	—	X	
6-4	471	419160	448847	X	X	—	—	—	—	—	—	X	
6-5	470	419028	448856	X	X	—	—	—	—	—	—	X	
6-6	469	418769	448867	Ridge and Furrow, Boundary, Ditch, Bank	Boundary	—	—	—	—	—	—	X	
6-7	468	418387	448883	X	Earthwork, Ditch	Irregular Earthwork	—	—	—	—	Post-Medieval Brick Clamps	Earthwork, Ditch	
6-8	467	418123	448943	X	Bank, Enclosure	—	Ridge and Furrow, Land Drain, Service	—	—	—	—	X	
6-9	466	418054	448997	X	Ditch	—	Pits, Quarry	—	—	—	—	Ditch	
6-10	465	417908	449109	Ridge and Furrow	Bank	—	Pits, Quarry	—	—	—	—	X	
7-1	458	417696	449268	X	X	—	Ridge and Furrow	—	—	—	—	X	
7-2	457	417599	449319	Quarry	X	—	Pits	—	—	—	—	X	
7-3	456	417510	449372	Ridge and Furrow	X	—	Pits	—	—	—	—	X	
7-4	455	417430	449410	X	X	—	—	—	—	—	—	X	
7-5	455	417340	449450	X	X	—	—	—	—	—	—	X	
7-6	454	417148	449533	Ridge and Furrow	X	—	Ridge and Furrow, Land Drains	—	—	—	—	X	
7-7	453	416961	449614	Ridge and Furrow	X	—	Ridge and Furrow	—	—	—	—	X	
7-8	452	416831	449672	Ridge and Furrow	X	—	—	—	—	—	—	X	
7-9	451	416733	449720	X	X	—	—	—	—	—	—	X	
7-10	450	416660	449739	X	X	—	—	—	—	—	—	X	
7-11	449	416586	449769	X	X	—	—	—	—	—	—	X	
7-12	448	416504	449795	X	Bank	—	—	—	—	—	—	X	
7-13	447	416421	449825	X	Bank	—	—	—	—	—	—	X	
7-14	446	416356	449847	X	X	—	—	—	—	—	—	Boundary	
7-15	445	416268	449881	X	Bank	—	—	—	—	—	—	X	
7-16	445	416172	449915	X	Bank	—	—	—	—	—	—	Bank	
7-17	444	416098	450028	X	X	—	Ridge and Furrow, Track	—	—	—	—	X	
7-18	443	415973	450188	X	X	—	Pits, Quarry	—	—	—	Medieval and Post-Medieval Farmhouse, Kiln	Medieval and Post-Medieval Farmhouse, Kiln	Excavated in watching brief element
7-19	441	415685	450388	Ditch	Drain	—	Ditch, Pit	—	—	Ditch	—	X	
7-20	440	415338	450578	X	X	—	X	—	—	—	—	X	
7-21	439	415092	450659	X	Bank	—	X	—	—	—	—	X	
7-22	438	414908	450678	X	X	—	X	—	—	—	—	X	
7-23	438	414828	450681	Cairn, Enclosure	X	—	Ridge and Furrow	—	—	—	—	Ditch	
7-24	438	414758	450684	Cairn, Enclosure	X	—	Ridge and Furrow	—	—	—	—	X	
7-25	438	414694	450687	X	X	—	Ridge and Furrow	—	—	—	—	X	
7-26	437	414669	450686	X	X	—	—	—	—	—	—	X	
7-27	437	414596	450684	X	X	—	—	—	—	—	—	X	
7-28	436	414463	450686	X	X	—	—	—	—	—	—	X	

Plot	'N' no.	NGR		DBA	FSU	Topographic Survey	Geophysical Survey	Metal Detecting	Test Pit	Evaluation	Excavation	Watching Brief	Comments
7-29	436	414376	450681	X	Track	—	—	—	—	—	—	X	
7-30	434	414229	450681	X	X	—	—	—	—	—	—	X	
7-31	433	414119	450669	X	X	—	—	—	—	—	—	X	
8-1	432	414048	450663	X	X	—	—	—	—	—	—	X	
8-1a	432	413961	450653	X	X	—	—	—	—	—	—	X	
8-2	431	413835	450653	X	Bank, Ditch	—	Pits, Ditches, Ridge and Furrow	—	—	Ridge and Furrow, Bank	—	X	
8-3	430	413693	450656	X	X	—	Ridge and Furrow	—	—	—	—	X	
8-4	429	413485	450614	X	Boundary	—	Burning, Ridge and Furrow	—	—	—	—	X	
8-5	428	413390	450502	X	X	—	Ridge and Furrow	—	—	—	Medieval Bloomery Furnace	Medieval Bloomery Furnace	Excavated in watching brief element
8-6	427	413242	450366	X	X	—	Ditch, Ridge and Furrow	—	—	—	—	X	
9-1	426	413067	450285	X	X	—	Ridge and Furrow	—	—	—	—	X	
9-2	426	412930	450269	X	Boundary	—	Service, Ridge and Furrow	—	—	—	—	X	
9-3	425	412793	450265	X	Boundary	—	—	—	—	—	—	X	
9-4	425	412683	450241	X	X	—	—	—	—	—	—	X	
9-5	424	412629	450237	X	X	—	—	—	—	—	—	X	
9-6	424	412551	450232	X	X	—	—	—	—	—	—	X	
9-7	424	412451	450238	Pond	X	—	—	—	—	—	—	Pond, Boundary	
10-1	423	412312	450251	Pen	X	—	—	—	—	—	—	X	
10-2	422	412078	450271	X	Boundary	—	—	—	—	—	—	X	
10-3	421	411838	450293	Bank	X	—	—	—	—	—	—	X	
10-4	420	411755	450299	X	X	—	—	—	—	—	—	X	
10-5	419	411715	450304	Bank	Boundary	—	—	—	—	—	—	X	
10-6	417	411523	450326	X	X	—	—	—	—	—	—	Boundary	
10-7	416	411294	450293	X	X	—	—	—	—	—	—	X	
10-8	415	411148	450313	X	Drain	—	—	—	—	—	—	X	
10-9	415	411074	450321	X	X	—	—	—	—	—	—	X	
10-10	414	410935	450340	Quarry	X	—	—	—	—	—	—	X	
10-11	413	410769	450360	X	X	—	—	—	—	—	—	X	
10-12	412	410687	450371	X	X	—	—	—	—	—	—	X	
10-13	411	410620	450382	X	X	—	—	—	—	—	—	X	
10-14	411	410581	450399	X	X	—	—	—	—	—	—	X	
11-1	410	410487	450443	X	X	—	Service	—	—	—	—	X	
11-2	409	410331	450516	X	X	—	X	—	—	—	—	X	
11-3	408	410203	450541	X	X	—	Ditch	—	—	—	—	X	
11-4	407	410089	450547	Enclosure	X	—	Track, Burning	—	—	—	—	X	
11-5	406	409924	450546	Quarry	X	—	Cultivation	—	—	—	—	X	
11-6	405	409746	450720	X	Track	Hollow-way	—	—	—	—	Ditch	Ditch, Track	Excavated in watching brief element
11-7	403	409659	450868	X	Track	—	—	—	—	—	—	X	
11-8	402	409606	450887	X	Track	—	X	—	—	—	—	X	
11-9	401	409496	450881	X	X	—	X	—	—	—	—	X	
11-10	400	409300	450750	X	X	—	X	—	—	—	—	X	
11-11	399	409049	450575	Ridge and Furrow	X	—	Ridge and Furrow, Pits	—	—	—	—	Building	
11-12	397	408802	450365	X	Bank	—	Ridge and Furrow	—	—	X	—	Earthwork	
12-1	396a	408607	450319	Ridge and Furrow	X	—	Ridge and Furrow	—	—	—	—	X	
12-2	396	408520	450354	X	Barrow	—	Ditches, Ridge and Furrow, Pits	—	—	Boundary, Wall	—	X	

Plot	'N' no.	NGR		DBA	FSU	Topographic Survey	Geophysical Survey	Metal Detecting	Test Pit	Evaluation	Excavation	Watching Brief	Comments
12-3	395	408344	450427	Boundary	Earthwork	Mound or Barrow	Industrial Burning, Pits, Palaeochannel, Ridge and Furrow	—	—	X	—	X	
12-4	393	408130	450517	X	Boundary	—	X	—	—	—	Kilns	Kilns	Excavated in watching brief element
12-5	392	408036	450569	X	X	—	Ridge and Furrow	—	—	—	—	X	
13-1	391	407941	450591	X	X	—	Ridge and Furrow	—	—	—	—	X	
13-2	389	407848	450614	X	Bank, Ditch	—	Pits	—	—	—	—	X	
13-3	389	407713	450645	X	X	—	Pits	—	—	—	—	X	
13-4	388	407470	450755	Well	X	—	—	—	—	—	—	Boundary	
13-5	387	407342	450907	X	Drain	—	—	—	—	—	—	X	
13-6	386	407284	450973	X	X	—	—	—	—	—	—	X	
13-7	385	407214	451054	X	Track	—	—	—	—	—	—	Track	
13-8	384	407019	451291	X	X	—	—	—	—	—	—	X	
13-9	383	406834	451510	X	X	—	Burning, Service	—	—	—	—	X	
13-10	382	406718	451648	X	X	—	—	—	—	—	—	X	
13-11	381	406614	451747	X	X	—	—	—	—	—	—	X	
13-12	380	406503	451831	X	X	—	—	—	—	—	—	X	
13-13	379	406236	452042	Building	Building, Drain	—	—	—	—	—	—	X	
13-14	378	406071	452399	Quarry	X	—	—	—	—	—	—	Quarry	
13-15	377	405915	452541	Ridge and Furrow, Quarry, Bank, Ditch, Track, Enclosure	Ridge and Furrow, Building	Ridge and Furrow	—	—	—	—	—	X	
13-16	377	405838	452597	X	X	—	—	—	—	—	—	X	
13-17	376	405768	452656	X	X	—	—	—	—	—	—	X	
13-18	375	405590	452792	X	Bank, Ditch	—	—	—	—	—	—	X	
13-19	375	405353	452999	Ditch, Field System	X	—	—	—	—	—	Post-Medieval Barn or Dwelling	Post-Medieval Barn or Dwelling	Excavated in watching brief element
13-20	374	405227	453073	Ridge and Furrow, Boundary	Ridge and Furrow, Track	Ridge and Furrow, Hollow-way	—	—	—	—	—	Track	
13-21	373	404998	453305	X	Bank	—	—	—	—	—	—	X	
14-1	372	404838	453458	Boundary	Ridge and Furrow, Field System	Ridge and Furrow, Strip Field System	—	—	—	—	Pits	Field System	
14-2	371	404633	453480	X	Ridge and Furrow, Bank	—	—	—	—	—	—	Bank, Ridge and Furrow	
14-3	370	404556	453483	X	X	—	—	—	—	—	—	X	
14-4	369	404452	453503	X	Ridge and Furrow, Bank	—	—	—	—	—	—	X	
14-5	368	404219	453527	X	Bank, Ditch	—	X	—	—	—	—	Bank, Ditch	
14-6	367	404016	453594	X	Drain	—	X	—	—	—	—	Earthwork	
14-7	366	403860	453756	X	X	—	X	—	—	—	—	X	
15-1	365	403692	453909	X	X	—	Pits	—	—	Kiln, Ridge and Furrow	Kiln	X	Evaluation went to excavation
15-2	364	403594	453963	X	Track	—	Boundary	—	—	—	—	Ridge and Furrow	
15-3	363	403463	454035	Ridge and Furrow	X	—	Ditches	—	—	—	—	X	
15-4	362	403282	454060	X	Track	—	—	—	—	—	—	X	
15-5	361	403135	454057	X	Ridge and Furrow	—	—	—	—	—	—	X	
15-6	360	403040	454048	X	X	—	—	—	—	—	—	X	
15-7	359	402914	454012	Ditch	X	—	—	—	—	—	—	Ditch	
15-8	358	402740	454006	Ridge and Furrow	Ridge and Furrow	—	—	—	—	—	Kilns	Kilns, Prehistoric Cup-marked Boulder	Excavated in watching brief element
15-9	357	402587	454002	X	Ridge and Furrow	Ridge and Furrow	—	—	—	—	—	X	
15-10	356	402352	454002	X	Ridge and Furrow, Bank, Ditch	—	—	—	—	—	—	Bank, Ditch	
15-11	355	402165	453979	X	X	—	—	—	—	—	—	X	

Plot	'N' no.	NGR		DBA	FSU	Topographic Survey	Geophysical Survey	Metal Detecting	Test Pit	Evaluation	Excavation	Watching Brief	Comments
15-12	354	402074	453995	X	X	—	Palaeochannel, Boundary	—	—	—	—	X	
15-13	353	401937	454059	X	X	—	Ditches	—	—	—	—	X	
15-14	352	401862	454059	X	X	—	Ditches	—	—	—	—	X	
15-15	351	401754	454057	X	X	—	Ridge and Furrow, Boundary	—	—	—	—	Ditch	
15-16	350	401613	454059	X	Ridge and Furrow, Drain, Building, Bank, Ditch, Earthwork, Boundary	—	Ditches, Pits, Ridge and Furrow	—	—	River Channel	—	X	
15-17	349	401481	454060	X	X	—	—	—	—	—	—	X	
15-18	348	401380	454123	X	Ridge and Furrow	—	—	—	—	—	—	X	
15-19	347	401246	454225	Ridge and Furrow	X	—	—	—	—	—	—	X	
16-1	346	401068	454202	X	X	—	—	Post-Medieval Copper Alloy Shoe Buckle	Flint Flake, Heat-affected Flint	—	—	Building	
16-2	345	400851	454177	Ridge and Furrow	X	—	—	Post-Medieval Coin	Heat-affected Flint	—	—	Ridge and Furrow	
16-3	344	400728	454163	X	X	—	—	Post-Medieval Copper Alloy Object	—	—	—	X	
16-4	343	400684	454155	X	X	—	—	Undated Lead Object	X	—	—	X	
16-5	342	400592	454144	Ridge and Furrow	X	—	—	Post-Medieval Buttons	Stone Drain	—	—	Ridge and Furrow	
16-6	341	400472	454132	X	X	—	—	Modern Coin	X	—	—	X	
16-7	340	400312	454116	Ridge and Furrow	X	—	—	Medieval Silver Coin	X	—	—	X	
17-1	339	400035	454085	Ridge and Furrow	X	—	—	X	X	—	—	X	
17-2	338	399823	454071	X	X	—	—	Post-Medieval Button	X	—	—	Boundary	
17-3	337	399694	454065	X	X	—	—	X	Ditch	—	—	X	
17-4	336	399588	454057	X	X	—	—	Modern White Metal	X	—	—	X	
17-5	335	399358	454043	Ridge and Furrow, Quarry, Kiln, Pit	X	—	—	X	X	—	—	X	
17-6	334	399115	454051	Quarry	Quarry	—	—	Modern Coin	X	—	—	X	
17-7	333	398943	454088	X	X	—	—	X	X	—	—	X	
17-8	332	398761	453998	Ridge and Furrow	X	—	—	Modern Harness	Field Drain	—	—	X	
17-9	331	398597	453870	X	X	—	—	X	—	—	—	X	
17-10	330a	398544	453840	X	X	—	—	X	—	—	—	X	
17-11	330	398499	453820	X	Bank	—	—	—	—	—	—	Bank	
17-12	329	398340	453739	X	X	—	—	—	—	—	—	X	
18-1	328	398174	453655	X	X	—	X	—	—	—	—	X	
18-2	327	397920	453712	X	Bank	—	Pits, Boundary	—	—	—	—	Bank	
18-3	326	397627	453742	X	X	—	Ditch, Land Drains	—	—	—	—	Bank	
19-1	325	397480	453757	Ridge and Furrow	Bank	—	—	X	X	—	Prehistoric Structure or Roundhouse	Bank	
19-1a	324a	397340	453770	Ridge and Furrow	X	—	—	X	—	—	—	X	
19-2	324	397213	453784	X	X	—	—	X	X	—	—	Earthwork, Ridge and Furrow	
19-3	323	396987	453747	Ridge and Furrow	Bank, Ditch	—	—	Post-Medieval Copper Alloy Object	Ditch	Ditches, Bank, Furrow	—	Bank, Ditch	
19-4	322	396774	453609	X	Bank, Ditch	—	—	X	X	—	—	Bank, Ditch	
19-5	321	396621	453516	X	X	—	—	X	X	—	—	Bank, Ditch	
19-6	320	396370	453314	X	Bank, Ditch	X	—	X	X	Ditches, Bank	—	Ridge and Furrow	
19-7	319,318	396142	453133	X	Bank, Ditch	—	—	X	X	—	—	Bank, Ditch	
19-8	317	396012	453007	Building	Bank	—	—	X	X	—	—	X	
20-1	316	395961	452951	X	X	—	—	—	—	—	—	X	
20-2	316a	395941	452903	X	Ridge and Furrow	—	—	—	—	—	—	Ridge and Furrow	
20-3	315a	395872	452800	Bank, Boundary	Bank, Ditch	X	—	—	—	—	—	Bank, Ditch	

Plot	'N' no.	NGR		DBA	FSU	Topographic Survey	Geophysical Survey	Metal Detecting	Test Pit	Evaluation	Excavation	Watching Brief	Comments
20-4	314a	395760	452572	X	X	—	—	—	—	—	—	Bank, Ditch	
20-5	313	395644	452419	X	Bank, Ditch	X	—	—	—	—	—	X	
20-6	312	395405	452286	X	X	—	—	—	—	—	—	X	
20-7	311	395095	452207	X	X	—	—	—	—	—	—	Quarry	
20-8	310,309	394780	452121	X	Bank, Earthwork	—	—	—	—	—	—	Bank, Ridge and Furrow	
20-9	308	394568	451976	X	Ridge and Furrow	X	Ridge and Furrow, Service	—	—	—	—	Ridge and Furrow	
20-10	307	394412	451939	Ridge and Furrow	X	—	Ridge and Furrow	—	—	—	—	Ridge and Furrow	
20-11	306	394314	451932	X	X	—	X	—	—	—	—	Ridge and Furrow	
20-12	305	394190	451907	X	X	—	X	—	—	—	—	X	
20-13	304	393936	451853	X	Drain	—	X	—	—	—	—	X	
20-14	302	393835	451823	X	X	—	X	—	—	—	—	X	
20-15	303	393800	451815	X	X	—	—	—	—	—	—	Bank, Ditch	
21-1	301	393666	451762	X	X	—	—	—	—	—	—	Ridge and Furrow	
21-2	300	393426	451775	X	X	—	—	—	—	—	—	X	
21-3	298	393108	451692	X	X	—	—	—	—	—	—	X	
21-4	297	392994	451622	X	X	—	—	—	—	—	—	Bank, Ditch	
21-5	296	392875	451564	X	Bank, Ditch	—	—	—	—	—	—	X	
21-6	295	392736	451502	X	X	—	—	—	—	—	—	X	
21-7	294	392613	451496	Ridge and Furrow	X	—	—	—	—	—	—	Ridge and Furrow	
21-8	293	392485	451605	X	Quarry	—	—	—	—	—	—	Quarry	
21-9	292a	392295	451734	Boundary	Ridge and Furrow, Bank, Track, Earthwork, Boundary	—	—	—	—	—	—	Bank, Track, Earthwork, Ridge and Furrow	
21-10	291	391928	451903	X	Ridge and Furrow, Bank, Track, Earthwork	—	—	—	—	—	Bronze Age Burnt Mound	Bank	
21-11	291a	391674	451948	X	Bank	—	—	—	—	—	—	X	
21-12	290	391474	452021	X	X	—	—	—	—	—	—	X	
21-13	289	391258	452021	X	Drain	—	—	—	—	—	—	Bank, Ditch	
21-14	288	391049	452034	X	X	—	—	—	—	—	—	Bank, Ditch	
21-15	287a	390824	452031	X	X	—	—	—	—	—	—	Boundary	
21-16	287	390571	452006	X	Bank, Ditch	—	—	—	—	—	—	Bank, Ditch	
21-17	287	390343	452003	X	Bank, Ditch	—	—	—	—	—	—	X	
21-18	286	390117	452071	Ridge and Furrow, Enclosure, Boundary	Bank, Ditch, Lynchet	Banks and Ditches, D-shaped Bank, Strip Lynchet, Earthen Bank	Earthwork, Banks, Ditches, Ridge and Furrow, Pits	—	—	Prehistoric Ditches, Banks	Prehistoric Ring Cairn, Late Iron Age, Romano-British and Early Medieval House Platforms and Ditches	Bank, Ditch	Evaluation went to excavation
21-19	285	389861	452160	X	X	—	—	—	—	—	—	Ridge and Furrow	
21-20	284	389418	452330	X	X	—	—	—	—	—	—	Bank, Ditch, Ridge and Furrow	
21-21	282a	389008	452432	X	X	—	—	—	—	—	—	Bank, Ditch, Ridge and Furrow	
21-22	281a	388741	452477	X	X	—	—	—	—	—	—	X	
22-1	280a	388634	452505	X	X	—	—	—	—	—	—	X	
23-1	279a	388543	452519	X	X	—	—	—	—	—	—	X	
23-2	278a	388286	452550	X	Track	—	—	—	—	—	—	Track, Boundary	
23-3	277	387849	452588	X	X	—	—	—	—	—	—	X	
23-4	276	387560	452653	Pit	X	—	—	—	—	—	—	X	
23-5	275	387403	452736	X	X	—	—	—	—	—	—	X	
23-6	274	387195	452807	X	X	—	—	—	—	—	—	X	
23-7	273	387021	452903	X	X	—	—	—	—	—	—	X	
23-8	272	386849	453046	Ridge and Furrow	X	—	Cultivation	—	—	—	—	Earthwork, Ridge and Furrow	

Plot	'N' no.	NGR		DBA	FSU	Topographic Survey	Geophysical Survey	Metal Detecting	Test Pit	Evaluation	Excavation	Watching Brief	Comments
23-9	271	386701	453169	Ridge and Furrow	X	—	Quarry	—	—	—	—	Ridge and Furrow	
24-1	270	386645	453296	X	X	—	Ridge and Furrow, Boundary	—	—	—	—	Earthwork, Ridge and Furrow	
24-2	270	386584	453380	X	X	—	Ridge and Furrow, Track	—	—	—	—	X	
24-3	269	386465	453539	Enclosure, Boundary, Railway	Ridge and Furrow, Bank, Ditch	X	Ridge and Furrow	—	—	—	—	Bank, Ditch	
24-4	268	386253	453826	Ridge and Furrow	X	—	X	—	—	—	—	Ridge and Furrow	
24-5	266	386108	453970	X	Ridge and Furrow	Ridge and Furrow, Hollow-way	X	—	—	—	—	Ridge and Furrow	
24-6	266	386061	453977	X	X	Ridge and Furrow, Hollow-way	Ridge and Furrow	—	—	—	—	Track	
24-7	266	385926	454002	X	Track	Ridge and Furrow, Hollow-way	Ridge and Furrow	—	—	—	—	Ridge and Furrow	
25-1	265	385753	453996	Building	X	—	X	—	—	—	—	Building	
25-2	264	385490	454026	Ridge and Furrow, Quarry	X	—	Ridge and Furrow, Boundary, Service	—	—	—	—	X	
25-3	263	385138	454063	X	X	—	Ditch, Ridge and Furrow, Quarry, Service	—	—	Pits	—	Boundary	
25-4	262	384966	454085	X	X	—	Boundary	—	—	—	—	Boundary	
25-5	261	384842	454068	X	Ridge and Furrow	—	Cultivation, Service	—	—	—	—	Track	
25-6	260	384679	454030	X	Ridge and Furrow	—	Ditch	—	—	—	—	Bank, Ditch	
25-7	259	384533	453998	X	X	—	Cultivation	—	—	—	—	Ridge and Furrow	
25-9	258	384422	453976	X	Track	—	—	—	—	—	—	Track	
25-10	257	384305	453963	X	Bank, Ditch	—	—	—	—	—	—	Bank, Ditch	
25-11	257	384194	453962	X	X	—	—	—	—	—	—	X	
25-12	256	384150	453995	Ridge and Furrow	X	—	—	—	—	—	—	Ridge and Furrow	
25-13	256	383966	454026	X	X	—	—	—	—	—	—	X	
25-14	255	383857	454096	X	Track	—	—	—	—	—	—	X	
25-15	255	383739	454179	X	X	—	—	—	—	—	—	Boundary	
26-1	254	383523	454328	Boundary, Road	Ridge and Furrow, Bank	X	Ditch	—	—	—	—	Ditch, Ridge and Furrow	
26-1a	253a	383266	454358	X	X	—	X	—	—	—	—	X	
26-2	253	383065	454583	X	Bank	—	Palaeochannel, Boundary, Earthwork, Cultivation	—	—	—	—	X	
26-3	252	382873	454795	X	Bank	—	Cultivation, Land Drains, Boundary	—	—	—	—	X	
26-4	251	382675	454999	Pond	X	—	—	—	—	—	—	X	
26-5	251	382534	455147	Pond	X	—	—	—	—	—	—	X	
26-6	251a	382441	455191	X	X	—	—	—	—	—	—	X	
26-7	250	382416	455286	X	X	—	—	—	—	—	—	X	
26-8	250	382350	455374	X	X	—	—	—	—	—	—	X	
26-9	250	382289	455434	X	X	—	—	—	—	—	—	X	
26-10	249	382225	455500	X	X	—	—	—	—	—	—	Track	
26-11	248	382207	455701	X	Ridge and Furrow	—	X	—	—	—	—	Boundary, Ridge and Furrow	
26-11a	247	382202	455918	Ridge and Furrow	X	—	Boundary	—	—	—	—	Bank	
26-12	246	382096	456088	X	Bank	—	Ditch, Ridge and Furrow	—	—	—	—	Bank	
26-13	245	381990	456322	X	Bank	—	Ditches, Ridge and Furrow	—	—	—	—	X	
26-14	244	381920	456497	X	X	—	—	—	—	—	—	X	
26-15	243	381848	456623	X	Bank	—	—	—	—	—	—	Ditch	
26-16	242	381798	456728	X	X	—	—	—	—	—	—	Ridge and Furrow	
26-17	241	381756	456801	X	X	—	Ditch	—	—	—	—	Bank, Ridge and Furrow	
26-18	240	381706	456880	Bank	Bank, Ditch, Boundary	—	Ridge and Furrow, Boundary	—	—	—	—	Bank, Ditch, Ridge and Furrow	
27-1	239	381586	457013	Field System,	Track, Drain	—	Services	—	—	—	—	Track, Ridge and Furrow	

Plot	'N' no.	NGR		DBA	FSU	Topographic Survey	Geophysical Survey	Metal Detecting	Test Pit	Evaluation	Excavation	Watching Brief	Comments
				Enclosure, Kiln									
27-2	238	381461	457339	Quarry, Building	X	—	Cultivation, Track	—	—	—	—	Boundary	
27-3	237	381425	457523	X	Ridge and Furrow, Bank	—	Ridge and Furrow	—	—	—	—	X	
27-4	237	381407	457606	X	X	—	—	—	—	—	—	Boundary	
27-5	236	381400	457639	X	Drain	—	—	—	—	—	—	Boundary	
27-6	235	381353	457731	X	X	—	Ridge and Furrow	—	—	—	—	Ridge and Furrow	
27-7	234	381213	457812	Ridge and Furrow, Track	X	—	X	—	—	—	—	Ridge and Furrow	
27-8	233	381021	457887	X	X	—	Pits, Burning	—	—	—	—	Bank	
27-9	232	380770	457982	Enclosure	X	—	Service, Pits, Burning	—	—	X	—	Enclosure, Pit	
28-1	231	380449	458074	X	X	—	Pits, Burning	—	—	Kiln	Kiln, Ditches, Pits	X	Evaluation went to excavation
28-2	230	380279	458164	X	Earthwork	—	X	—	—	—	—	Pit	
28-3	229	380185	458214	X	Track	—	X	—	—	—	—	X	
28-4	229	380162	458238	X	X	—	X	—	—	—	—	X	
28-5	228	379996	458395	Ridge and Furrow, Pit	Drain	—	Ditches, Boundary, Cultivation	—	—	—	—	X	
28-6	227	379684	458690	X	Drain	—	Ditches, Boundary, Cultivation	—	—	—	—	X	
28-7	227	379542	458784	X	X	—	Ditches, Boundary, Cultivation	—	—	—	—	X	
28-8	226	379400	458759	Mark	X	—	Burning	—	—	—	—	X	
28-9	225	379171	458893	X	X	—	X	—	—	—	—	X	
28-10	225	379023	459021	X	X	—	X	—	—	—	—	X	
28-11	223	378892	459139	X	X	—	Ditches	—	—	—	—	X	
28-12	222	378784	459308	X	X	—	—	—	—	—	—	X	
28-13	221	378722	459409	Quarry	Drain	—	Pits	—	—	—	—	X	
28-14	220	378647	459542	Boundary	Ridge and Furrow	X	Cultivation	—	—	—	—	X	
28-15	220	378638	459667	X	X	—	Cultivation	—	—	—	—	X	
29-1	217	378639	459709	X	X	—	Ditch, Cultivation	—	—	—	—	X	
29-2	217	378655	459791	X	Bank	—	Ditch, Cultivation	—	—	—	—	X	
29-3	216	378688	459905	X	X	—	X	—	—	—	—	X	
29-4	215	378712	459985	X	X	—	—	—	—	—	—	X	
30-1	214	378739	460072	X	X	—	X	—	—	—	—	X	
30-2	213	378790	460258	X	X	—	X	—	—	—	—	X	
30-3	213	378842	460436	Palaeochannel	Drain	—	X	—	—	—	—	X	
30-4	212	378875	460613	X	Bank	—	X	—	—	—	—	X	
30-5	211	378848	460759	X	X	—	Cultivation	—	—	—	—	X	
30-6	210	378839	460871	X	X	—	X	—	—	—	—	X	
31-1	209	378848	460950	X	X	—	—	—	—	—	—	X	
31-2	208	378940	461206	X	X	—	X	—	—	—	—	Mesolithic Flint Scatter	Located in Pipe Trenching
31-3	207	379032	461381	X	X	—	—	—	—	Bank, Ditch, Stone Drain	—	X	
31-4	207	379067	461448	X	X	—	—	—	—	—	—	X	
31-5	206	379146	461598	Enclosure	Earthwork	—	—	—	—	—	—	X	
31-6	205	379227	461819	X	X	—	—	—	—	—	—	X	
31-7	204	379199	462042	X	X	—	Cultivation, Service	—	—	—	—	X	
31-8	203	379185	462161	X	X	—	—	—	—	—	—	Track	
31-9	202	379173	462272	X	X	—	—	—	—	—	—	X	
31-10	201	379166	462414	X	Drain, Bank, Track	—	—	—	—	—	—	X	
31-11	200	379210	462498	X	X	—	—	—	—	—	Post-Medieval Track	Post-Medieval Track	Excavated in watching brief element

Plot	'N' no.	NGR		DBA	FSU	Topographic Survey	Geophysical Survey	Metal Detecting	Test Pit	Evaluation	Excavation	Watching Brief	Comments
31-12	199	379243	462627	X	Ridge and Furrow	—	Burning, Cultivation	—	—	—	—	X	
31-13	198	379265	462758	Track	Bank, Enclosure	—	Ditches	—	—	X	—	X	
32-1	197	379283	462889	Settlement	Drain	—	Earthwork, Bank, Ditches, Pits, Quarry	—	—	Ditches, Track, Culvert	—	X	
32-2	196	379260	463111	X	X	—	Ditches	—	—	—	—	X	
32-3	195	379068	463351	X	X	—	Burning	—	—	—	—	X	
32-4	194	378946	463495	X	X	—	X	—	—	—	—	X	
32-5	193	378889	463565	X	X	—	Cultivation	—	—	—	—	X	
32-6	192	378781	463701	Pond	X	—	X	—	—	—	—	X	
32-7	191	378645	463861	Palaeochannel	X	—	Burning, Cultivation	—	—	—	—	X	
32-8	191	378555	463975	Ridge and Furrow	X	—	Burning, Cultivation	—	—	—	—	Burnt Spread	
32-9	190	378446	464126	Ridge and Furrow	X	—	Burning, Cultivation	—	—	—	—	X	
32-10	189	378315	464407	Ridge and Furrow	X	—	—	—	—	—	—	X	
32-11	189	378237	464576	Ridge and Furrow	X	—	—	—	—	—	—	X	
33-1	187	378310	464774	X	Ridge and Furrow, Track, Earthwork, Drain	X	—	—	—	—	—	X	
33-2	186	378429	464983	X	Track, Drain, Building	—	—	—	—	—	—	X	
33-3	185	378422	465184	X	Bank	—	Earthwork, Cultivation	—	—	Ditch, Burning	—	X	
34-1	184	378421	465339	Quarry, Building	X	—	X	—	—	—	—	X	
34-2	183	378416	465465	X	Drain	—	Ditch, Service	—	—	Pit	—	X	
34-3	182	378365	465702	X	Ridge and Furrow	—	Ridge and Furrow, Service	—	—	—	—	X	
34-4	181	378268	465885	X	Ridge and Furrow	Ridge and Furrow	Ridge and Furrow	—	—	—	—	X	
34-5	178a	378112	466055	Quarry	Earthwork, Building, Track	Ridge and Furrow	Ditches, Earthwork	—	—	—	Post-Medieval Barn or Dwelling	Dump	
34-5a	178	377950	466279	Ridge and Furrow	X	—	Ridge and Furrow, Modern Ferrous	—	—	X	—	X	
34-6	177	377826	466430	X	X	—	Service	—	—	—	—	X	
34-7	176	377728	466565	Ridge and Furrow, Well	X	—	—	—	—	—	—	X	
34-8	174	377656	466618	X	Drain	—	—	—	—	—	—	X	
34-9	173	377591	466757	Ridge and Furrow, Lynchet	X	—	—	—	—	—	—	X	
34-10	172	377539	466894	X	X	—	—	—	—	—	—	X	
35-1	171	377432	466930	Ridge and Furrow	Ridge and Furrow	—	Ridge and Furrow, Pits	—	—	—	—	X	
35-2	170	377287	466950	Ridge and Furrow	Ridge and Furrow	—	Service	—	—	—	—	X	
35-3	169	377121	466961	Building	Ridge and Furrow	—	Ridge and Furrow, Service	—	—	—	—	X	
35-4	168	376951	466978	X	X	—	Ridge and Furrow, Pits	—	—	—	—	X	
35-5	167	376850	466981	X	X	—	Ridge and Furrow, Pits	—	—	—	—	X	
35-6	166	376708	466992	X	Ridge and Furrow, Bank	X	Ridge and Furrow	—	—	—	—	X	
35-7	165	376608	467001	X	X	—	X	—	—	—	—	X	
35-8	164	376457	467012	Track, Building, Enclosure	Ridge and Furrow, Bank	—	X	—	—	—	Post-Medieval Burnt Spread and Ditches	Post-Medieval Burnt Spread and Ditches	Excavated in watching brief element
35-9	163	376251	467026	X	X	—	Ditch, Service	—	—	—	—	X	
35-10	162	376015	467075	X	Drain	X	Service	—	—	—	—	X	
35-11	161	375678	467134	Ditch	Earthwork, Settlement, Drain	—	Banks, Ditches, Pits, Cultivation, Land Drains	—	—	Culverts	—	X	
35-12	160	375472	467132	X	Drain	—	Ditch, Service	—	—	—	—	X	
35-13	159	375377	467129	X	X	—	Ditches	—	—	—	—	X	
36-1	158	375204	467181	Enclosure	X	—	Pits, Enclosure, Cultivation, Land Drains	—	—	—	—	Drain	
36-2	157	375050	467226	Enclosure, Ditch	Ridge and Furrow	X	Pits, Enclosure	—	—	—	—	X	
36-3	156	374959	467256	Enclosure	Ridge and Furrow, Bank	—	Burning, Services	—	—	Kiln	—	Earthwork	
36-4	156	374831	467299	Enclosure	X	—	Services	—	—	—	—	X	

Plot	'N' no.	NGR		DBA	FSU	Topographic Survey	Geophysical Survey	Metal Detecting	Test Pit	Evaluation	Excavation	Watching Brief	Comments
36-5	155	374671	467351	Oxbow	Earthwork	—	X	—	—	—	—	X	
36-6	154	374552	467391	X	X	—	X	—	—	—	—	X	
36-7	153	374463	467430	X	X	—	Boundary	—	—	—	—	X	
36-8	152	374318	467533	X	X	—	X	—	—	—	—	X	
36-9	151	374231	467591	X	X	—	—	—	—	—	—	X	
36-10	150	374137	467653	X	X	—	—	—	—	—	—	X	
36-11	149	373983	467811	X	X	—	—	—	—	—	—	Dump	
36-12	148	373836	468029	Enclosure	Bank, Drain	—	Earthwork, Pit, Burning	—	—	Stone Drain	—	X	
37-1	147	373657	468296	X	X	—	Boundary, Land Drain	—	—	—	—	X	
37-2	146	373568	468571	Ridge and Furrow	X	—	—	—	—	—	—	X	
37-2a	145	373540	468689	X	X	—	—	—	—	—	—	X	
37-3	144	373533	468859	X	X	—	—	—	—	—	—	X	
37-4	143	373529	469070	X	X	—	—	—	—	—	—	X	
38-1	142	373586	469293	Pond	X	—	Land Drain, Modern Ferrous	—	—	—	—	Earthwork	
38-2	141	373660	469521	X	Field System	Strip Field System	Modern Ferrous	—	—	—	—	Earthwork	
38-3	140	373629	469666	X	X	—	Earthwork	—	—	—	—	X	
39-1	139	373588	469836	X	Ridge and Furrow, Bank, Ditch	—	Ridge and Furrow	—	—	—	—	Earthwork	
39-2	138	373519	469989	X	X	—	Ridge and Furrow	—	—	—	—	X	
39-3	137	373471	470028	X	X	—	X	—	—	—	—	X	
39-4	136	373274	470160	Ridge and Furrow, Quarry, Enclosure	Building, Bank, Earthwork	Bank	Ridge and Furrow, Ditch	—	—	—	—	Ridge and Furrow, Earthwork	
40-1	135	373067	470280	X	X	—	Ridge and Furrow	—	—	—	—	X	
40-2	134	372959	470335	X	X	—	Ridge and Furrow	—	—	—	—	X	
40-3	133	372885	470376	Ridge and Furrow	Ridge and Furrow	Ridge and Furrow	—	—	—	—	—	Earthwork	
40-4	132	372791	470422	X	X	—	—	—	—	—	—	X	
40-5	132	372665	470483	X	X	—	—	—	—	—	—	X	
40-5a	131	372532	470541	Building	X	—	—	—	—	—	—	X	
40-6	130	372379	470596	X	X	—	—	—	—	—	—	X	
40-7	129	372211	470655	X	Ridge and Furrow, Bank	—	—	—	—	—	—	X	
40-8	128	372028	470719	X	X	—	—	—	—	—	—	Earthwork	
40-9	127	371883	470767	X	X	—	—	—	—	—	—	X	
40-10	126	371780	470789	X	Bank	—	Ridge and Furrow, Boundary	—	—	X	—	Earthwork	
40-11	125	371658	470808	Building	X	—	Boundary, Cultivation, Modern Ferrous	—	—	—	—	X	
40-12	124	371495	470794	Building	X	—	Burning	—	—	—	—	X	
40-13	123	371353	470755	X	Ridge and Furrow	—	X	—	—	—	—	X	
40-14	122	371218	470805	X	X	—	Cultivation, Pits, Land Drain	—	—	—	—	X	
40-15	121	371087	470858	X	X	—	Modern Ferrous	—	—	—	—	X	
40-16	121	371023	470879	X	X	—	X	—	—	—	—	X	
41-1	120	370900	470928	X	X	—	Ditch, Cultivation	—	—	—	—	X	
41-2	119	370584	471011	Ridge and Furrow	Enclosure	Enclosure	Earthwork	—	—	Ditch, Bank, Culvert	—	X	
41-3	118	370365	471064	X	X	—	Ditches, Modern Ferrous	—	—	—	—	X	
42-1	117	370247	471017	X	X	—	—	—	—	—	—	X	
42-2	116	370112	470939	X	X	—	—	—	—	—	—	X	
43-1	115	369977	470856	X	X	—	—	—	—	—	—	X	
44-1	114	369797	470850	X	X	—	—	—	—	—	—	X	
44-1a	113	369685	470864	X	X	—	—	—	—	—	—	X	

Plot	'N' no.	NGR		DBA	FSU	Topographic Survey	Geophysical Survey	Metal Detecting	Test Pit	Evaluation	Excavation	Watching Brief	Comments
44-2	113	369626	470870	X	X	—	—	—	—	—	—	X	
44-3	112	369574	470876	X	X	—	X	—	—	—	—	X	
44-4	111	369487	470876	X	X	—	Burning	—	—	—	—	X	
44-5	110	369392	470878	X	X	—	X	—	—	—	—	X	
44-6	109	369294	470876	X	X	—	X	—	—	—	—	X	
44-7	108	369166	470876	X	Drain	—	X	—	—	—	—	X	
44-8	107	369039	470878	X	Drain	—	X	—	—	—	—	Earthwork	
44-9	106	368952	470878	X	Drain	—	X	—	—	—	—	Earthwork	
45-1	105	368755	470968	X	Bank	—	Cultivation	—	—	—	—	X	
45-2	104	368637	471048	X	Ridge and Furrow	—	Pits	—	—	Stone Drain	—	X	
45-3	102a	368528	471078	X	Earthwork, Bank, Track	—	Ditches, Pits, Earthwork, Quarry	—	—	—	—	Earthwork	
45-4	102	368319	471062	X	X	—	X	—	—	—	—	X	
45-5	101	368216	471092	X	X	—	—	—	—	—	—	X	
45-6	100	367913	471152	Building	Bank	—	—	—	—	—	—	X	
45-7	99	367554	471162	X	Bank, Stones	—	—	—	—	—	—	X	
45-8	98	367334	471165	X	Bank	—	—	—	—	—	—	Earthwork	
45-9	97	367206	471170	X	X	—	—	—	—	—	—	X	
45-10	96	367018	471173	X	X	—	Pits, Earthwork	—	—	Pit, Burning	—	Burnt spread	
45-11	95	366815	471177	X	X	—	X	—	—	—	—	X	
46-1	94	366660	471210	X	X	—	X	—	—	—	—	X	
46-2	93a	366610	471229	X	X	—	X	—	—	—	—	X	
46-3	93	366560	471246	X	X	—	Burning, Pits	—	—	—	—	X	
46-4	92	366461	471271	X	X	—	Burning	—	—	—	—	X	
46-5	91	366351	471305	X	X	—	Pits	—	—	Stone Drains	—	X	
46-6	90	366236	471321	X	X	—	X	—	—	—	—	X	
46-7	89	366139	471330	X	Ridge and Furrow	Ridge and Furrow	X	—	—	—	—	X	
46-8	88	365985	471347	X	Ridge and Furrow, Earthwork, Bank	Ridge and Furrow	X	—	—	—	—	Earthwork	
46-9	87	365807	471296	X	Ridge and Furrow	Ridge and Furrow	X	—	—	—	—	X	
46-10	86	365688	471182	X	Ridge and Furrow	Ridge and Furrow	Ditch, Pits	—	—	X	—	X	
46-11	85	365467	471115	X	X	—	—	—	—	—	—	X	
47-1	83	365255	471073	Quarry, Kiln, Pit	X	—	—	—	—	—	—	X	
47-2	82	365125	471050	X	X	—	—	—	—	—	—	X	
47-3	81	364996	471053	X	Drain	—	—	—	—	—	—	X	
47-4	80	364852	471070	X	X	—	—	—	—	—	—	X	
47-5	79	364757	471084	X	X	—	—	—	—	—	—	X	
48-1	78	364631	471118	X	X	—	Cultivation, Pit, Land Drain	—	—	—	—	X	
48-2	77	364494	471241	X	X	—	X	—	—	—	—	X	
48-3	76	364405	471327	X	Drain	—	X	—	—	X	—	X	
48-4	75	364303	471419	Pond	X	—	Land Drain	—	—	—	—	Posthole	
48-5	74	364104	471510	X	Ridge and Furrow	—	X	—	—	—	—	X	
48-6	73	363932	471580	X	X	—	X	—	—	—	—	X	
48-7	72	363785	471642	X	X	—	Cultivation	—	—	—	—	X	
48-8	71	363490	471753	Kiln	X	—	Pits, Ridge and Furrow, Burning	—	—	—	—	X	
48-9	70	363182	471730	Building	Ridge and Furrow	Ridge and Furrow	Ferrous Boundary	—	—	—	—	X	
48-10	69	362962	471694	X	X	—	Cultivation, Ridge and Furrow	—	—	—	—	X	
49-1	67, 66	362739	471577	X	X	—	—	—	—	—	—	X	

Plot	'N' no.	NGR		DBA	FSU	Topographic Survey	Geophysical Survey	Metal Detecting	Test Pit	Evaluation	Excavation	Watching Brief	Comments
49-2	65	362606	471508	X	X	—	X	—	—	—	—	X	
49-3	64	362467	471436	X	X	—	X	—	—	—	—	X	
49-4	63	362333	471368	X	X	—	—	—	—	—	—	X	
49-5	62	362183	471291	X	X	—	—	—	—	—	—	X	
49-6	61	362018	471206	X	X	—	—	—	—	—	—	X	
50-1	60	361878	471188	X	Track, Drain	—	—	—	—	—	—	X	
50-2	59	361647	471154	X	X	—	—	—	—	—	Bronze Age Burnt Mound	Bronze Age Burnt Mound	Excavated in watching brief element
50-3	58	361241	471092	X	X	—	—	—	—	—	—	X	
50-4	57	361015	471048	X	X	—	—	—	—	—	—	X	
50-5	56	360860	471011	X	X	—	—	—	—	—	—	X	
50-6	55	360743	470953	X	X	—	—	—	—	—	—	X	
51-1	53	360622	470814	X	X	Tramway	—	—	—	—	—	X	
51-2	51	360461	470708	Railway	Ridge and Furrow, Bank, Slag Heap	Ridge and Furrow	—	—	—	—	—	X	
51-3	50a	360366	470613	X	X	—	—	—	—	—	—	Burnt Spread	
51-4	50	360232	470539	Pit	X	—	—	—	—	—	—	X	
51-5	49	359962	470393	X	X	—	Pits	—	—	—	—	X	
51-6	48	359885	470351	X	X	—	X	—	—	—	—	X	
51-7	47	359750	470276	X	X	—	—	—	—	—	—	Burnt spread	
51-8	46	359566	470296	X	X	—	—	—	—	—	—	X	
51-9	45	359461	470293	X	X	—	—	—	—	—	—	X	
51-9a	45	359319	470265	X	X	—	X	—	—	—	—	X	
51-10	44	359124	470229	X	X	—	Service	—	—	—	—	X	
51-11	43	359051	470215	X	X	—	X	—	—	—	—	X	
52-1	42	358921	470220	X	X	—	Pits, Ditches, Service	—	—	Ditch, Furrow	—	X	
52-2	41	358789	470199	Watercourse	X	—	—	—	—	—	—	X	
52-3	40	358637	470174	X	X	—	—	—	—	—	—	X	
52-4	39	358419	470092	X	X	—	—	—	—	—	—	X	
52-5	38	358229	469984	X	X	—	—	—	—	—	—	X	
52-6	36	357999	469855	Building	X	—	—	—	—	—	—	X	
53-1	35	357706	469711	Ridge and Furrow, Coin	X	—	—	—	—	—	—	X	
53-2	34	357425	469689	X	X	—	—	—	—	—	—	X	
54-1	33	357232	469677	X	X	—	—	—	—	—	—	X	
54-2	32	357059	469664	X	X	—	—	—	—	—	Post-Medieval Boundary	Bank, Ditch, Post-Medieval Boundary	Excavated in watching brief element
54-3	31	356970	469658	X	X	—	—	—	—	—	—	X	
54-4	30	356853	469647	X	Bank	—	—	—	—	—	—	X	
54-5	29	356731	469560	X	X	—	—	—	—	—	—	X	
54-6	28	356625	469482	X	X	—	—	—	—	—	—	X	
54-7	27	356510	469402	X	X	—	—	—	—	—	—	X	
55-1	26	356397	469323	X	X	—	—	—	—	—	—	X	
55-2	25	356307	469252	X	X	—	—	—	—	—	—	X	
55-3	25	356215	469164	X	X	—	—	—	—	—	—	X	
55-4	23	356134	469071	Palaeochannel	X	—	—	—	—	—	—	X	
55-5	22a	355953	468972	X	X	—	—	—	—	—	—	X	
55-6	22	355805	468945	X	X	—	—	—	—	—	—	X	
56-1	21	355688	468908	X	Ridge and Furrow	Ridge and Furrow	—	—	—	—	—	X	
56-2	20	355586	468852	X	X	—	—	—	—	—	—	X	

Plot	'N' no.	NGR		DBA	FSU	Topographic Survey	Geophysical Survey	Metal Detecting	Test Pit	Evaluation	Excavation	Watching Brief	Comments
56-2a	19	355471	468786	X	X	—	—	—	—	—	—	X	
56-3	18	355276	468632	X	X	—	—	—	—	—	—	X	
56-4	17	355070	468465	Ridge and Furrow	Ridge and Furrow	Ridge and Furrow	—	—	—	—	—	X	
56-5	16	354873	468256	X	X	—	—	—	—	—	—	X	
56-6	15	354711	468068	X	X	—	—	—	—	—	—	X	
56-7	14	354536	467939	Ridge and Furrow	Ridge and Furrow	—	—	—	—	—	Kiln	Kiln	Excavated in watching brief element
56-8	13	354301	467800	Ridge and Furrow	Ridge and Furrow	—	—	—	—	—	—	X	
56-9	12	354022	467627	Ridge and Furrow, Quarry, Earthwork	Ridge and Furrow	—	—	—	—	—	—	X	
57-1	11	353764	467360	X	X	—	—	—	—	—	—	X	
57-2	10	353524	467220	Quarry	X	—	—	—	—	—	—	X	
57-3	9	353201	467031	X	X	—	—	—	—	—	—	X	
57-4	8	352934	466978	X	X	—	—	—	—	—	—	X	
57-4a	7	352799	467044	X	Ridge and Furrow	—	—	—	—	—	—	X	
58-1	6	352682	467104	X	X	—	X	—	—	—	—	X	
58-2	5	352398	467228	Earthwork	X	—	X	—	—	—	—	X	
58-3	4	352204	467295	X	X	—	—	—	—	—	—	X	
58-4	3	352131	467320	Kiln	X	—	—	—	—	—	—	X	
58-5	1, 2	352022	467359	X	X	—	—	—	—	—	—	X	

X	Carried out, but nothing found
—	Not carried out