Lanton Quarry, Northumberland

Phase 5 Archaeological Excavation 2012

The base of a large Middle Bronze Age pot discovered in pit F3241

ARS Ltd Report No. 2012/86

Compiled By:
Philippa Cockburn
Archaeological Research Services Ltd
Angel House
Portland Square
Bakewell
DE45 1HB

Checked By:
Dr. Clive Waddington
Tel: 01629 814540
Fax: 01629 814657
admin@archaeologicalresearchservices.com
www.archaeologicalresearchservices.com

Lanton Quarry, Northumberland

Phase 5 Archaeological Excavation 2012

ARS Ltd Report 2012/86

Archaeological Research Services Ltd

Contents

List of Figures

List of Tables

Executive Summary

A fifth phase of archaeological excavation following a strip, map and sample methodology was conducted by Archaeological Research Services Ltd on an area totalling just over 2ha at Lanton Quarry, Milfield, Northumberland on behalf of Tarmac Ltd. The investigation took the form of a strip, map and sample, in which the topsoil was mechanically removed under archaeological supervision before a complete plan of archaeological features was made. A sampling strategy was then agreed and excavations were undertaken.

Archaeological remains were excavated dating from a number of different prehistoric periods including:

- *Thirteen pit and posthole features containing broken Neolithic pottery, stone tools and charred plant foods dating to the Neolithic*
- *Four possible post-built buildings*
- *A Middle Bronze Age pit containing a well-preserved basal section of a large pottery vessel*
- *A severely truncated, shallow linear ditch feature of uncertain date*
- *Thirty nine isolated, undated pits and posthole features*

A large quantity of Early Neolithic Carinated bowl and small amounts of Impressed Ware and Grooved Ware including the large basal section of an Impressed Ware pot were found in Neolithic pit features together with chipped stone tools and a quartz hammerstone.

Analysis of the botanical macrofossils obtained through flotation has shown the presence of cereal grain, hazelnut shells and other gathered wild resources in the same Neolithic contexts, highlighting a potential mix of agriculture and exploitation of natural resources. This indicates the likelihood that both cultivated crops and wild-gathered foods formed an important part of the diet.

A single radiocarbon date was obtained on a piece of short-lived twig charcoal dating the pit and the associated pottery vessel to the Middle Bronze Age c.1266-1051 cal BC.

The archaeological features excavated during Phase 5 at Lanton Quarry add important new information to the wider story of prehistory in the Milfield Basin and also the wider region, as do the ceramic finds.

1. INTRODUCTION

1.1. This report describes an archaeological strip, map and sample investigation undertaken at Lanton Quarry, Northumberland in 2012 by Archaeological Research Services Ltd on behalf of Tarmac Ltd. In October 2012 an area of the quarry, totalling over 2 hectares, was stripped of topsoil, revealing archaeological deposits beneath. Excavation and sampling of the site took place over a two week period.

2. LOCATION, LAND USE AND GEOLOGY

2.1. The Lanton Quarry site lies in the Milfield Basin north-east of the Cheviot Hills, approximately 3 km north of Wooler (see Fig 1).

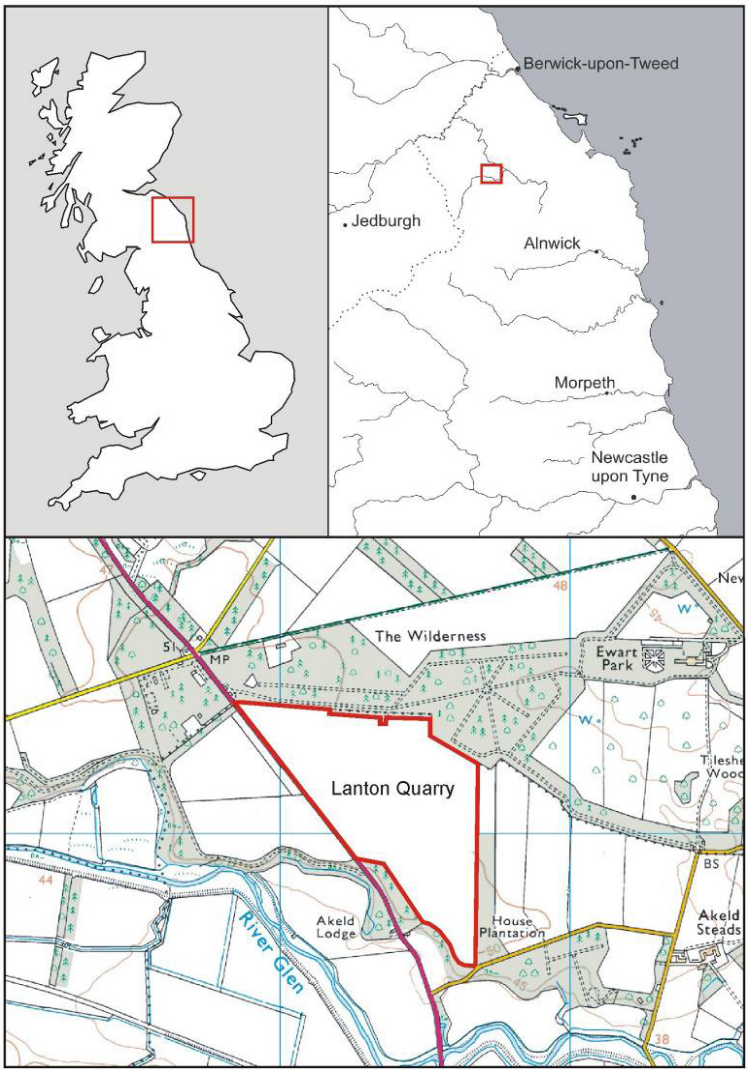


Figure 1: Site location
Ordnance Survey data copyright OS, reproduced by permission, Licence no. 100045420

2.2. The Milfield plain is an area of low-lying ground which contains a complex sedimentary sequence, with glaciodeltaic and glaciofluvial sand and gravel deposits fanning out from the valley of the River Glen to form a series of terraces (Passmore et al. 2002). Inset below the gravel terraces is the in-filled glacial lake, Lake Ewart, which forms an extensive alluvial floodplain. Eight hundred metres to the north-east of the site lies the present channel of the River Till, and beyond that the land rises to the Fell Sandstone escarpment that borders the basin on its eastern side. Three kilometres to the south, the igneous rocks of the Cheviot Hills rise abruptly from the plain above the River Glen, where the summits of Humbleton Hill, Harehope Hill and the double peak of Yeavering Bell form prominent landmarks. To the west, the northern foothills of the Cheviots run parallel to the Fell Sandstone ridge, leaving only a 2 km wide corridor at the northern end of the plain through which the River Till meanders. The archaeology of Lanton Quarry was situated on a terrace of glaciofluvial sand and gravel deposits, situated for the most part at c.45 m aOD and covered by a ploughsoil of argillic brown earth origin (Payton 1992).

3. ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

3.1 Numerous and extensive archaeological remains are known from the vicinity of the quarry site, dating from all periods with important remains from the Mesolithic, Neolithic, Bronze Age and Anglo-Saxon periods.

3.2 The Phase 1 excavations at Lanton quarry, which took place between August and December 2006, uncovered multi-period remains. These remains included evidence for Neolithic settlement including four trapezoidal structures, three triangular structures and associated hearths and pits; two Bronze Age roundhouses probably in association with two rectangular structures; and an Anglo-Saxon settlement in the southern-most part of the quarry including two rectangular and two square post-built buildings, seven sunken feature buildings and associated pits and postholes.

3.3 The Phase 2 excavations took place between December 2008 and February 2009. Multi-period remains uncovered during the excavation included Early Neolithic 'midden pits' that contained Carinated Bowl ceramics, a probable Bronze Age circular post-built house similar in form to others found during the Phase I work at this site and on the nearby Cheviot Quarry site, three probable Bronze Age rectangular and triangular post-built structures also similar in form to those found during Phase I, three irregular post-built structures of uncertain date, similar in form to the Early Neolithic structures, and a late Iron Age burial within a corbelled stone cist. A second nearby feature was probably also an Iron Age burial cist but this had been more deeply truncated by ploughing and so no human remains were found in the base of this feature.

3.4 The Phase 3 excavations took place between May and June 2010. Remains uncovered during the excavation included Neolithic domestic midden pits, two hearth pits and two pits containing Neolithic Grooved Ware pottery. Eleven chipped stone artefacts were also found dating from the Neolithic or Bronze Age.

3.5. Phase 4 of the excavations at Lanton Quarry took place in June 2011. Features excavated during this phase included a Neolithic pit containing sherds of a Carinated bowl, a square structure defined by 4 linear gulleys with a pit feature in the centre, thought to be an Iron Age shrine next to the Iron Age burial cist, a modern animal burial, a large pit feature with a stony fill, a linear feature and thirteen other isolated pits and postholes. The Neolithic

pottery discovered in a shallow pit feature fits into the wider assemblage of such material that has already been recovered from the site. The square feature is thought to be the remains of an Iron Age shrine. Similar features have been found in southern England where there are now around 30 examples.

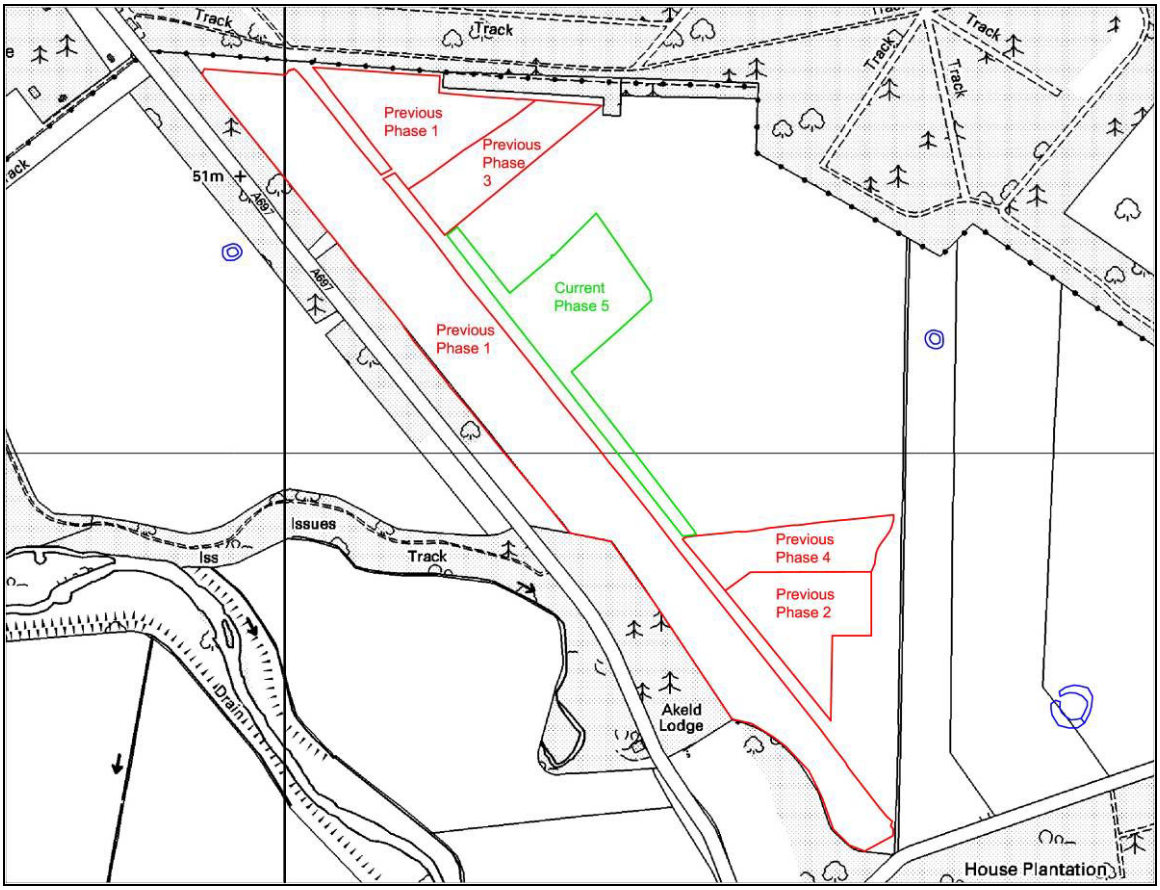


Figure 2: A plan of the quarry showing the previous and current phases of archaeological excavation. Henge and ring ditch cropmarks are shown in blue.

4. METHOD STATEMENT

4.1. The excavation was carried out over a 2 week period in October 2012 by stripping back the topsoil in spits with a 360° tracked excavator equipped with a toothless ditching bucket. This exposed the underlying sand and gravel deposits into which archaeological features were cut. The entire process was monitored by archaeologists. As the machine stripped the ground, features were cleaned with a hoe and trowel, recorded in plan and photographed before being marked with wooden pegs and ascribed context and feature numbers.

4.2. Each of the features identified during the stripping process was subject to sample excavation and recording. This involved the sectioning of deposits to determine their form and dimensions, and the collection of artefacts and samples suitable for radiocarbon dating and environmental analysis. All excavation was undertaken with trowels and small tools. The content of all deposits were sieved through a 10mm mesh and deposits containing artefacts, or with potential for containing organic material, were subject to flotation through a 500µm sieve. All features were photographed using colour print film, black and white print film, and digital. All sections were drawn at 1:10 and features planned at 1:20. The section lines were

surveyed to provide an Ordnance Survey datum for each feature. Features that produced pottery and flints were 100% excavated to maximise finds recovery

4.3. All the deposits and cuts were described in the field on pro-forma context sheets. The sheets contain prompts for the recording of sediment composition, compaction and colour, the dimensions of the deposit, its relationship to other deposits and features, artefact content, environmental samples, drawing and photographic records and an interpretative discussion to ensure consistency across all records. All features were described in accordance with MoLAS conventions. Drawings were produced on drawing film. Registers of all contexts, samples, finds, levels, and drawings were also made. Artefacts were bagged individually and assigned an individual find number, with the site code and the deposit from which they were recovered clearly indicated. Ceramic finds were bubble-wrapped before being placed in labelled bags or boxes as appropriate. Any single entity charred material samples suitable for radiocarbon dating were wrapped in aluminium foil before being placed in labelled bags.

4.4. Flotation of sediments to recover organic materials was undertaken on site. The fill of every feature associated with a building, or which contained material culture or was organic-rich were dry-sieved through a 10mm mesh, and then passed through flotation to maximise recovery of small finds and organic material. The sediments were passed through four mesh sieves from 5mm down to the smallest which measured 500μm. Material from the sieve was air dried and then placed in a sealed bag marked with its context and environmental sample number. All the dating and environmental samples were recorded in a separate register.

5. RESULTS

5.1 This section describes the results of the excavation. In summary the features discovered on site were:

- Thirteen pits and postholes containing pottery of either Neolithic or Bronze Age date, including
- A large, vertically sided pit/shaft feature
- Two possible post-built buildings
- Two pit clusters
- A severely truncated, shallow linear ditch feature of uncertain date
- Thirty nine isolated, undated pit and posthole features, including
- A small animal burrow containing a metal animal trap
- A small pit containing a sheep burial

5.2 All features on the site were truncated as a result of past agricultural practices (ploughing). No archaeological features survived within the topsoil, and only those features that were cut into the natural glaciofluvial gravel deposits remained. The features and deposits are discussed individually, but arranged under headings according to their period, association with other features and their type.

Topsoil. The topsoil (001) at Lanton Quarry consisted of a dark-brown sandy soil containing coarse to medium gravel inclusions and was loosely compacted.

Glaciofluvial Deposits. The soils of the Milfield Basin are underlain by thick glaciofluvial deposits from the Devensian glacial episode. A mixed deposit of gravel and coarse sand (002) was evident across the area, interspersed by bands of finer, fluvially deposited sand. The archaeological features tended to be more prevalent on the sandy substrate with noticeably fewer archaeological remains on the coarser gravel substrate.

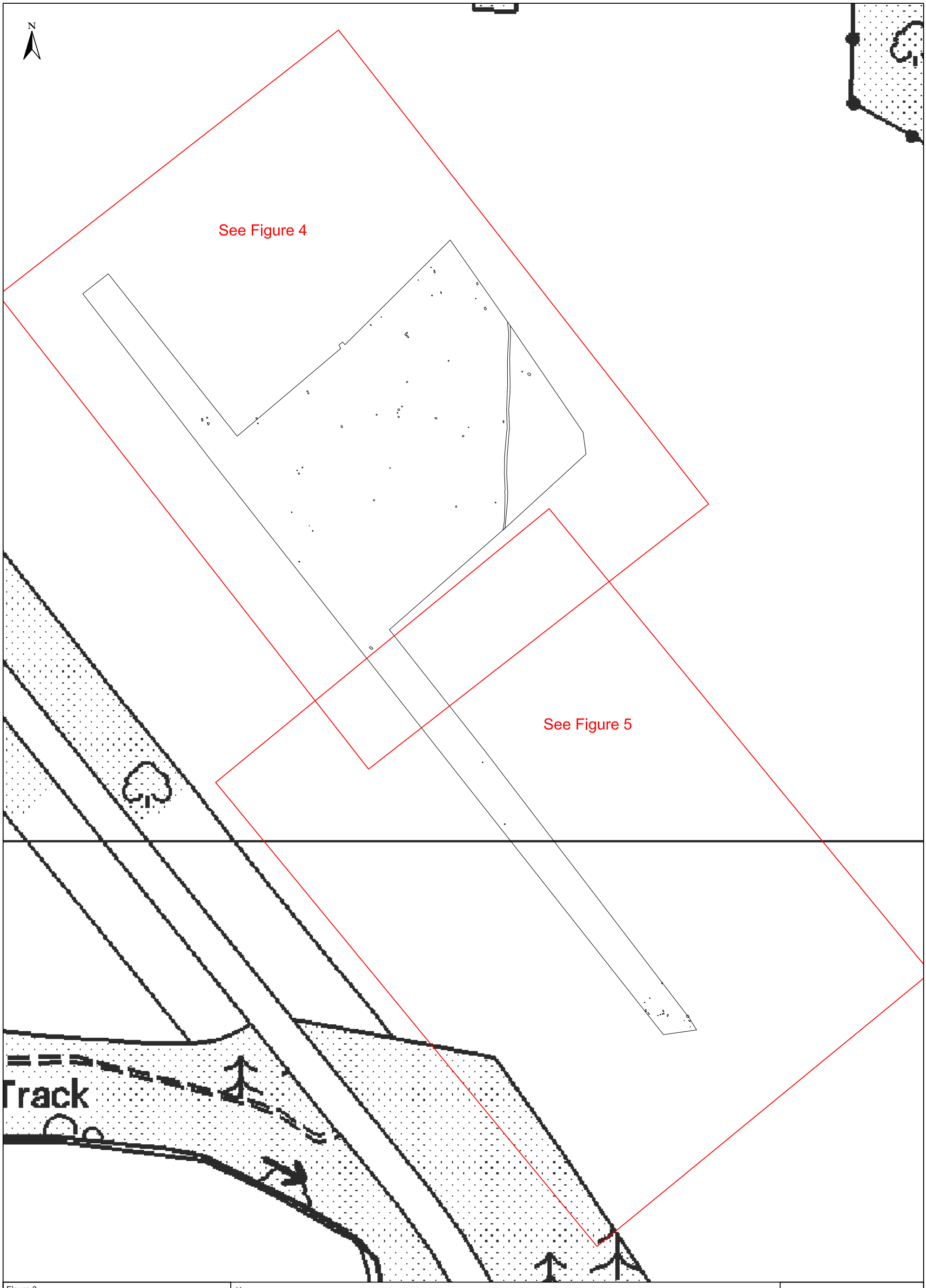


Figure 3:

Distribution of features across the site.

Scale = 1:1250 at A3

Key:

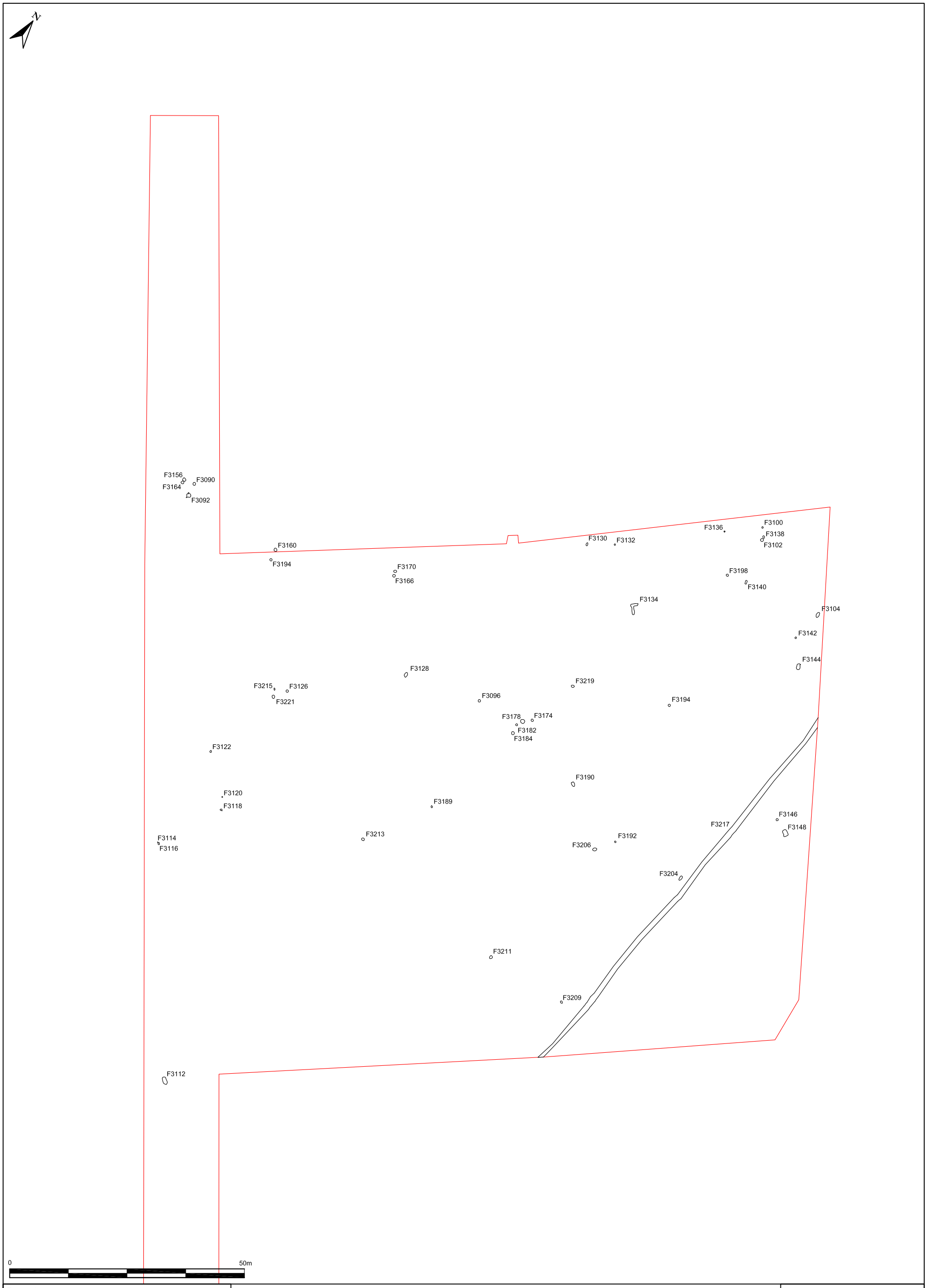


Figure 4:

Distribution of features at the northern end of the excavation area.

Scale = 1:750 at A3

Key:

Limit of excavation

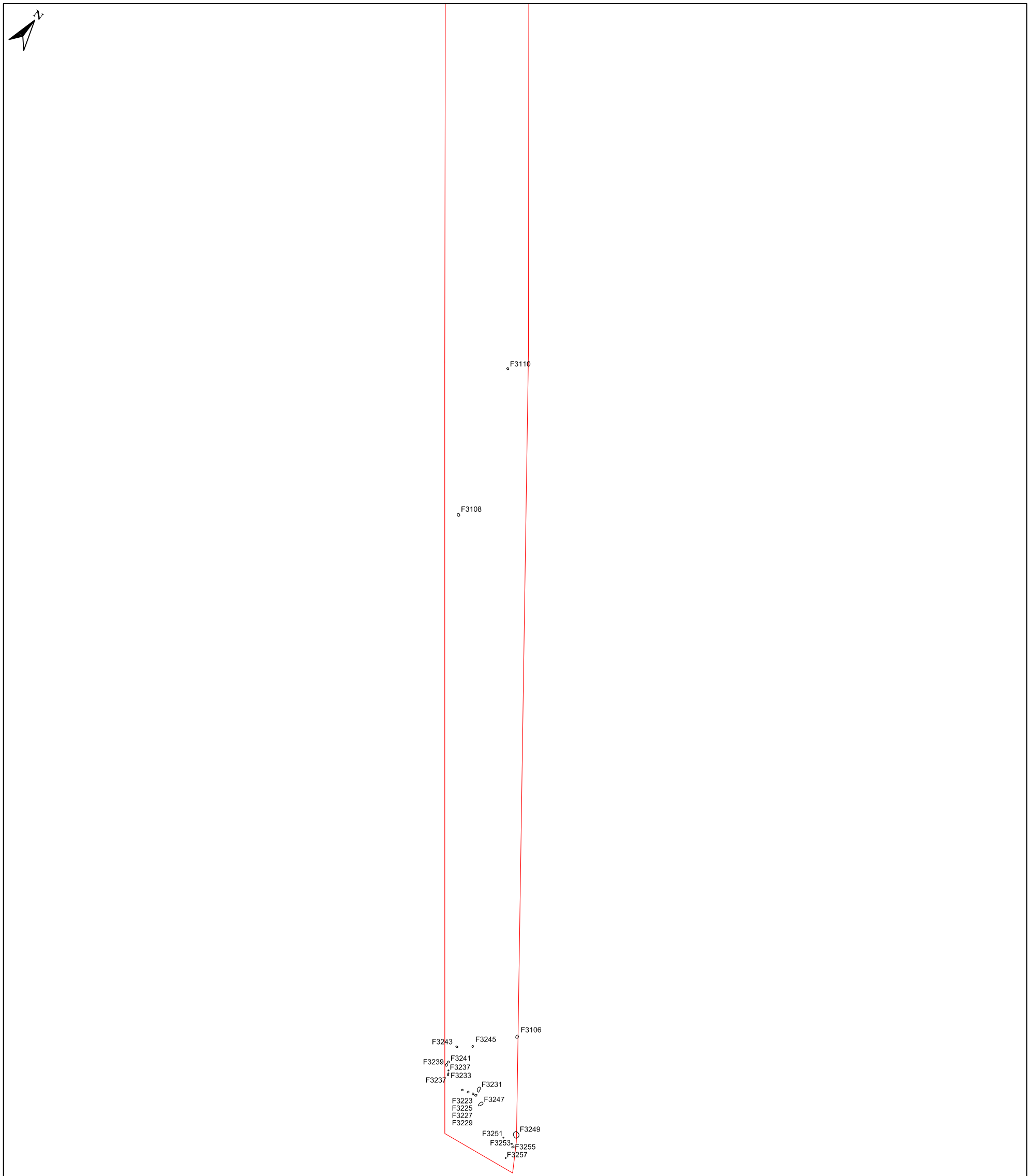


Figure 5:

Distribution of features at the southern end of the excavation area.

Scale = 1:750 at A3

Key:

Limit of excavation

6. STRATIGRAPHIC REPORT

6.1 Truncation of features across much of the site was very severe. Due to this, many features had a very shallow depth although originally they would have been considerably deeper.

6.2 *Isolated pit and posthole features containing pottery*

A total of thirteen isolated pit and posthole features across the site contained pottery of Neolithic date. One of the pit features (F3241) contained the base of a particularly large, thick-walled pot and a piece of short-lived specie twig charcoal from the pit has dated it to the Middle Bronze Age *c.*1266-1051 cal BC (95% probability). None of these features could be associated with any others across the site. They are described in Table 1 below. The features varied considerably in dimensions and depth although most were circular or sub-circular. Some of the pits contained evidence of *in-situ* burning and environmental samples were taken from all of them.

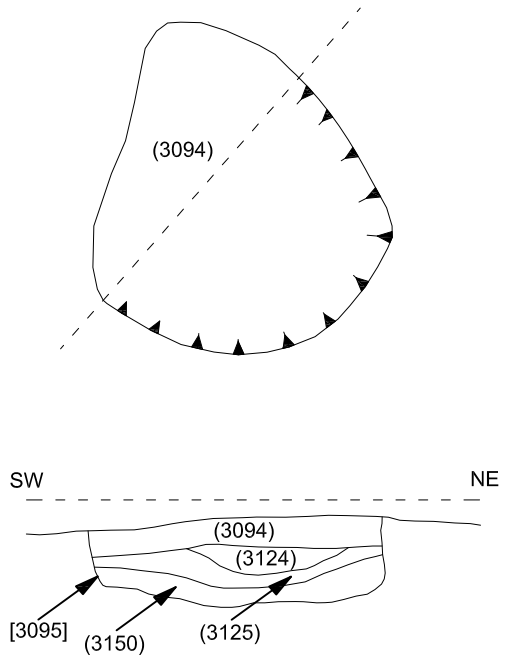
An additional feature that has been included in the table below is a very large, very deep shaft (F3249) that was located towards the south eastern end of the excavation area. This pit had very steep sides, a dark brown silty fill and contained some fragments of pottery. The pit was located very close to possible Post-Built Building 28. The pit shaft is only the second feature of its size to have been discovered on the site at Lanton Quarry. A large feature (F1780), interpreted as a posthole, was excavated during Phase 2 of the excavations in 2009 (Cockburn, Burrill and Brightman 2009). However, this feature had straight sides and a flat base, unlike F3249, and therefore a direct comparison is not able to be made. No finds were recovered from the fill of F1780.

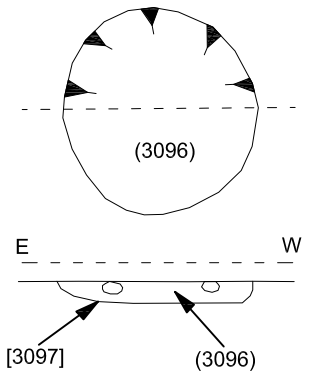
Figure 6: Pit F3241 containing the base of a large pot. Scale = 0.25m.

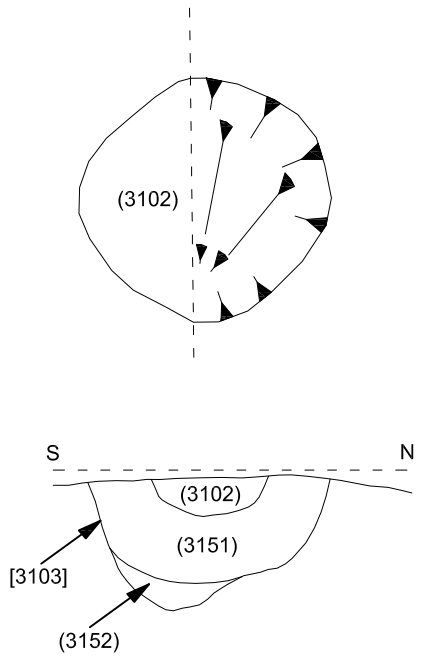
Figure 7: Pit F3249, after excavation, looking south. Scale = 1m.

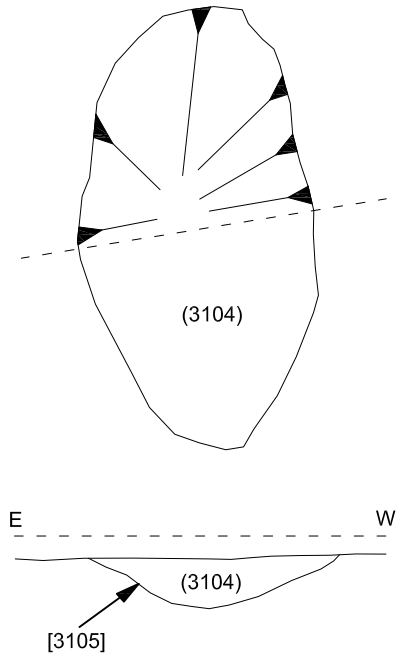
Feature No.	Context numbers	Description	Max. dimensions (mm)	Max. depth (mm)	Colour of fill	Composition
F3094	3094, 3124, 3125, 3150, 3095	Shallow pit	870 x 770	330	Light brown	Sandy silt
F3096	3096, 3097	Shallow, circular pit	500 x 610	60	Dark brown	Sandy silt
F3098	3098, 3153, 3099	Small, circular pit	450 x 440	210	Light brown	Sandy silt
F3102	3102, 3151, 3152, 3103	Circular pit	730 x 670	320	Light brown	Sandy silt
F3104	3104, 3105	Shallow, ovoid pit	1200 x 610	130	Mottled	Silty sand
F3148	3148, 3149	Sub-rectangular	1450 x 930	100	Mid brown	Sandy silt
F3160	3160, 3161, 3162	Circular pit	720 x 710	210	Dark grey	Sandy silt
F3166	3166, 3167, 3168	Circular pit	550 x 630	250	Grey	Silt
F3170	3170, 3171, 3172	Sub-circular pit	650 x 520	230	Dark grey/black	Silt
F3200	3200, 3201	Ovoid pit	1500 x 1000	130	Mid brown	Sandy silt
F3235	3235, 3236	Small posthole or stakehole	240 x 190	130	Dark brown	Sandy silt
F3241	3241, 3242	Small pit or posthole	370 x 390	260	Mid orange/brown	Silty sand
F3249	3249, 3250	Large, deep pit	1200 x 1300	950	Dark brown	Silt

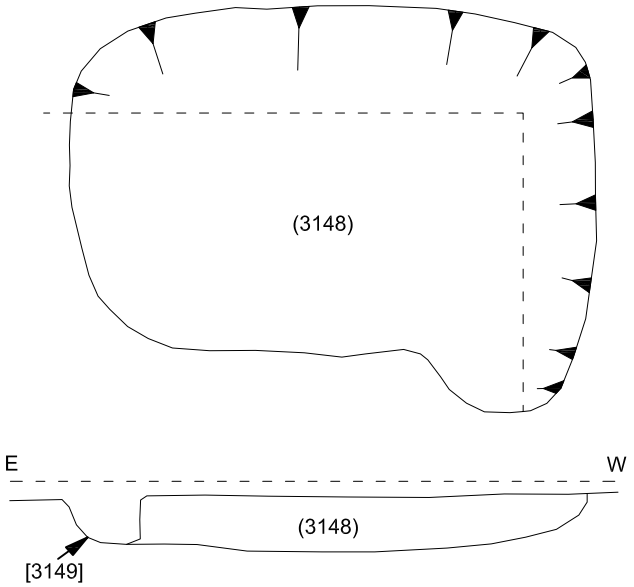
Table 1: Isolated pit and posthole features

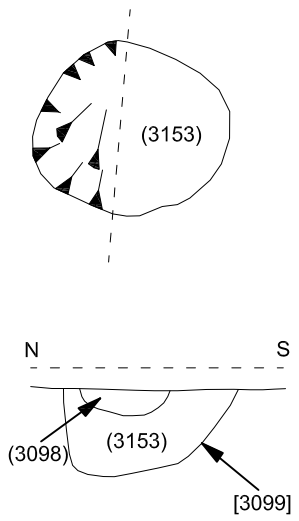


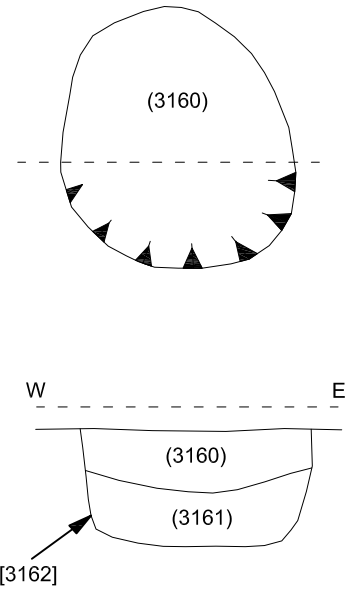


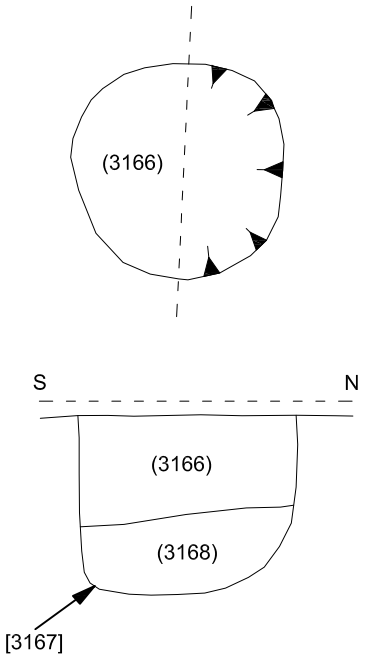












0 1m

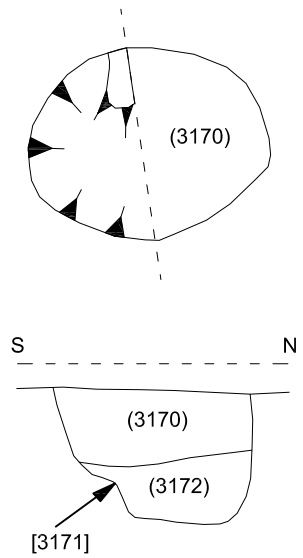
Figure 8:

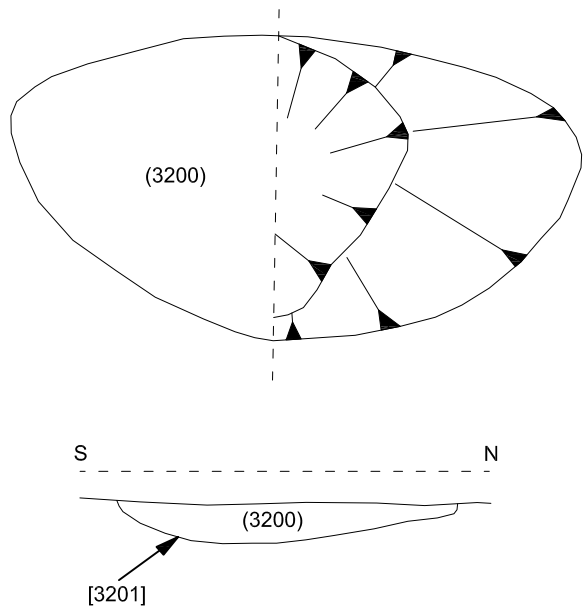
Features containing pottery of Neolithic and Bronze Age date

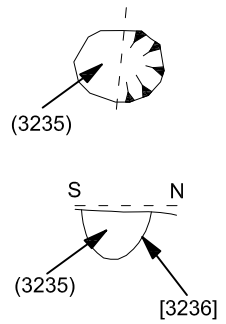
Scale = 1:20 at A3

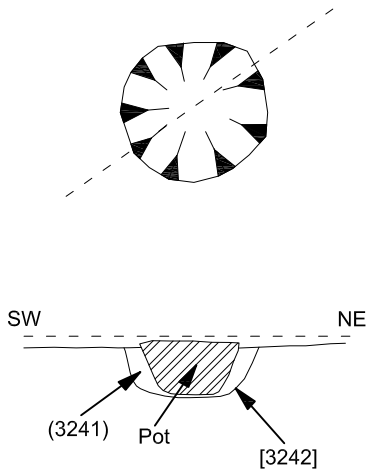
Key:

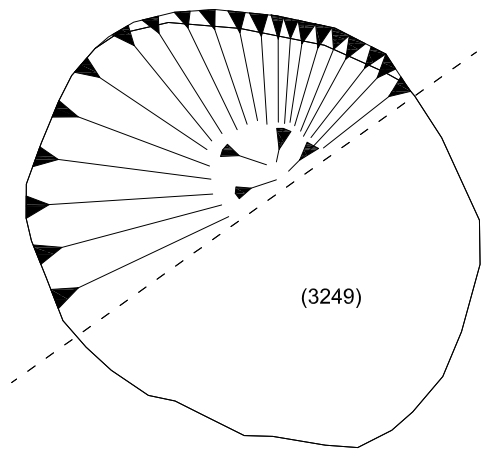
N

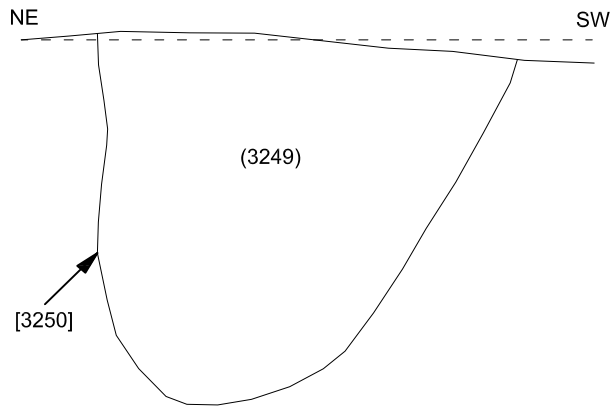












0 1m

Figure 9:

Features containing pottery of Neolithic and Bronze Age date

Scale = 1:20 at A3

Key:

N

6.3 *Possible Post-Built Buildings*

There were a total of two possible Post-Built Buildings excavated across the site. The first of these (PBB27) was located towards the south eastern end of the excavation area and comprised four postholes (F3223, F3225, F3227 and F3229) in a line. The line of postholes was orientated eastnortheast-westsouthwest and measured 3.2m in length. The postholes were all similar in size and shape and all had dark brown fills. The postholes were not equally spaced and it is believed that they were part of a larger structure, the rest of which had not survived. The features within PBB27 are shown in Table 2 below:

Figure 10: PBB27, looking southwest. Scale = 2m.

Feature No.	Context numbers	Description	Max. dimensions (mm)	Max. depth (mm)	Colour of fill	Composition
F3223	3223, 3224	Posthole	360 x 380	140	Mid-dark brown	Sandy silt
F3225	3225, 3226	Posthole	380 x 360	240	Dark brown	Sandy silt
F3227	3227, 3228	Posthole	390 x 340	130	Dark-mid brown	Sandy silt
F3229	3229, 3230	Posthole	450 x 400	160	Dark brown	Silt

Table 2: Features within PPB27

The second of the possible post-built buildings, PBB28, was located at the extreme south eastern end of the excavation area, approximately 9.5m to the southeast of PBB27. It comprised three small postholes (F3251, F3253 and F3257) and a possible double posthole (F3255). The four features formed a triangular shape, in plan, with the longest edge, between features F3251 and F3257, measuring 3.7m. This edge faced towards the southwest. The other two sides were almost equal in length, one measuring 2.20m and the other measuring

2.30m. The possible double posthole, F3255, formed the 'apex' of the triangle with the fourth posthole, F3253, situated 0.4m to the northwest. The fill of each feature, with the exception of F3251, was sampled environmentally.

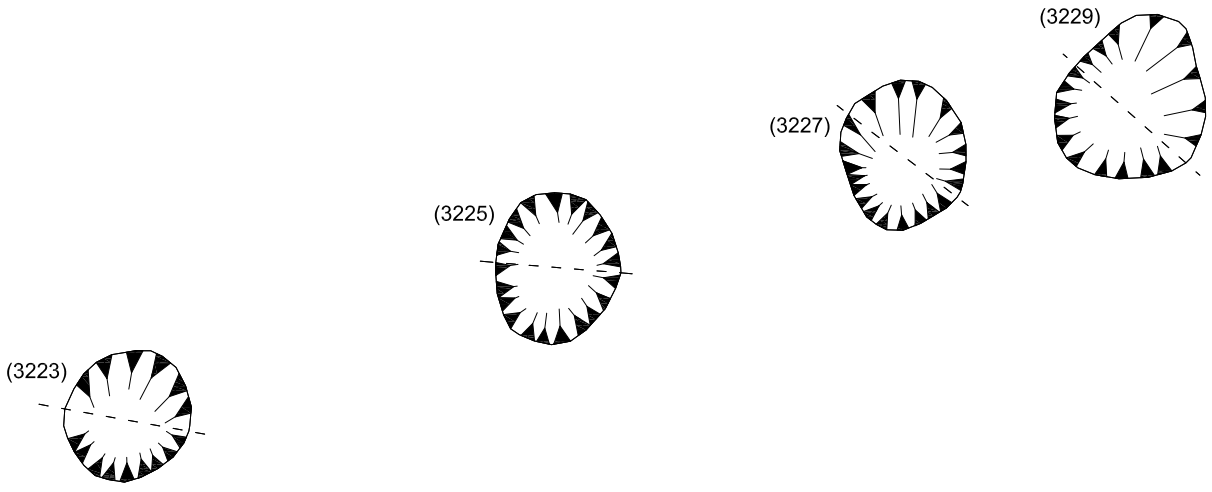
Environmental sampling of F3255 revealed that the fill contained industrial slag. It is possible that this slag is residual, deposited in the top of the feature through ploughing. If this is the case this feature is still most probably associated with PBB28. However, if the slag is not residual, this feature is relatively modern. Due to the fact that the slag was recovered during environmental sampling and not during excavation, it is not possible to determine whether or not it was recovered from the top of the fill and therefore not possible to determine whether or not it was more likely to be a residual deposition.

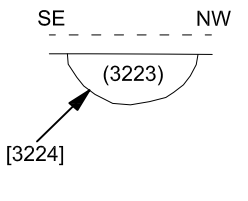
This possible post-built building is similar in shape to PBB8, which was excavated during Phase 1 of the excavations at Lanton Quarry in 2006. This structure also had a triangular shape in plan however it contained more features and was larger than PBB28. It has been dated to the Early Neolithic period.

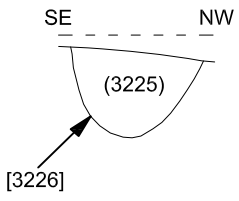
Figure 11: PBB28, looking south. Scale = 2m + 1m. The large pit in the left foreground is not thought to form part of the triangular structure.

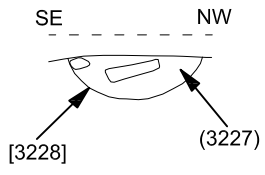
Feature No.	Context numbers	Description	Max. dimensions (mm)	Max. depth (mm)	Colour of fill	Composition
F3251	3251, 3252	Posthole	190 x 200	70	Dark brown	Sandy silt
F3253	3253, 3254	Posthole	200 x 200	65	Black	Sandy silt
F3255	3255, 3256	Elongated posthole, possibly double	300 x 500	140	Black	Sandy silt
F3257	3257, 3258	Posthole	200 x 220	140	Black	Silt

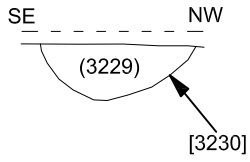
Table 3: Features within PPB28











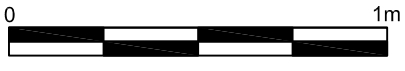
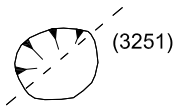


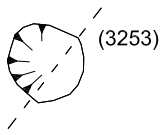
Figure 12:

Possible Post-Built Building 27

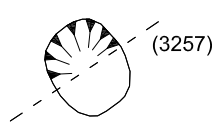
Scale = 1:20 at A3

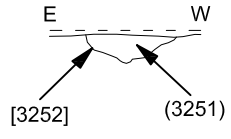
Key:

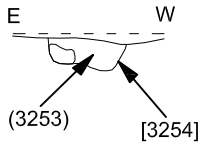


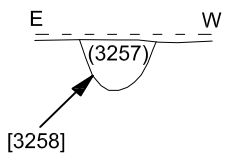


Possibly a modern feature due to the presence of industrial slag in the fill. Therefore this feature is possibly unrelated to this Post-Built Building









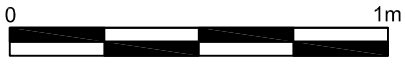


Figure 13:

Possible Post-Built Building 28

Scale = 1:20 at A3

Key:

6.4 *Pit clusters*

Two pit clusters were excavated during Phase 5. The first of these, Pit Cluster 1, was located towards the northwest of the site and comprised four sub-circular pits (F3090, F3092, F3156 and F3164) in an irregular arrangement. F3156 and F3164 were situated towards the northwest of the cluster with the southern edge of F3156 cutting the northern edge of F3164 which means that it is therefore stratigraphically later. F3090 was 1.98m to the northeast of F3164 and F3156, while F3092 was 2.37m to the southeast. All of the features were quite shallow and they have evidently been severely truncated. F3092 had also sustained substantial plough damage and animal burrow damage. Each of the features produced pottery and an environmental sample comprising the entirety of each fill was taken for floatation.

Figure 14: Pit cluster 1, looking south. Scale = 2m + 1m.

Feature No.	Context numbers	Description	Max. dimensions (mm)	Max. depth (mm)	Colour of fill	Composition
F3090	3090, 3091	Pit	360 x 630	190	Brown/grey	Sandy silt
F3092	3092, 3093	Pit	940 x 880	170	Mottled	Sandy silt
F3156	3156, 3157, 3158, 3159	Pit	710 x 730	170	Mid orange brown	Sand
F3164	3164, 3165	Pit	620 x 670	90	Grey/brown	Silty sand

Table 4: Features within Pit cluster 1

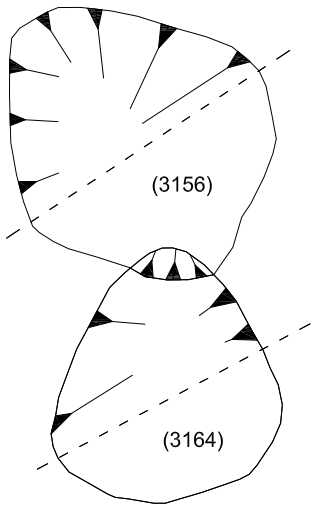
Pit Cluster 2 was located towards the centre of the site and comprised four pits (F3174, F3178, F3182 and F3184) in a semi-circular arrangement running from northeast to southeast. The average distance between the pits was 1.22m. The features did not appear to be as heavily truncated as others across the site and three of the four (F3174, F3178 and

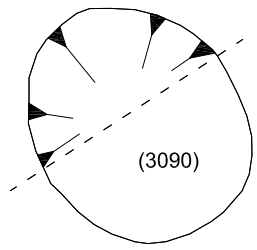
F3184) contained a primary fill and a secondary fill. These three features also contained pottery, while F3182 contained a lithic. Environmental samples comprising the entirety of each fill were taken from each of the pits that contained both primary and secondary fills.

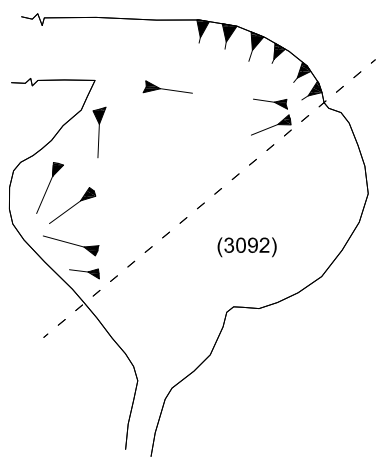
Figure 15: Pit cluster 2, looking south. Scale = 2m.

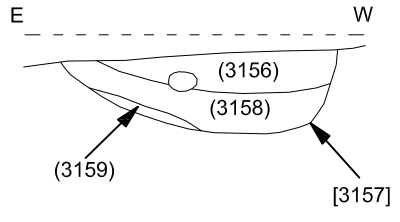
Feature No.	Context numbers	Description	Max. dimensions (mm)	Max. depth (mm)	Colour of fill	Composition
F3174	3174, 3175, 3176	Pit	500 x 530	90	Mid brown	Sandy silt
F3178	3178, 3179, 3180	Pit	400 x 440	90	Mid grey	Sandy silt
F3182	3182, 3183	Pit	420 x 460	60	Mid grey/brown	Sandy silt
F3184	3184, 3185, 3186	Pit	420 x 600	190	Light brown	Sandy silt

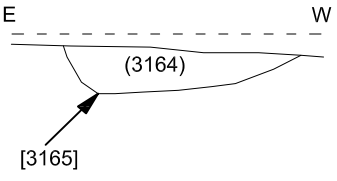
Table 5: Features within Pit Cluster 2

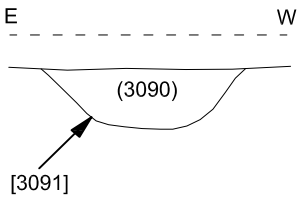


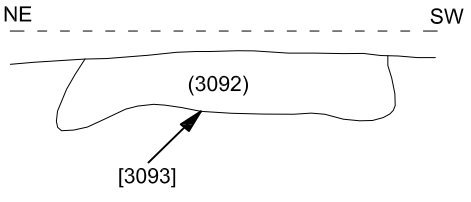


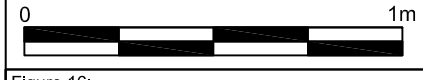












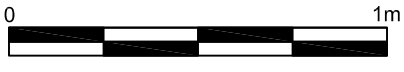
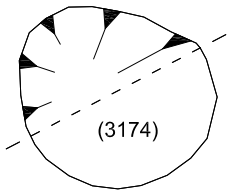


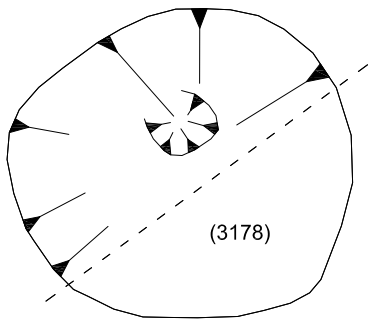
Figure 16:

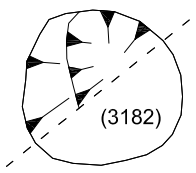
Pit Cluster 1

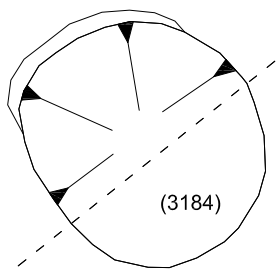
Scale = 1:20 at A3

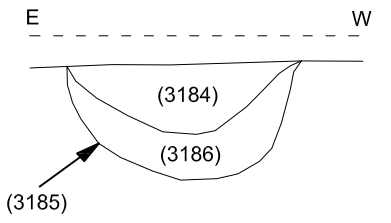
Key:

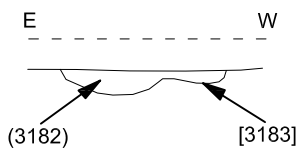


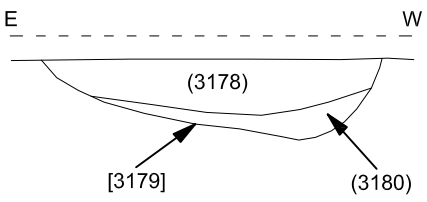


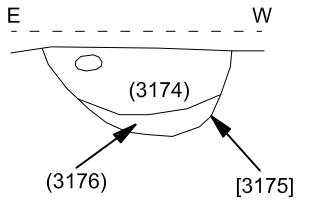












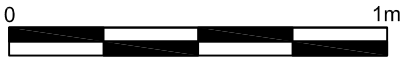


Figure 17:

Pit Cluster 2

Scale = 1:20 at A3

Key:

6.5 *Linear Ditch*

There was one shallow linear ditch feature (F3217) excavated. The linear ditch ran from north to south across the eastern part of the site. The feature was severely truncated and had not survived at all in some places. The linear had a flat base, very gradually sloping sides and a dark brown sandy silt fill, with gravel inclusions. There was no material culture recovered from the fill of the linear ditch.

This feature was very similar in form to linear features excavated during both Phases 2 and 4 of excavations at Lanton Quarry. Linear F1642, excavated in 2009 had a maximum width of 1.3m and depth of 0.22m. This feature produced modern pottery and is thought to be a post-Medieval field boundary or woodland boundary (Cockburn, Burrill and Brightman 2009). Linear F3066 was much more truncated and only survived to a maximum width of 0.65m and depth of 0.13m. However, it is also possible that this feature is associated with the Iron Age burial and possible shrine complex located approximately 30m to the south (Mapplethorpe and Scott 2011).

Figure 18: Sections 3 and 4 of Linear F3217, looking southwest. Scale = 1m

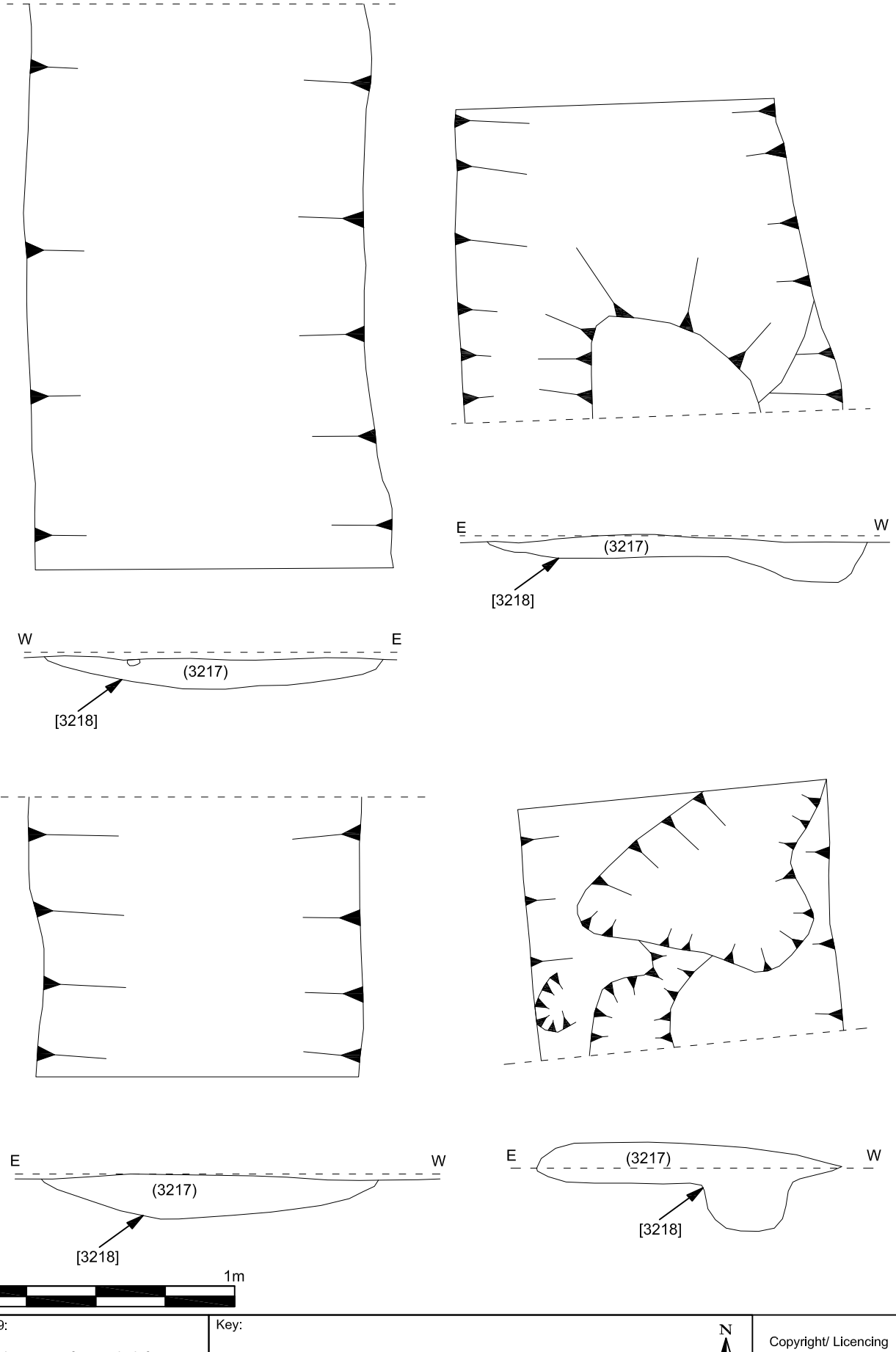


Figure 19:

Plans and sections of linear ditch feature

Scale = 1:20 at A3

Key:

N

6.6 *Additional pit and posthole features*

A total of 39 additional pit and posthole features were excavated. The majority of these features did not appear to be associated with any form or structure and none of them contained pottery. They varied from small posthole-type features to large, shallow pit features ranging in size from 0.19 x 0.21m to 1.67 x 0.81m. The features were located across the site with a higher concentration towards the northern end of the excavation area.

Environmental samples were taken from four of these features (F3100, F3138, F3231 and F3233). F3100 and F3138 were located slightly to the north of F3102 which produced a flint bladelet, while F3231 was situated towards the southern end of the site, very close to F3241 which contained the base of a large pot. F3233 was an ovoid pit located slightly to the north of Possible Post-built Building 27.

Although none of the features described in the table below produced pottery, one of them contained the burial of a sheep and another contained a metal animal trap. F3140 was situated towards the northern extent of the excavation area and contained the skeleton of a young sheep that did not appear to be any older than 100 years. A similar sheep burial, discovered during Phase 4 of the excavations carried out in 2011, yielded a radiocarbon date of between 1731-1809 cal AD. F3118 was located towards the northern end of the site and comprised a small animal burrow containing a metal animal trap.

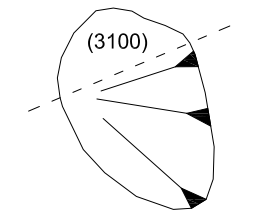
Figure 20: Sheep burial discovered in F3140. Scale = 0.25m.

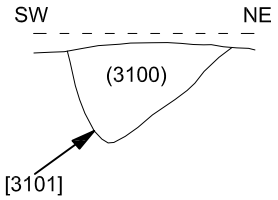
Figure 21: Small animal burrow containing metal animal trap, looking north. Scale = 0.25m.

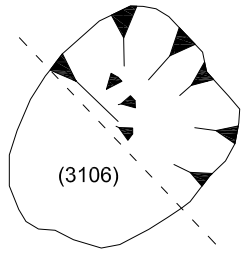
Feature No.	Context numbers	Description	Max. dimensions (mm)	Max. depth (mm)	Colour of fill	Composition
F3100	3100, 3101	Posthole	540 x 440	260	Dark	Sandy silt
F3106	3106, 3107	Pit	500 x 440	100	Mottled	Silty sand
F3108	3108, 3109	Pit	540 x 580	170	Brown	Sandy silt
F3110	3110, 3111	Small pit	410 x 420	85	Brown	Sandy silt
F3112	3112, 3113	Sub-rectangular pit	830 x 1690	290	Dark brown	Sandy silt
F3114	3114, 3115	Posthole/stakehole	150 x 190	70	Dark	Silty sand
F3116	3116, 3117	Pit/posthole	360 x 440	180	Dark brown	Silty sand
F3118	3118, 3119	Rabbit burrow containing metal trap	-	-	-	-
F3120	3120, 3121	Stakehole/posthole	160 x 190	60	Dark	Sandy silt
F3122	3122, 3123	Pit	210 x 510	80	Dark	Silty sand
F3126	3126, 3127	Pit	480 x 520	220	Dark	Silty sand
F3128	3128, 3129	Pit	860 x 630	170	Brown	Sandy silt
F3130	3130, 3131	Pit	630 x 350	160	Brown	Silty sand
F3132	3132, 3133	Posthole	300 x 320	220	Brown	Silty sand
F3136	3136, 3137	Posthole	250 x 270	250	Dark	Sandy silt
F3138	3138, 3139	Pit	390 x 370	110	Dark	Sandy silt
F3140	3140, 3142	Pit	630 x 840	270		
F3142	3142, 3143	Pit/posthole	290 x 340	100	Dark	Sandy silt
F3146	3146, 3147	Pit	590 x 500	210	Brown	Sandy silt
F3188	3188, 3189	Pit	340 x 460	60	Black/dark brown	Silty sand
F3190	3190, 3191	Pit	620 x 960	140	Mid brown	Silty sand
F3192	3192, 3193	Posthole	330 x 360	190	Dark brown	Silty sand
F3194	3194, 3195	Pit	500 x 500	70	Light brown	Sandy silt
F3202	3202, 3203	Posthole	190 x 200	30	Dark brown	Sandy silt

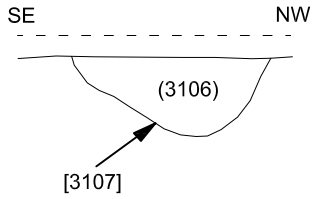
F3204	3204, 3205	Pit	830 x 490	200	Dark brown	Sandy silt
F3206	3206, 3207, 3208	Pit	1001 x 560	90	Grey/brown	Sandy silt
F3209	3209, 3210	Pit	460 x 450	140	Dark brown	Sandy silt
F3211	3211, 3212	Pit	630 x 760	70	Mid/light brown	Silty sand
F3213	3213, 3214	Pit	340 x 440	200	Dark brown	Silty sand
F3215	3215, 3216	Pit	460 x 240	100	Mid/dark brown	Sandy silt
F3219	3219, 3220	Pit	670 x 500	210	Grey/brown	Silt
F3221	3221, 3222	Pit	550 x 700	280	Mid brown	Sandy silt
F3231	3231, 3232	Irregular pit	920 x 480	160	Dark brown	Sandy silt
F3233	3233, 3234	Posthole	280 x 250	120	Dark brown	Sandy silt
F3237	3237, 3238	Posthole	200 x 240	100	Dark brown	Sandy silt
F3239	3239, 3240	Irregular pit	540 x 450	320	Dark grey/brown	Silty sand
F3243	3243, 3244	Posthole	400 x 290	290	Dark brown	Sandy silt
F3245	3245, 3246	Posthole	280 x 380	150	Dark brown	Sandy silt
F3247	3247, 3248	Pit	490 x 1090	90	Light-dark brown	Silty sand

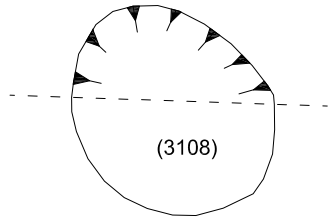
Table 6: Additional pit and posthole features.

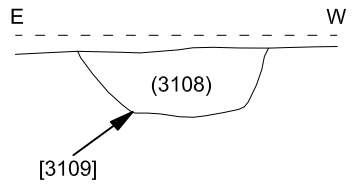


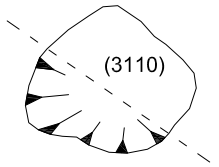


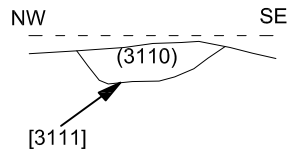


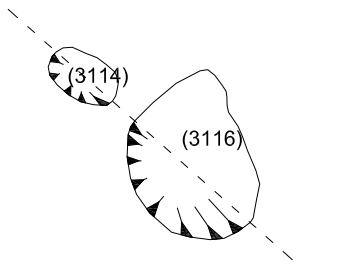


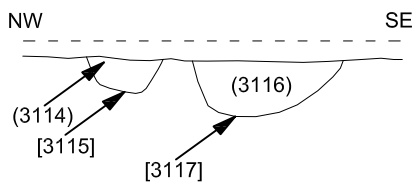


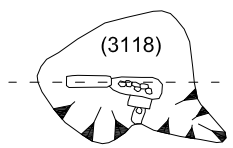


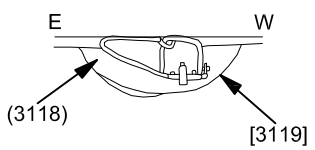


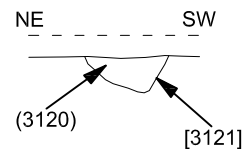


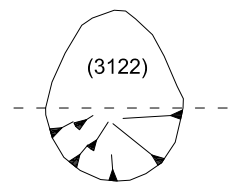


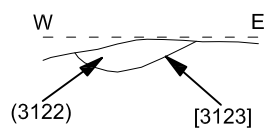


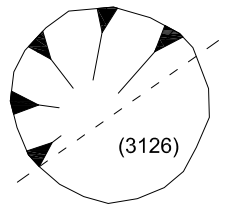


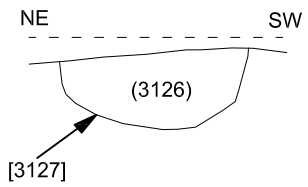


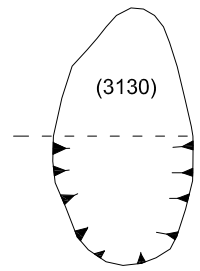


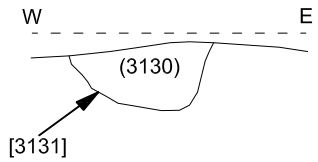


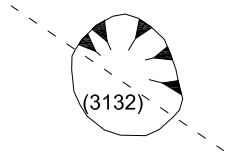


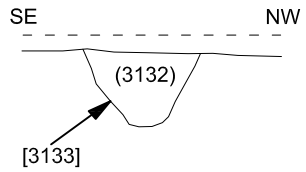


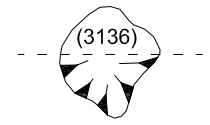


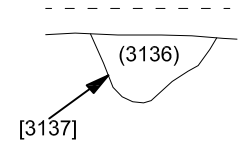


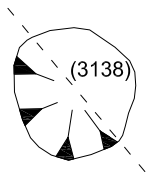


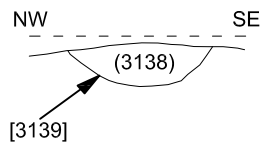


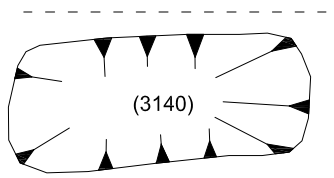


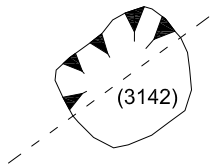


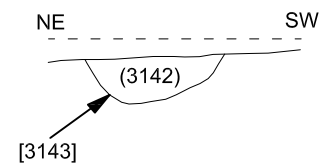


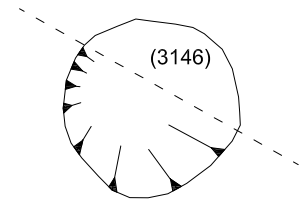












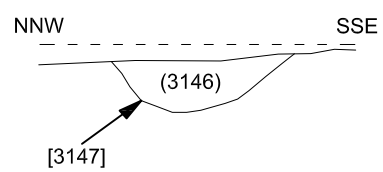
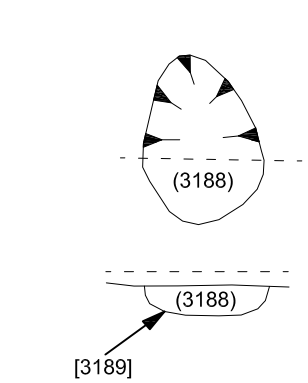


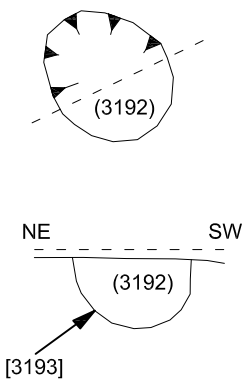
Figure 22:

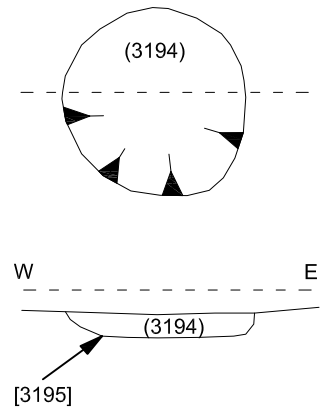
Undated features across the site

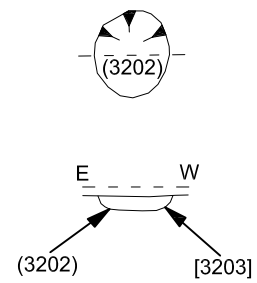
Scale = 1:20 at A3

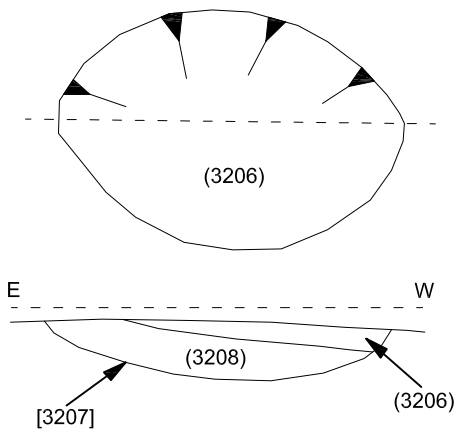
Key:

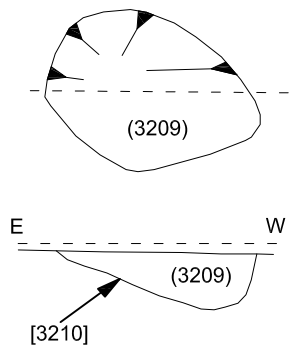


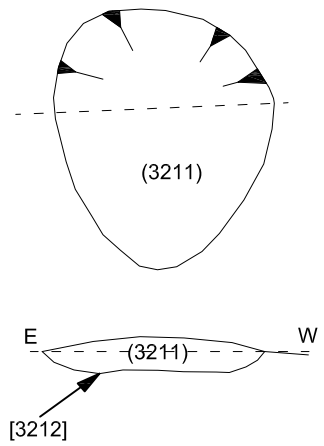


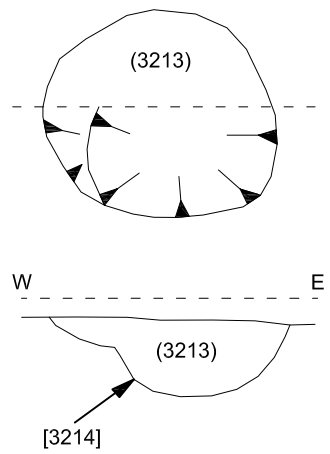


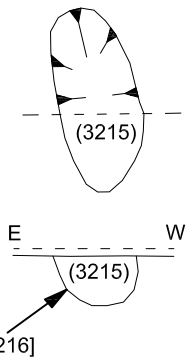


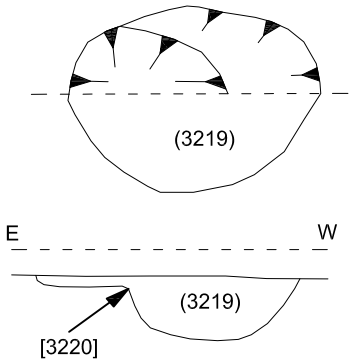


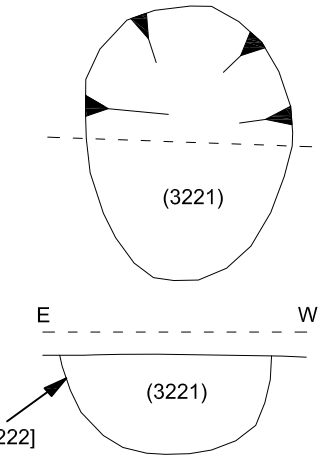


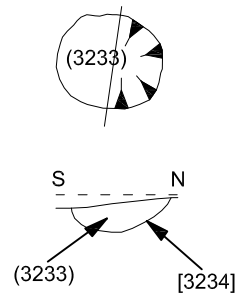


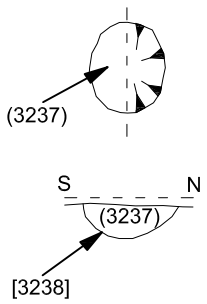


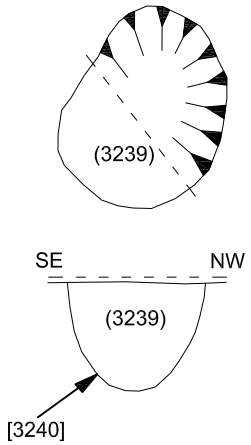


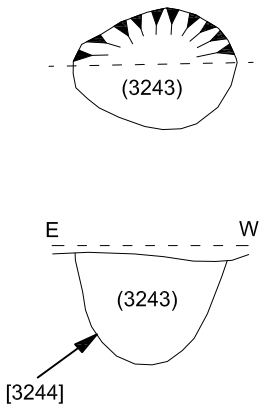


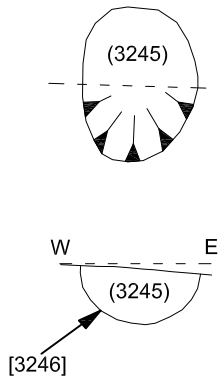












0 1m

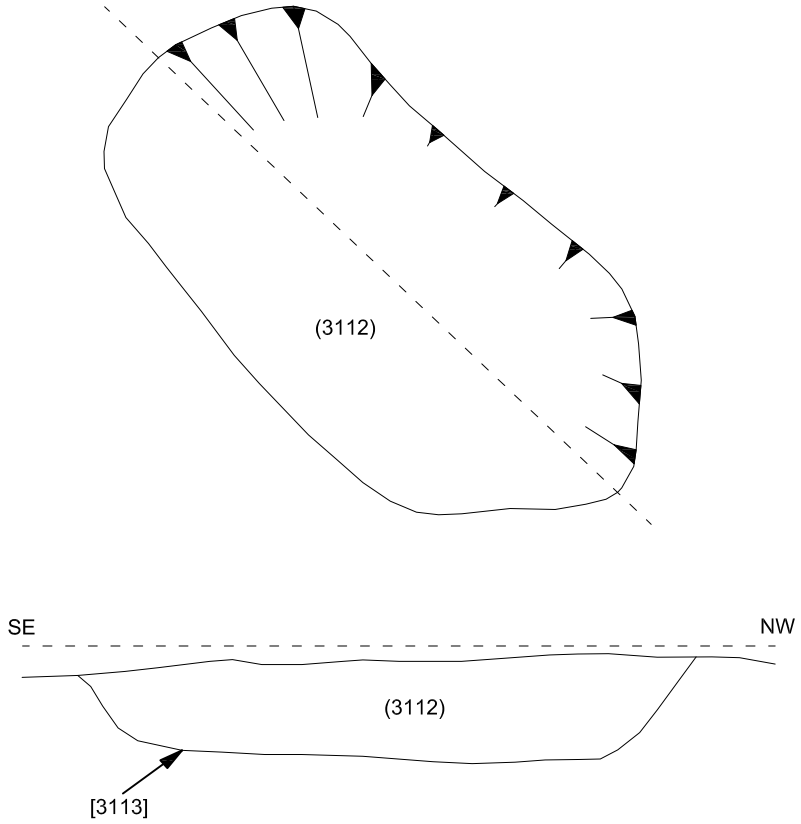
Figure 23:

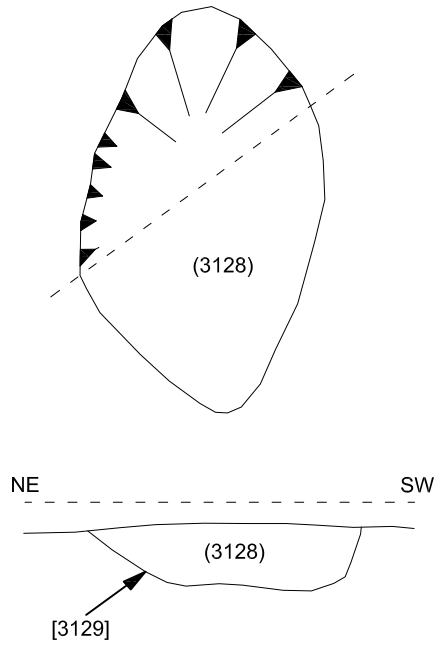
Undated features across the site

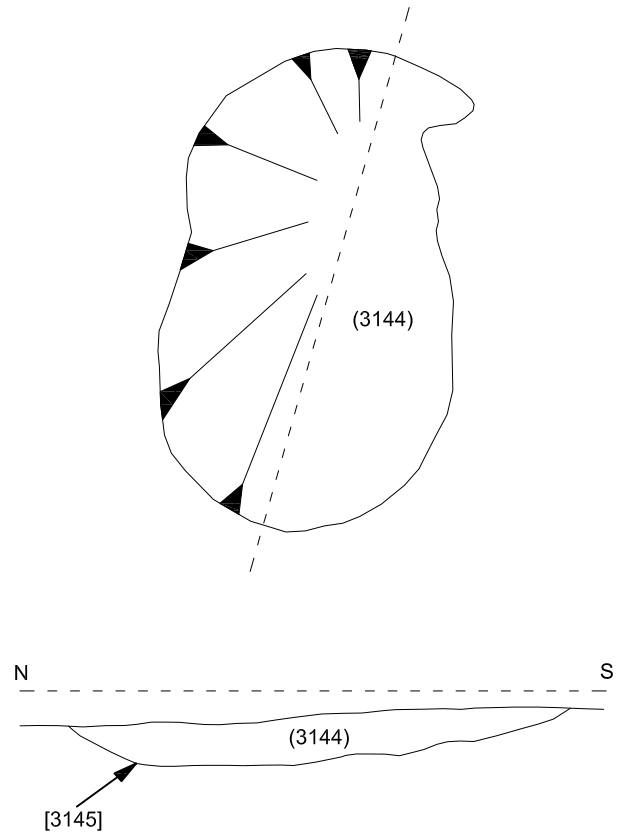
Scale = 1:20 at A3

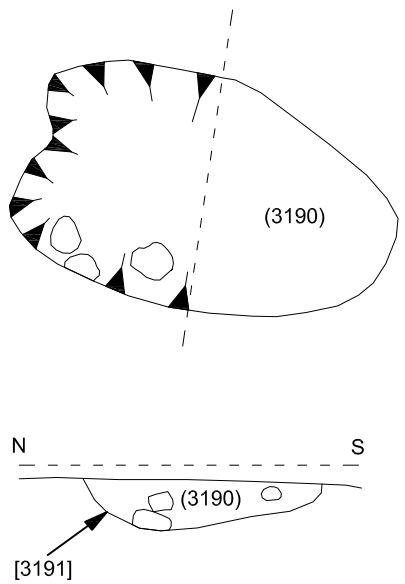
Key:

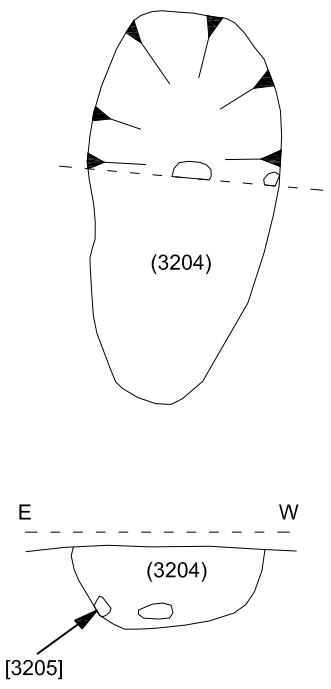
N

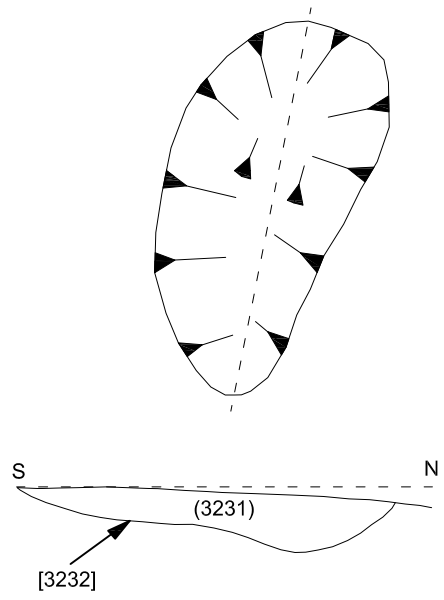


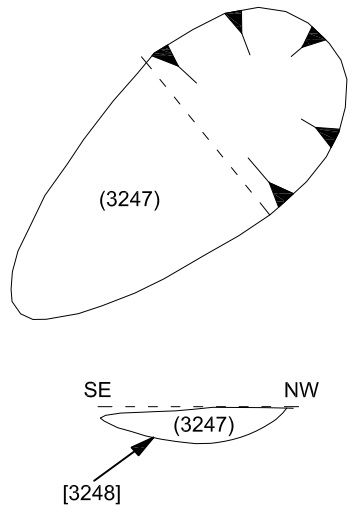












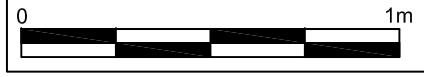


Figure 24:

Undated features across the site

Scale = 1:20 at A3

Key:

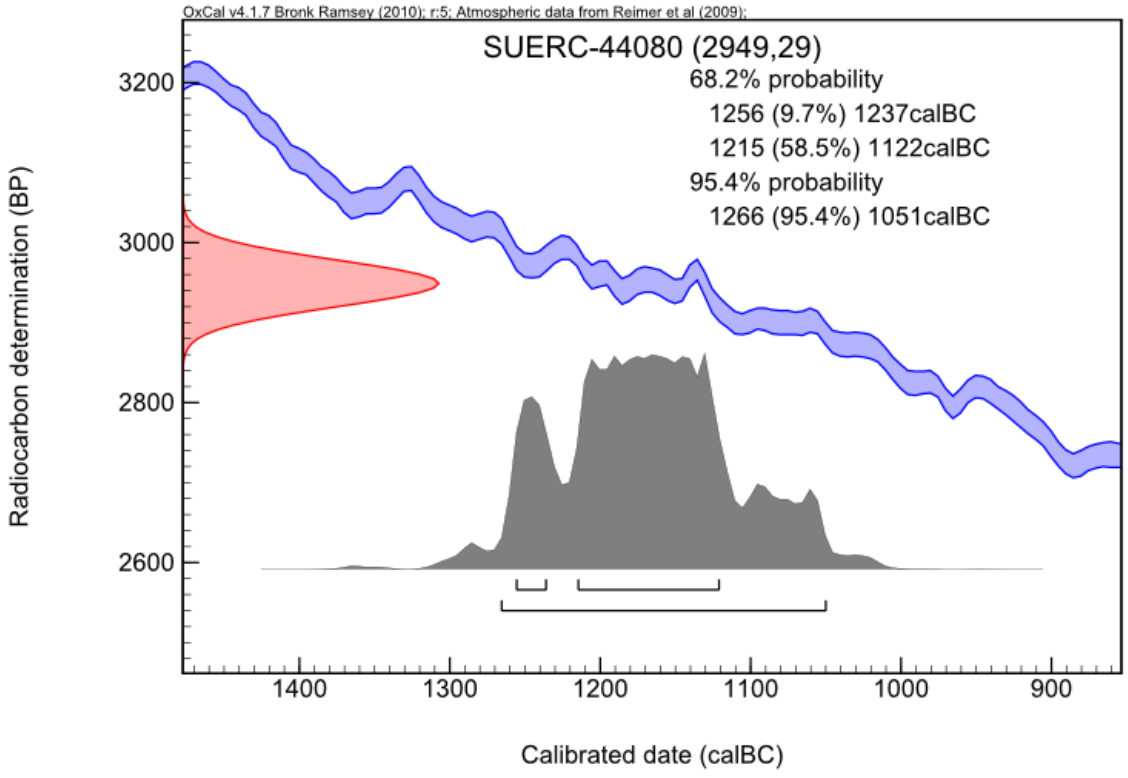
7. RADIOCARBON DATING

7.1 A single radiocarbon date was obtained on material from pit F that contained the basal section of a large vase-shaped ceramic vessel.

Feature	Context	Sample	Lab No.	RC Age (BP)	$\delta^{13}C$ (‰)	Calibrated date range (95.4% confidence)
Pit with large vase-shaped vessel	3241	Short-lived twig (indet.)	SUERC-44080	2949±29	-25.8	1266 – 1051 cal BC

Table 2 Radiocarbon dating results

7.2 The sample obtained from pit fill 3241 returned a radiocarbon date that in the Middle Bronze Age in the final quarter of the 2nd millennium cal BC and as such places the vessel and the use of the pit in the same period for which Flat Rimmed Ware has been dated elsewhere on the site associated with Bronze Age house sites.



8. PALAEOENVIRONMENTAL ASSESSMENT

By Laura Strafford

8.1 Introduction

A total of 39 samples were taken from the excavation at Lanton, all of which produced flots for assessment. The results are summarised in tabular form in Appendix II.

8.2 Method

The flots were examined at up to x20 magnification for charred botanical remains using a binocular microscope. Plant nomenclature follows Stace (1997).

8.3 Results

The charred plant macrofossil assemblage comprised remains of cereals, hazelnuts and wild weed seeds, indicating the likelihood that both cultivated crops and wild-gathered foods formed an important part of the diet for Neolithic occupants of the site.

Charcoal was noted in all of the flots. This was generally present in small quantities, although samples <357> (3180) and <358> (3180), from the same primary pit fill, produced notably larger assemblages than other contexts. Other flots produced more moderate charcoal assemblages; those flots particularly poor in quantity were <366> (3227), <367> (3233) and <371> (3225), all post hole fills.

Hazelnut was present in a number of samples, notably those representing primary pit fills, although in each case in small quantity. Cereal grains were also present in numerous samples, again notably those from pit fills, and again in each case in small quantity. In many cases the highly fragmented and clinkered nature of the grain rendered identification impossible. Although diagnostic features are missing, from the basic outline shape it seems likely to be either wheat (*Triticum* spp.) or barley (*Hordeum* spp.), perhaps both. Sample <363> (3176) produced the richest assemblage of grain, but the assemblage was so highly clinkered and fragmented that species ID was not possible. All the CPR in this sample, including charcoal, showed signs of clinkering, a state indicative of being subject to very high temperatures. Many of the samples contained unidentified small rounded weed seeds, some of which have been tentatively identified to vetch (*Vicia* spp.) and wild cabbage/mustard (*Brassica* spp.), and although other unidentified species are also present it seems likely that such seeds represent wild food sources which would have been available for exploitation.

Without exception, all samples produced evidence of modern intrusion, most notably in the form of modern uncharred seeds (commonly goosefoot (*Chenopodium* spp.) and knotweed or knotgrass (*Polygonum* spp.)), but also present were worm, insect remains and worm egg cases.

8.4 Conclusions

The assemblage of charred plant remains suggests exploitation of both cultivated crops and wild-collected foods. The results indicate that grain, probably barley (*Hordeum* spp.) and/or wheat (*Triticum* spp.) was utilised, although the low number of grains and lack of diagnostic features and chaff prevent identification of the species present.

Analysis of the botanical macrofossils obtained through flotation has shown the presence of cereal grain, hazelnut shells and other gathered wild resources in Neolithic contexts, indicating a potential mix of agriculture and exploitation of natural resources.

8.5 Recommendations

No further analysis is recommended for the plant macrofossils due to their low numbers and poor preservation. Any additional work undertaken at the site should consider the results of this assessment.

9. FAUNAL REMAINS ASSESSMENT

By Kate Mapplethorpe

9.1. The faunal remains recovered from Lanton Quarry consisted of a small assemblage of articulated sheep bone from two pits, F3140 and F3198, along with a small amount of probable burnt animal bone from features (3139), (3168), (3170), (3231) and (3249).

9.2. The animal bone recovered from F3140 consisted of a fully articulated adult domestic sheep skeleton. The third lower molar was fully erupted but not worn indicating an age at death of approximately 1-2 years (Payne 1973). There were no butchery marks or palaeopathology present, and the preservation of the remains indicate that it is likely to be a modern livestock burial.

9.3. The remains from F3198 are also those of a domestic sheep, in this case a juvenile individual. No skull was present, and it is likely that this had been ploughed away. As with the remains from F3140, there are no palaeopathological lesions or butchery marks present. The bone was less well preserved, probably because the pit was slightly shallower than F3140. It is also likely to be a modern livestock burial.

9.4. Burnt bone was recovered from (3139), (3168), (3170), (3231) and (3249). The assemblage mostly consisted of small fragments of bone less than 15mm in diameter, all of which showed longitudinal and transverse cracking. This suggests that the bone was 'green' when burnt, i.e. it still contained a significant organic component. The bone is uniformly white, indicating that it had been disarticulated or defleshed prior to burning with no areas shielded by soft tissue or corresponding joint surfaces, and that it was burnt in a fire in excess of 800°C in temperature. The only exception was the bone from (3139), which was white on the exterior surface and black on the interior surface. This indicates that these fragments were burnt in a fire exceeding 800°C, but that they were not in the fire long enough for the bones to fully crack and the extreme heat to reach the interior. Several fragments were identified as non-human, suggesting that these bones were likely to have been cooking waste. Table 7 gives a quantification of the remains.

Context	No. of frags.	Weight	Avg. diameter	Colour % affected	Surface texture
(3139)	8	0.33g	8.9mm	60% white, 40% black	Transverse and longitudinal cracking
(3168)	7	3.76g	12.9mm	100% white	Transverse and longitudinal cracking

(3170)	9	1.63g	10.8mm	100% white	Transverse and longitudinal cracking, some curved cracking
(3231)	4	0.83g	9.9mm	100% white	Transverse and longitudinal cracking
(3249)	5	1.74g	10.6mm	100% white	Transverse and longitudinal cracking

Table 7: Quantification of burnt faunal remains from Lanton Quarry 2012.

10. PREHISTORIC CERAMIC ANALYSIS

By Clive Waddington

10.1. Introduction

The corpus of ceramic material recovered from the Phase 5 excavation at Lanton Quarry comprised a substantial assemblage of Neolithic pottery numbering approximately 256 sherds in total, with a combined weight of just over 4.4 kg. It represents a minimum of 53 vessels, based upon consideration of profile, fabric and depositional context as well as slightly less reliable indicators such as colour and wall thickness. The majority of this assemblage, numbering some 192 sherds and weighing just under 3.47 kg, relate to approximately 43 vessels or more that can be classified as Early Neolithic Carinated Bowl, together with approximately four vessels or more of Impressed Ware and five vessels or more of Grooved Ware, one vase-shaped vessel of Middle Bronze Age date and seven undiagnostic vessels recovered from a pit features scattered across the Phase 5 excavation area.

The assemblage compliments the previous assemblages recovered from Lanton Quarry and relates to Neolithic occupation across the wider site. It may also be compared with further assemblages recovered from neighbouring sites such as those from Coupland (Passmore and Waddington 2009), Cheviot Quarry (Johnson and Waddington 2008), and Thirlings (Miket *et al.* 2008). In this respect it forms a substantial and significant addition to the local and regional pottery sequence.

10.2. Method Statement

The sherds were gently finger-washed in cold water and then left to air dry. Once they had dried the remaining soil was gently brushed off with a sable shaving brush. The sherds were laid out according to context and then by fabric group and individual vessels. The pottery was examined macroscopically with the aid of a x10 hand lens. No microscopic analysis was undertaken. Joining sherds were refitted using HMG adhesive.

10.3. Catalogue

A catalogue describing each identified vessel by ceramic type is presented below.

Carinated Bowl

Vessel Number	Small Find Number	Context Number	Description	Weight (grams)
61	1652, 1653	3174	Two small body sherds of carinated	19.12

			bowl ceramic with buff brown outer surface and grey brown inner surface both of which are well burnished, the interior appearing to have been grass-wiped. The vessel has a wall thickness of 12mm and the well fired hard fabric contains fine crushed stone inclusions up to 3mm across.	
62	1656	3174	A single tiny body sherd of carinated bowl ceramic with red brown, burnished inner and outer surface with grey, well fired core containing fine crushed stone inclusions up to 4mm across. The vessel has a wall thickness of 8mm.	4.64
63	1651, 1654, 1655	3174	Three small body sherds of carinated bowl ceramic displaying a pale yellow brown outer surface, dark grey inner surface and grey brown core. It has a coarse fabric containing crushed stone inclusions, some being quite large up to 9mm across. The outer surface has been lightly burnished whereas the inner surface is rougher with the crushed stone opening agents erupting on both surfaces. The vessel has an average wall thickness of 9mm.	32.22
64	1501, 1635	3104	Two body sherds of hard carinated bowl ceramic with highly burnished inner and outer surfaces and uniform well fired core. The inner surface is dark grey in colour; the outer surface varies from brown to grey whilst the core is grey brown and contains prepared crushed stone inclusions up to 4mm across. One of the sherds includes part of a gentle carination. The vessel a curving profile and the wall thickness varies from 10.5 to 6mm thick.	35.21
65	1634	3200	A single tiny body sherd of carinated bowl ceramic with buff brown, burnished inner and outer surfaces, a dark grey well fired core containing crushed stone inclusions up to 4mm across. The vessel has a wall thickness of 10mm.	10.11
66	1554	3096	A single tiny rim sherd of carinated bowl ceramic with highly burnished, brown outer surface and slightly	9.89

			coarser but burnished inner surface. The fabric is hard and contains prepared crushed stone inclusions averaging 2mm across which occasionally erupt on the inner surface. The rim is plain and everted and the vessel has a wall thickness of 9mm. The sherd is too small to accurately assess the diameter of the vessel.	
67	1673, 1678, 1674, 1664, 1665, 1666, 1688, 1667, 1682, 1670, 1669, 1663, 1668, 1682, 1677, 1681, 1672, 1680, 1671, 1675, 1676, 1679	3166	One rim sherd of carinated bowl ceramic together with 21 tiny sherds and crumbs that all appear to be from the same vessel. The rim sherd displays a hard fabric containing prepared crushed stone inclusions averaging 2mm across. It is highly burnished and has a grey brown inner and outer surface with a lighter grey brown core. The rim is slightly everted and the wall thickness varies between 11 and 6mm thick. It has an external rim diameter of approximately 200mm.	85.96
68	1553, 1774, 1775, 1776,	3172	Four sherds, three of which conjoin, from a carinated bowl vessel with everted rim and highly burnished inner and outer surfaces. It has a hard fabric containing crushed stone inclusions, typically quite fine, also including larger pieces up to 9mm across. It has a wall thickness that varies between 6 and 11mm.	92.55
69	1552	3172	A single small body sherd of early Neolithic ceramic with a coarse fabric containing crushed stone inclusions up to 4mm across. It has a wall thickness of 9mm.	23.96
70	1522, 1520, 1527, 1529, 1530	3178	Five sherds, including two which conjoin, of carinated bowl ceramic that has a buff brown external surface and dark grey inner surface upon which survives charred organic residues. It has a dark grey fabric containing crushed stone inclusions up to 9mm across, some of which erupt on both the inner and outer surfaces. It has a wall thickness varying between 7 and 14mm thick.	160.13
71	1521, 1526	3178	Body sherds from a carinated bowl fabric vessel with a buff brown	136.79

			external surface, a dark grey inner surface and dark grey core. It is burnished on its inner and outer surfaces and the fabric contains crushed stone inclusions up to 5mm across, some of which erupt on the inner and outer surfaces. The vessel has a curved profile and a wall thickness varying between 9 and 12mm.	
72	1524	3178	A single body sherd of carinated bowl ceramic. It has a hard fabric, a buff brown and grey outer surface and dark grey inner surface and core. It contains crushed stone inclusions up to 4mm across and a wall thickness averaging 10mm. It has charred organic residue surviving on its inner surface.	38.75
73	1528	3178	A single small body sherd of carinated bowl ceramic with a buff brown inner and outer surface and core. It has been evenly fired, has a fairly coarse fabric, and contains crushed stone inclusions up to 8mm across. It has an average wall thickness of 12mm.	24.02
74	1523	3178	A single body sherd from carinated bowl vessel, the carination being clearly apparent on this piece. It has a buff brown outer surface, a medium brown inner surface and dark grey core. The fabric contains crushed red sandstone inclusions up to 6mm across which occasionally erupt on the burnished outer surface but frequently erupt across its inner surface. It has an average wall thickness of 9mm.	57.81
75	1661	3178	A single small rim sherd of carinated bowl with highly burnished inner and outer surface. It has a grey brown inner and outer surface and a dark grey core. The fabric contains crushed red sandstone up to 5mm across. It has a classic everted rim and the wall thickness averages 7mm.	15.47
Unattributable	1660, 1662, 1525, 1531	3178	Four tiny sherds of carinated bowl ceramic unattributable to any given vessel.	17.74
76	1695, 1772, 1773	3249	One rim sherd and two crumbs from a carinated bowl with very gentle high	76.02

			shoulder just below the rim. It has a buff brown external surface and dark grey inner surface and core. Charred organic residue adheres to the internal surface. The fabric is hard, contains crushed stone inclusions up to 4mm across and the wall averages 9mm thick. The rim is upright with flat top and squared profile.	
77	1506, 1722, 1735, 1741, 1748	3180	Five sherds, one of which is a rim sherd, probably from the same carinated bowl vessel with everted rim. Several sherds have charred organic residue surviving on their inner surfaces. The vessel has a buff brown outer surface and a dark grey inner surface with grey brown core. The vessel contains crushed stone inclusions up to 9mm across and it has been burnished on its outer surface. The wall thickness varies between 9 and 14mm.	121.96
78	1745	3180	A single small rim sherd from a carinated bowl vessel. It has a red brown outer surface, dark grey inner surface and core. It has a hard fabric, is highly burnished and contains crushed stone inclusions typically 3mm across. It has a wall thickness of 11mm below the rim.	30.79
79	1510	3180	A single small rim sherd from a carinated bowl with buff brown inner surface, outer surface and core. It has crushed stone inclusions typically 1 to 2mm across. The rim is slightly everted and a carination starts 35mm below the rim of the vessel. It has a wall thickness of 8mm and an estimated external rim diameter of 100mm.	24.77
80	1734, 1738	3180	Two rim sherds of carinated bowl with highly burnished inner and outer surfaces. It has a hard fabric and contains crushed stone inclusions up to 7mm across and has a dark grey to brown outer surface and core. It has a rolled-over rim and a wall thickness that ranges between 7 and 10mm. If these two sherds belong to the same vessel the rim is less rolled-over along part of its circumference.	33.86

81	1509	3180	A single tiny rim sherd of carinated bowl ceramic from a small bowl with upright and rounded rim. It is made from a buff brown fabric with crushed red sandstone inclusions up to 4mm across and has a wall thickness averaging 7mm across.	5.59
82	1743	3180	A single tiny rim sherd from a carinated bowl ceramic with flaring and rounded rim. It is highly burnished and has a dark grey inner and outer surface and core. It contains crushed red sandstone inclusions up to 3mm across and has a wall thickness averaging 8mm thick.	6.64
83	1737, 1735, 1740, 1746	3180	Four sherd, of which two are rim sherds, from a substantial carinated bowl vessel with rolled-over rim. It has a hard, dark grey to buff brown fabric and contains crushed sandstone inclusions up to 5mm across. It contains charred residue on the inside surface of one sherd and has a wall thickness between 9 and 10mm across. One of the rim sherds has a circular perforation suggesting that this bowl was suspended. It has an estimated external rim diameter of 250mm.	170.53
84	1723, 1726, 1736, 1747	3180	Four body sherds probably from the same carinated bowl vessel with highly burnished buff brown outer surface and dark grey inner surface. The fabric contains crushed sandstone inclusions up to 5mm across and the wall averages 8 to 9mm thick.	132.92
Unattributable	1733, 1732, 1727, 1731, 1739, 1507, 1744, 1728, 1730, 1511, 1508, 1503, 1729, 1742, 1505, 1504, 1512, 1724	3180	Eighteen small sherds of carinated bowl ceramics unable to be confidently attributed to any of the other vessels recognised form this context.	182.46
85	1532	3178	A single small rim sherd of carinated bowl with flared and out turned rim and well burnished all over. It has a grey brown outer surface, pale brown inner surface and the fabric contains	3.89

			crushed stone inclusions up to 5mm across and it has a wall thickness of 10mm.	
86	1758, 1754, 1761, 1766, 1633	3176	Five sherds, including a rim sherd, of carinated bowl ceramic from a vessel with a buff brown exterior and a brown interior and dark grey evenly fired core. The vessel is roughly burnished however crushed red sandstone inclusions up to 5mm across erupt on its surfaces, particularly the inner surface. Two sherds have charred organic residues on the internal surface, the rim is everted with a flat top. It has a wall thickness averaging 10mm thick.	137.39
87	1764, 1771, 1759	3176	Three sherds from a carinated bowl vessel including one rim sherd showing an everted and flattened rim. The vessel has been highly burnished and has a pale brown to dark brown outer surface and a darker grey to brown inner surface. The fabric contains crushed stone inclusions up to 4mm across, some of which erupt on the inner and outer surfaces. Its wall thickness varies from 7 to 11mm.	120.77
Unattributable	1765, 1769, 1763, 1757, 1768, 1755, 1756, 1762, 1767, 1770, 1760	3176	Eleven small sherds of carinated bowl ceramic from context (3176) that were unable to be confidently attributed to any of the identified vessels from this context.	
88	1749, 1780, 1556, 1557, 1779, 1781	3168	Two rim sherds and four tiny sherds and crumbs of carinated bowl with upright neck, slack shoulder and everted rim with evidence for what appears to be two lugs having been located on the outer surface. The fabric is hard and highly burnished inside and out and the pot has a dark grey to brown colour on its inner and outer surface and core. The fabric contains crushed stone inclusions up to 9mm across and the vessel wall is typically 9mm thick. This vessel has an estimated rim diameter of 220mm.	158.26
89	1621	3186	A single small rim sherd of Carinated Bowl ceramic with buff brown outer and inner surface and core. It has a hard, evenly fired fabric with fine	16.83

			crushed stone inclusions no more than 4mm across. The wall of the vessel varies between 6 and 8mm. It is from an open bowl with a slightly everted rim.	
90	1709	3186	A single small rim sherd of carinated bowl ceramic from a plain open bowl with plain upright rim. It is made from a hard fabric with a brown grey external and internal surface and core. It contains fine crushed stone inclusions typically 1mm across and has a wall thickness of 8 to 9mm.	18.21
91	1624	3186	A rim sherd from a Carinated Bowl with a grey brown inner and outer surface and core. It is highly burnished and has a hard fabric containing crushed stone inclusions up to 5mm across. It has an everted and partly rolled over rim and is part of an open bowl which has an estimated external rim diameter of 240mm.	44.17
92	1582	3186	A small rim sherd from a Plain Ware vessel with a distinctive yellow brown fabric that has been evenly fired throughout. It is part of an open bowl with a plain upright and rounded rim. The vessel has a wall thickness of 5 to 7mm.	11.13
93	1602, 1608, 1699	3186	Three sherds from a Carinated Bowl vessel with an everted rim, upright neck and carination evident. It is made from a hard fabric with medium brown outer and inner surface and dark grey core. It contains crushed stone inclusions which can erupt on both the inner and outer surfaces, both of which have been smoothed. The wall of the vessel ranges between 7 and 9mm thick and it has an estimated external rim diameter of 160mm.	56.52
94	1612, 1615, 1617, 1703, 1596, 1605, 1627, 1593, 1606, 1698, 1597, 1595, 1619	3186	A Carinated Bowl vessel with everted and partly rolled-over rim giving the rim a flat top with vertical neck and carination starting 55mm below the top of the rim. It is made from a hard fabric with dark grey to brown and burnished outer surface and a medium brown to grey burnished	288.8

			inner surface and dark grey core. It contains crushed red sandstone inclusions up to 6mm across which occasionally erupt on the inner surface. It has an external rim diameter of 210mm.	
95	1629, 1600, 1630, 1598, 1610, 1618, 1580, 1586, 1713, 1587	3186	Ten sherds of carinated bowl ceramic with a distinctive fabric with buff brown outer surface, medium brown inner surface and dark grey core. It contains crushed red sandstone inclusions up to 7mm across that erupt conspicuously on both the inner and outer surfaces. No rim sherds survive but the body sherds indicate a substantial bowl shaped vessel. The wall varies from 7 to 13mm in thickness.	198.61
96	1702, 1705	3186	Two conjoining rim sherds from a small Carinated Bowl with an upright and partly rolled-over rim with flat top. It is made from a hard fabric with a buff brown inner surface and dark grey to brown outer surface and core. It contains crushed stone inclusions up to 4mm across and has a wall thickness averaging 7mm. The vessel has an external rim diameter of 130mm.	45.82
97	1594, 1609, 1611	3186	Three sherds, two of which are rims, from a Carinated Bowl with an everted and partly rolled over rim, vertical neck and sharp carination. The fabric, although hard, appears a little more friable than other Carinated Bowls from this assemblage and contains crushed stone inclusions up to 3mm across. It has a grey brown outer surface and a pale brown to grey inner surface with dark grey core. It has a wall thickness of 5 to 6mm and an estimated external rim diameter of 200mm.	57.57
98	1704, 1707, 1603, 1696	3186	Four small sherds, three of which are rims and two of which conjoin, from a Carinated Bowl vessel with an everted plain rim. It is made from a hard fabric with buff brown to dark grey outer and inner surface and dark grey core. It contains crushed stone inclusions up to 7mm across and a	78.57

			wall thickness ranging from 9 to 10mm.	
99	1701	3186	A single rim sherd from a plain Carinated Bowl with rounded and slightly rolled over rim. It is made from a hard fabric with buff brown outer and inner surface and core. It contains crushed stone inclusions up to 6mm across and has a wall thickness averaging 8mm. It has an estimated external rim diameter of 160mm.	51.44
100	1620	3186	A rim sherd from a substantial, thick walled Carinated Bowl with everted rim. The fabric is hard and has a buff brown to grey outer surface, medium brown inner surface and dark grey core, and contains crushed stone inclusions up to 14mm across. Both the inner and outer surfaces are highly burnished and the inclusions occasionally erupt on both surfaces. The wall of the vessel averages 12mm thick. It is difficult to estimate the external diameter of this vessel but it is likely to be in the order of 400mm.	58.19
101	1626	3186	A rim sherd from a Carinated Bowl with slightly everted rim and slack shoulder. It is made from a hard fabric with buff brown outer surface, a brown to grey inner surface and buff brown core. It has been evenly fired, contains crushed stone inclusions up to 4mm across and is burnished on its inner and outer surfaces. It has an average wall thickness of 9mm and an estimated external diameter of in the order of 250mm.	59.68
102	1599, 1721	3186	Two sherds including one rim sherd from a carinated bowl vessel with high shoulder and everted rim, typical of what Hearne termed 'Shouldered Bowls'. It has a hard fabric with highly burnished outer surface and rougher inner surface. The fabric contains crushed stone inclusions up to 4mm across and it has a dark brown outer surface, buff brown inner surface and dark brown to grey core. The wall thickness averages	89.45

			10mm and the vessel has an estimated external diameter of 180mm.	
103	1625	3186	A single small body sherd of Carinated Bowl ceramic from a substantial vessel with hard fabric and buff brown outer surface and dark grey inner surface and core. It has been evenly fired and contains crushed stone inclusions up to 5mm across. It has a wall thickness of 15mm.	26.14
Unattributed	1601, 1616, 1613, 1614, 1604, 1623, 1592, 1697, 1712, 1584, 1581, 1706, 1622, 1589, 1708, 1711, 1578, 1700, 1717, 1585, 1628, 1579, 1591, 1590, 1576, 1607, 1577, 1588, 1720, 1719, 1718, 1716, 1714, 1715	3186	Thirty four small sherds of Carinated Bowl ceramic which could not be confidently attributed to any of the identified vessels from context (3186).	337.6

The term Carinated Bowl is used here generically to describe the full range of Early Neolithic shouldered, S-profiled and bag-shaped bowls and plain wares that comprise the tradition as defined by Sheridan (2007) and as described in the ceramic reports for the previous phases of the site.

The assemblage of Carinated Bowls is fairly typical of the Northumberland tradition displaying a series of outwardly flared or rolled rims together with carinated, upright, globular and flared body forms, demonstrating a complete absence of decoration and executed in a well-fired fabric with a highly burnished, or at least well smoothed, external and sometimes internal surface. Examples of un-shouldered simple vertical rimmed bowls or cups can also be identified. In this regard the corpus aligns well with the material recovered from the previous phases at Lanton Quarry and similar assemblages elsewhere in the Milfield Basin, such as those from Cheviot Quarry (Waddington in Johnson and Waddington 2008), Coupland (Waddington in Passmore and Waddington 2009) and Thirlings (Miket *et al.* 2008).

Fabric

The fabrics are largely well fired and contain variable quantities of crushed stone temper, of either limestone or sandstone, presumably derived from upland sources to the east and north of the Milfield plain. The inclusions are generally well sorted with an average size of between 0.20-0.40 mm and are fairly evenly distributed throughout the fabric. The common practice

of treating the external and sometimes internal surface by means of burnishing often masks the presence of the inclusions across the surface of the vessels although in some cases surfaces are less well smoothed and inclusions erupt at the surface.

Surface colouration can vary considerably, even within a single vessel, as is usual with ceramics fired under a bonfire and repeatedly exposed to smoke discolouration, heat and differential oxygen supply. On the whole they tend to be buff brown, dark brown, grey and occasionally black. On the whole, the pottery is well fired with a fairly even and uniform colouration throughout indicative of good control of the firing process. Several vessels have carbonised residue surviving on the inner, and occasionally outer, surfaces.

Form

Overall vessel forms tend to be simple or inflected and neutral in character. Body shapes are mostly shallow and hemispherical in shape, although several examples of flat sections of wall also exist which may indicate the further presence of upright carinated forms. Alternatively the flat wall sections may indicate the presence of closed, slack shouldered vessels with an elongated upper body and vertical rim similar to those recovered from the Coupland site (Passmore and Waddington 2009). Shoulders can be slack and rounded in shape or sharply defined.

The majority of rims tend to be outwardly angled and flared, although in many cases they are rather short and thick in profile and may either be pinched, flat or rounded at the edge.

Few vessels are adequately represented to allow vessel reconstruction yet the range of rim diameters indicates a wide variety of vessel sizes. These vary from the small simple cup with a rim diameter of approximately 100 mm, to the large cooking vessel (100) which has a diameter of approximately 400 mm. Most vessels whose diameter can be estimated have a size varying between 200 mm and 250 mm.

Numbers

A total of 192 sherds were recovered which represent a minimum of 43 vessels. The most productive contexts were pit fills [3186] where at least 15 vessels were represented, [3180] where at least eight vessels were represented and [3178] where at least seven vessels were represented.

Impressed Ware

Vessel Number	Small Find Number	Context Number	Description	Weight (grams)
6	1534	3092	Three conjoining sherds including part of the rim of an open Impressed Ware bowl. It is made from a hard fabric that contains crushed stone inclusions that include quartz, measuring up to 2.5mm across. The wall of the pot averages 7mm thick. It has an external rim diameter of approximately 140mm. The rim is thin and flat topped with a squared	23.49

			profile. The outer surface is a buff brown colour and darker grey at the rim and is decorated with horizontal rows of impressed 'bird bone' decoration interspersed with double rows of horizontal lines. The inner neck of the vessel also bears decoration in the form of three rows of parallel horizontal lines.	
7	1535, 1536, 1537, 1538, 1539, 1540, 1541, 1542, 1543, 1546, 1547, 1636	3092	Twelve sherds, several of which conjoin, to form part of what appears to be a relatively thin walled Impressed Ware vessel. The fabric of the vessel is hard with a buff brown to dark grey outer surface, an evenly fired dark grey core and a dark grey to black inner surface which contains substantial areas of carbonised residue. The vessel wall averages 5mm thick. A small area of rim survives revealing it to be plain with a squared profile and for the vessel to be part of an open bowl. There is no decoration evident on the outer surface however the inner surface has multiple parallel horizontal rows of twisted cord impressions below the rim. Establishing the rim diameter is awkward given the degree of survival however an external rim diameter in the order of 150mm is unlikely to be far off the mark.	83.87
8	1639, 1640, 1641, 1642, 1502	3090	Five conjoining sherds forming part of an open bowl that includes a short section of rim. The rim is plain and thin, there is no decoration on the outer surface, but there are at least two parallel horizontal rows of twisted cord impression decoration below the rim on the inner surface. It is made from a hard fabric that is burnished on the inner and outer surfaces that contains crushed stone inclusions averaging 2mm across which occasionally erupt on the inner surface. The vessel has a red brown outer and inner surface with a dark grey well-fired core. The vessel has an average wall thickness of 7mm.	38.64
9	1637, 1638	3090	Two sherds, neither of which conjoin that appear to be from the same	21.98

			vessel. One is a shall rim sherd and the other part of the base. The rim sherd (1637) shows this to be an open bowl with plain rim and with horizontal rows of impressed 'bird bone' decoration on its outer surface. The small base sherd reveals this bowl to have had a narrow, flat base. The fabric is fairly hard and contains crushed stone inclusions up to 3mm across, some of which erupt on the rough inner surface. The outer surface has been burnished and is buff brown in colour, whilst the core and inner surface is a dark grey colour. The wall thickness varies from 5 to 8mm thick. Although the rim sherd is small, a tentative external rim diameter of 210mm is possible.	
Undiagnostic	1643, 1644, 1645	3090	Three small sherds of undiagnostic material from the same context as Impressed Ware vessels 8 and 9. It has a rough outer surface and a slightly smoother inner surface with some carbonised residue on both. There is one small base sherd which reveals a narrow, flat base and one of the wall sherds shows a bulbous protrusion, albeit one that cannot be described as a lug. The fabric is friable and has a dark grey evenly fired core with buff brown inner and outer surface that has only been lightly smoothed. It contains crushed stone inclusions and the wall averages between 4 and 6mm thick. There is no decoration present.	37.51

The corpus of Impressed Ware recovered during the Phase 5 excavation at Lanton Quarry is small compared to that of Carinated Bowls but nevertheless offers an important expansion of the Impressed Ware assemblages known from the region (Waddington 2000). The limited number of vessels represented obviously curtails the range of vessel types so far represented within the corpus, however they appear fairly representative of local forms of Impressed Ware as well as the more typical sub-forms of Peterborough Ware more commonly associated with assemblages from southern England.

Fabric

The fabric of much of this material is fairly coarse and can be hard or friable with crushed stone inclusions, including quartz, and can be distinguished from the harder, smoother and more evenly-fired Carinated Bowl assemblage and is tempered with varying quantities of crushed stone. Typically the external surface is a buff brown colour and the core, and sometimes the inner surface, is a darker grey colour. Carbonised residues are present on at least one vessel (Impressed Ware vessel 7).

Form

The vessels only have small numbers of sherds surviving making reconstructing their form problematic.

Decoration

As the name suggests several vessels in the assemblage are finished using a variety of impressed techniques common to the wider tradition and this includes bird bone impressions and short twisted cord maggots. They occur on both external and internal surfaces, although in the latter case this is only apparent in the neck zone of Impressed Ware vessel 7. Twisted cord maggots are fairly commonplace within the Impressed Ware decorative repertoire and can be found on examples of both Ebbsfleet Ware, more commonly on Mortlake Ware and to a lesser extent Fengate Ware.

In all the assemblage is decorated in a fairly typical manner, according to the style of the Impressed Ware tradition, with twisted cord and bird bone impressions evident. Individual decorative elements are arranged according to stock motifs common across the geographical and typological range of the tradition, including single or multiple horizontal rows.

Numbers

A minimum of four vessels are represented in the Impressed Ware tradition, with a total of 23 sherds deriving from two separate contexts. At least two vessels derive from pit fill [3090] and a further two vessels came from pit fill [3092]. The single largest sub-assemblage in terms of the quantity of sherds derives from pit fill [3092] which contained 13 sherds from at least two vessels.

Grooved Ware

Vessel Number	Small Find Number	Context Number	Description	Weight (grams)
5	1685, 1687, 1691, 1694 all conjoin. 1690, 1692, 1693, 1684	3160	Sherds from a large grooved ware vessel including wall sherds and a base sherd with the base broken off. Four of the sherds have been refitted. It is made from a gritty fabric averaging 8mm thick and contains crushed stone inclusions up to 8mm across. It has a red brown burnished outer surface with a rough interior where the inclusions erupt at the surface. It is evenly fired. On the	193.82

			external surface it bears applied moulding including vertical lines with angled straight lines running off. There is one possible rim sherd that appears to have a horizontal moulding running just below the rim (small find 1690). The base of the pot has an estimated external diameter of 190mm; the height of this vessel remains unknown.	
6	1686	3160	A single small body sherd from a grooved ware vessel with six parallel finely grooved lines that appear to be placed horizontally around the vessel. It is made from a well fired fabric with orange brown burnished outer surface and lightly smoothed orange brown inner surface. It has fine crushed stone inclusions up to 3mm across, some of which erupt on the inner surface. The vessel wall averages 7mm thick.	12.16
7	1783, 1558	1783 came from context 3160. 1558 came from context 3124 within feature F3094	Two conjoining rim sherds from a grooved ware vessel that has crudely executed grooved on its outer surface arranged in opposing diagonal pattern to form rough diamond shapes. It is made from a hard fabric that contains crushed stone inclusions up to 3mm across. It has been evenly fired and has a dark grey inner and outer surface around the rim of the pot with a buff brown inner and outer surface below. The core of the pot is a grey brown colour. The wall of the pot averages 7-8mm thick. It has an external rim diameter of approximately 140mm. The rim is plain and flat topped and the profile of the pot reveals a typical tub-shaped profile. These two conjoining rim sherds came from two separate pits situated over 100m away from each other.	62.22
8	1572, 1567, 1562, 1573, 1570, 1566, 1568, 1564, 1571, 1574, 1563, 1569	3159 (secondary fill of F3156)	Twelve sherds and crumbs of what appears to be a grooved ware vessel with hard fabric and charred organic residue adhering to its inner surface, and one sherd shows evidence of organic residue on its outer surface. The exterior is a grey brown colour	113.25

			and the interior dark grey with a grey brown core. The fabric contains prepared crushed stone inclusions up to 3mm across which erupt occasionally on the outer and inner surface. On one sherd (1567) there is applied cordon decoration running horizontally around the vessel. It has a wall thickness ranging between 8 and 10mm.	
9	1551, 1549, 1550	3148	Two small sherds, one of which consists of two conjoining sherds, belonging to a possible grooved ware pot with buff brown exterior and dark grey interior and core. It has been evenly fired and contains prepared crushed stone inclusions and has a wall thickness of 8-9mm. One sherd has three parallel lines of grooved decoration running across the body and a fourth line of grooving runs into these at an angle.	17.21

Fabric

The fabrics are typically hard and well-fired with crushed stone inclusions that can be gritty. Frequently the fabrics have a buff or red brown or sometimes a grey outer and inner surface and typically a dark grey core. Carbonised resiudes are evident on several sherds.

Form

Vessel 1 is a small flat-based vessel that flares slightly from the base to the rim to form a jar with straight, though angled, sides. The form of vessels 2-4 remains unknown, although vessel 2 was evidently larger than vessel 1 though its shape can not be accurately reconstructed.

Decoration

Decoration includes the use of substantial applied cordons on vessels 5 and 8 suggestive of the 'Durrington Walls' sub-style (Wainwright & Longworth 1971) with a limited repertoire of grooving on vessels 6, 7 and 9 which could belong to almost any of the sub-syles. The grooved lines tend to be in groups of straight or zig-zag lines, the latter producing a lozenge pattern. The grooved decoration and lozenge motifs on some sherds suggests parallels with Smith's 'Clacton' style (Smith 1956).

This range of Grooved Ware styles is in keeping with the styles known to be present in the Milfield Basin as, in Gibson's recent review (Gibson 2002), parallels with Durrington Walls and Clacton style vessels have been attested at the nearby sites of Old Yeavering, Ewart 1 pit alignment, Redscar Bridge and the Milfield North pit and similar Grooved Ware has since been found at Cheviot Quarry (Waddington in Johnson and Waddington 2008) and at the Milfield North Pit (Passmore and Waddington 2009, 196-204).

Numbers

A minimum of five vessels are present within the assemblage. Grooved Ware vessel 5 has an external basal diameter of around 190mm. Besides the material from Grooved Ware vessel 7, found to be deposited in pits 3124 and 3160, no other cross contextual fits could be located.

Middle Bronze Age Pottery

Vessel Number	Small Find Number	Context Number	Description	Weight (grams)
17	1784	3241	A thick-walled, flat based vase-shaped vessel, the entire basal section of which is intact. It has a crumbly fabric with buff brown outer and inner surface and dark grey core. It contains large angular crushed stone inclusions up to 12mm across which erupt frequently on its inner surface and occasionally on the outer surface. No decoration is visible on the vessel and the upper part of the vessel and its rim are missing due to it having been truncated by ploughing. The fabric and shape of the vessel suggest it could belong to the 'Flat Rimmed Ware' tradition. It has an external base diameter of 165mm. Its height and rim diameter remain unknown but it is clearly a substantial vessel.	

Fabric

The fabric of this vessel is fairly coarse and is friable with crushed stone inclusions.

Form

The vessel has a complete lower section surviving and reveals a vase-shaped vessel with quite steeply angled sides and a flat base. This is one of the most complete Middle Bronze Age vessels so far recovered from the region, although in this instance the vessel does not have any decoration present on its surfaces.

Decoration

There is no decoration present on the vessel.

Numbers

A single pot is represented.

Undiagnostic Vessels

Vessel Number	Small Find Number	Context Number	Description	Weight (grams)
	1657, 1658	3174	Two tiny crumbs of prehistoric ceramic with crushed stone inclusions up to 4mm across. Undiagnostic.	1.94
	1559, 1560, 1561	3170	3 sherds of buff brown, evenly fired undiagnostic prehistoric ceramics. The fabric contains crushed stone inclusions up to 5mm across. It is evenly fired and burnished on the inner and outer surfaces and appears to have a curved profile.	24.85
	1777, 1778	3235	Two small sherds of undiagnostic prehistoric ceramic, the wall sherd displaying a distinctive red brown outer surface and grey brown core, no inner surface survives on either sherd.	17.83
	1689	3225	A single tiny body sherd of carinated bowl ceramic with dark grey burnished inner surface and buff brown burnished outer surface and evenly fired grey brown core. It includes crushed stone inclusions up to 4mm across and the vessel has a wall thickness of 11mm.	7.81
	1513, 1518, 1514, 1517, 1519, 1647, 1646, 1648	3098	Eight sherds of thick walled pottery from a substantial Neolithic vessel. The vessel has a buff brown to grey external surface, a dark grey internal surface and dark grey evenly fired core. The fabric is hard although it has fractured considerably and contains large angular crushed stone inclusions up to 8mm across. Some of the inclusions erupt occasionally on both the inner and outer surfaces. Its wall thickness varies from 10 to 14mm and some sherds have charred organic residue surviving on their inner surface. This vessel could conceivably belong to either the carinated bowl or Impressed Ware traditions.	283.59
	1515, 1516	3098	Two tiny sherds from a thin-walled prehistoric vessel. It has burnished inner and outer surfaces being buff brown on the outside and dark grey on the inside and core. It has fine	8.94

			crushed stone inclusions up to 2mm across and a wall thickness averaging 5.5mm.	
	1750, 1751, 1752, 1753	3229	Four tiny sherds of prehistoric ceramic with buff brown outer surface and dark grey inner surface and core. It contains crushed stone inclusions up to 10mm across and a wall thickness of 11mm. The inclusions occasionally erupt from the surface.	23.23

10.4. Discussion

The Early Neolithic material includes traditional Carinated Bowl and plain ware forms typical of other Early Neolithic settlement and pit sites across the sand and gravel terraces of the Milfield Basin. The surfaces tend to have been well burnished and are entirely devoid of decoration. A notable number of the sherds have charred organic residue adhering to their surface indicating their use in the cooking process. The wid range and large number of vessels present are consistent with the storing, processing, cooking and consumption of food and can therefore be viewed as reflecting domestic occupation across the site.

The assemblage of Impressed Ware from the site is significant, despite its limited size, as it adds to the growing corpus of this type of material recovered from the region and consequently expands the picture of habitation during the middle centuries of the Neolithic. The typological range evident within the assemblage is also notable including as it does typical generic types as well as more localised sub-forms as identified at sites such as Meldon Bridge, Ford and Cheviot Quarry.

Finds of Grooved Ware are relatively rare in Northumberland and their chronology and use is only just beginning to be understood. The sherds from Lanton Quarry show clear evidence for grooved and applied cordon decoration and they form pure Grooved Ware assemblages with no sherds from other traditions identifiable in the same context. The fabric of all the vessels reveals well-made ceramics. While the assemblage of Grooved Ware from Phase 5 is not large it provides a significant and complimentary addition to the overall Grooved Ware assemblages from Cheviot and Lanton Quarries. Carbonised deposits on vessel 8 indicate that this vessel had held foodstuffs prior to its deposition.

This Late Neolithic material all comes from pits cut into the sand and gravel terrace providing direct depositional comparanda to the Grooved Ware material recovered from Cheviot Quarry (Johnson and Waddington 2008), the Milfield North pit (Gibson in Passmore and Waddington 2009), Yeavering (Ferrell 1990) and the possible material from Thirlings (Miket *et al.* 2008). As the Grooved Ware corpus for North East England grows the ceramics will be able to be more effectively compared to other regional assemblages. Although not all the vessels can be reconstructed a crude indication of size is afforded by the shape and size of the surviving sherds which suggest a fairly wide range of forms from large cooking vessels to smaller service vessels. All are executed in a fabric with varying quantities of grog and crushed stone, including limestone and quartz, and have been well fired. The surfaces are burnished.

The opportunity to gain radiocarbon dates for these pottery style, and the Impressed Ware and Grooved Ware in particular, is important and forms a priority in the North East research agenda (Petts and Gerard 2006).

The discovery of further Middle Bronze Age pottery on the site also significant and the well-preserved pot base from pit F3241 is one of the most complete Middle Bronze Age pots so far found in the region.

11. LITHIC FINDS ANALYSIS

By Clive Waddington

11.1. Factual Data

Quantity

A total of eight lithic artefacts were recovered from the excavations at Lanton Quarry in 2012 and were identified as being of prehistoric date.

Provenance

Table 1 below lists the feature numbers/contexts from which the material was recovered. All of the artefacts were identified from the fills of seven pit features (3096, 3102, 3166, 3170, 3172, 3182 and 3186).

Context No	Find No	Context Type	No Lithics	Lithic Types Present	Other asstns.	Period
3096	1555	Pit fill	1	Flint flake	Carinated Bowl pottery	Undiagnostic
3102	1575	Pit fill	1	Retouched blade		Neo
3166	1659	Secondary pit fill	1	Pitchstone broken blade	Carinated Bowl pottery	Undiagnostic
3170	1533	Pit fill	1	Quartzite blade, poss utilised	Undiagnostic pottery	Neo?
3172	1782	Pit fill	1	Quartz hammerstone	Carinated Bowl pottery	Undiagnostic
3182	1548	Pit fill	1	Flint blade		Meso or Neo
3186	1583 1631	Pit fill	2	Chert blade Andesite blade	Carinated Bowl pottery	Neo?
Total			8			

Table 8: Lithic counts by context.

Dating

Together the lithics are all part of a parallel-sided blade-based manufacturing tradition that is consistent with either a Mesolithic, or more likely given their size, an Early Neolithic date. This is supported by the fact that Early Neolithic pottery was discovered associated with the lithics in four out of the seven pits.

Range and Variety

The assemblage consists primarily of unaltered blades of which at least two appear to have been retouched or utilised. The hammerstone is a rare and interesting find and is of similar form, shape and material as the two found at nearby Cheviot Quarry (Jonson and Waddington 2008). The other pieces were blade forms of one sort or another. None of the pieces had been obviously burnt. The range of raw materials utilised is remarkable indicating the use of both imported and locally available material.

The number of lithics made from different raw materials is shown in Table 2 below.

Raw Material	**Quantity**
Flint	3
Chert	1
Pitchstone	1
Andesite	1
Quartz	2
Total	8

Table 9: Breakdown of lithics by raw material.

C**ontamination**

All of the lithic material came from discrete pit features that had not been disturbed by later activity.

Residuality

Excavations at the Lanton Quarry site have confirmed that this area of landscape has been favoured for settlement from Mesolithic through Neolithic, Bronze Age, Iron Age and Early Medieval times, and therefore the potential for earlier material to become incorporated in the fills of features cut into the ground at a later date will always remain. However, the fact that most of the material is from features that contained other forms of contemporary domestic waste in the form of broken ceramics and carbonised plant food remains suggests little or none of this material is residual.

Condition

None of the pieces show fresh breaks and therefore the broken pieces have been broken in antiquity prior to discard.

Primary Sources and Documentation

There are no primary sources or documentation that might enhance the study of this collection.

Means of Collecting the Data

The lithics were excavated from the ground using hand tools (trowels and small tools) and from sieves with a 1cm^2 mesh. Each lithic was washed in tap water and gently cleaned with a

toothbrush before being left to air dry. Each lithic was placed in an individual plastic bag that was labelled with a unique small find number and the context number.

For the assessment, the lithics were un-bagged and laid out on tables and grouped by context. lithic counts were recorded and a preliminary examination made of all pieces. The lithics were then re-bagged and packed, by context, into a sturdy plastic storage box.

11.2. Statement of Potential

Value of the Data

This assemblage of material is very small on its own but combined with the lithic material from earlier excavations on this site it has the potential to advance the regional research agenda and understand more specifically about Neolithic lithic production, use and significance in the region.

Integration of Study with Other Research

The study of this assemblage could be enhanced through comparison with the dates, styles and circumstances of discard with Neolithic assemblages from previous excavations at Lanton Quarry Waddington 2009, the nearby sites of Cheviot Quarry (Waddington 2000; Johnson and Waddington 2008), Thirlings (Miket *et al.* 2008), Bolam Lake (Waddington and Davies 2002) and elsewhere (e.g. Harding 1981; Miket 1976; 1981; 1985; Waddington 1996).

11.3. Archive Requirements

Storage and Curation

The lithics are currently contained in sealed and labelled plastic bags. Each lithic is individually bagged and those lithics from the same context all bagged again in a context specific larger bag. These bags are stored in a sturdy plastic storage box.

Retention and Discard Policy

It is recommended that all of this collection is kept for future study.

12. OVERALL DISCUSSION

12.1. The excavations and post-excavation assessment from Phase 5 have provided additional information to further our understanding of the Neolithic archaeology of the quarry, in particular, but also for the region as a whole. The results of this phase of excavation at Lanton Quarry fit within the larger programme of excavation, assessment and analysis which is still ongoing. The Phase 5 excavations revealed 13 pit and posthole features containing Neolithic pottery, lithics and charred food remains, a Middle Bronze Age pit, four possible post-built buildings and a severely truncated linear ditch feature of uncertain date.

12.2. The basal section of the thick-walled, flat-based vase-shaped vessel that was discovered in a pit has been radiocarbon dated to the Middle Bronze Age and suggests settlement at this time could have been widespread across the site given the discovery of two or three Middle Bronze Age houses during earlier phases of work on the site. The size of the

base alone demonstrates that the vessel would have originally been substantial, despite it's height remaining unknown. The fabric and shape of the vessel suggest it could be for an industrial or domestic use, and it is perhaps noteworthy that it was deposited the right way up. The radiocarbon date from a short-lived specie piece of charcoal from this pit dates the feature to *c.*1266-1051 cal BC.

12.3 The Neolithic archaeology, comprising 'domestic pits' and postholes fits within the pattern of features revealed elsewhere in the quarry and also the distribution of Neolithic flints from fieldwalking across the field surface (Cockburn *et al.* 2009; Stafford and Johnson 2007), and the associated charred botanical remains indicates a similar pattern of arable cultivation of cereals and wild harvesting of hazelnuts and other fruits when farming was first practised in the region *c.*6000 years ago.

12.4 Thirty nine isolated, undated pit features and postholes with no associated material culture were also recorded. However, nothing more is known about these features. It is possible that they could date to almost any period and they had no certain identifiable associations with any of the other features on the site.

13. PUBLICITY, CONFIDENTIALITY AND COPYRIGHT

13.1 Any publicity will be handled by the client.

13.2 Archaeological Research Services Ltd will retain the copyright of all documentary and photographic material under the Copyright, Designs and Patent Act (1988).

14. STATEMENT OF INDEMNITY

14.1 All statements and opinions contained within this report arising from the works undertaken are offered in good faith and compiled according to professional standards. No responsibility can be accepted by the author/s of the report for any errors of fact or opinion resulting from data supplied by any third party, or for loss or other consequence arising from decisions or actions made upon the basis of facts or opinions expressed in any such report(s), howsoever such facts and opinions may have been derived.

15. ACKNOWLEDGEMENTS

15.1 Archaeological Research Services Ltd would like to thank all those who contributed to the outcome of this project, in particular Mike Young and Dan Ternent of Tarmac Ltd.

16. REFERENCES

Archaeological Services. 2011. Ripon Market Place, North Yorkshire; full analysis. Unpublished report 2639. Archaeological Services Durham University.

Ferrell, G. 1990. A Reassessment of the Prehistoric Pottery From the 1952-62 Excavations at Yeavering. Archaeologia Aeliana 5th ser. 18: 29-49.

Gibson, A.M. 2002. A matter of pegs and labels: a review of some of the prehistoric pottery from the Milfield basin. *Archaeologia Aeliana* 5th ser. 30: 175-180.

Gibson, A.M. 2009. Pottery. in Passmore, D. G. and C. Waddington. 2009. Managing Archaeological Landscapes in Northumberland. Till-Tweed Studies Volume 1. Oxford, Oxbow Books and English Heritage: 201-204.

Grant, A. 1982. The use of tooth wear as a guide to the age of domestic ungulates. in B Wilson, C Grigson, and S Payne (eds.) Ageing and Sexing Animal Bones from Archaeological Sites. BAR British Series 109: 91-108. Oxford.

Greenwell, W. and G. Rolleston. 1877. British Barrows. Oxford.

Harding, A.F. 1981. 'Excavations in the prehistoric ritual complex near Milfield, Northumberland.' Proceedings of the Prehistoric Society, 46, 87-135.

Hather, J.G. 2000. The identification of the Northern European Woods: a guide for archaeologists and conservators. London.

HBMC 1991. *Management of Archaeological Reports*. English Heritage.

Herne, A. 1988. 'A time and place for the Grimston Bowl.' In J. C. Barrett and I. A. Kinnes (eds.) The Archaeology of Context in the Neolithic and Bronze Age: Recent Trends. Sheffield, 9-29.

Hope-Taylor, B. 1977. Yeavering: an Anglo-British centre of early Northumbria. London.

Johnson, B. and C. Waddington 2008. Prehistoric and Dark Age settlement remains from Cheviot Quarry, Milfield Basin, Northumberland. Archaeological Journal 165: 107-264.

Miket, R. 1976. The evidence for Neolithic activity in the Milfield Basin, Northumberland. In C.B. Burgess and R. Miket (ed.) *Settlement and Economy in the Third and Second Millenia BC*. Oxford, British Archaeological Reports: 113-142.

Miket, R. 1981. Pit Alignments in the Milfield Basin, and the Excavation of Ewart 1. Proceedings of the Prehistoric Society 47: 137-146.

Miket, R. 1985. Ritual Enclosures at Whitton Hill, Northumberland. *Proceedings of the Prehistoric Society* 51: 137-148.

Miket, R., B. Edwards and C. O'Brien. 2008. Thirlings: a Neolithic site in Northumberland. Archaeological Journal 165: 1-106.

Newbigin, N. 1935. 'Neolithic 'A' pottery from Ford, Northumberland.' AA4, 12, 148-157.

Passmore, D. G. and C. Waddington. 2009. Managing Archaeological Landscapes in Northumberland. Till-Tweed Studies Volume 1. Oxford, Oxbow Books and English Heritage.

Passmore, D.G., C. Waddington and S.J. Houghton. 2002. Geoarchaeology of the Milfield Basin, northern England; towards an integrated archaeological prospection, research and management framework. Archaeological Prospection 9: 71 – 91.

Payne, S. 1973. 'Kill-off patterns in sheep and goats: the mandibles from Asvan Kale.' *Anatolian Studies,* 23; 281-303.

Payton, R. 1992. Fragipan formation in argillic brown earths (fragiadalfs) of the Milfield Plain, North-East England. Journal of Soil Science 43: 621 – 644.

Petts, D. and C. Gerrard. 2006. *Shared Visions: The North-East Regional Research Framework for the Historic Environment*. Durham, Durham County Council.

Piggott, S. 1954. Neolithic Cultures of the British Isles. Cambridge.

Preston, C.D., Pearman, D.A., and Dines, T.D. 2002. New Atlas of the British and Irish Flora. Oxford.

Schweingruber, F.H. 1978. Microscopic wood anatomy. Birmensdorf

Sheridan, A. 2007a. 'From Picardie to Pickering and Pencraig Hill? New information on the 'Carinated Bowl Neolithic' in northern Britain.' In A. Whittle and V. Cummings (eds.) Going Over. The Mesolithic-Neolithic Transition in North-West Europe. Oxford (Proceedings of the British Academy 144), 441-492.

Smith, I.F. 1956. *The decorative art of neolithic ceramics in south-eastern England, and its relations*. PhD thesis, University of London.

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

Waddington, C. 1996. The 1995 Excavation on the Coupland Enclosure and Associated 'Droveway' in the Milfield Plain, Northumberland. *Universities of Durham and Newcastle Upon Tyne Archaeological Reports for 1995* 19: 9-15.

Waddington, C. 2000. Neolithic pottery from Woodbridge Farm, The Old Airfield, Milfield. *Archaeologia Aeliana* 5th series 28: 1-9.

Waddington, C. and J. Davies. 2002. Excavation of a Neolithic settlement and late Bronze Age burial cairn near Bolam Lake, Northumberland. *Archaeologia Aeliana* 5th series, 30: 1-47.

Waddington, C. 2008. Ceramic Analysis. in Johnson, B. and C. Waddington 2008. Prehistoric and Dark Age settlement remains from Cheviot Quarry, Milfield Basin, Northumberland. Archaeological Journal 165: 195-222.

Wainwright, G.J. and I.H. Longworth. 1971. *Durrington Walls: Excavations 1966-1968*. London, Society of Antiquaries Research Report No. 29.

Wilson, P. 2011. Later Prehistoric Shrines and Ritual Structures. Introductions to Heritage Assets. English Heritage.

APPENDIX I- Data from palaeoenvironmental assessment

SAMPLE NUMBER	CONTEXT NUMBER	FEATURE	DATE	FLOT VOL.	ASSESSED VOL.	Charcoal	Grain	Seeds	Weed seeds	Chaff	Other	Notes	ANALYSIS?
-	3098	Fill of small circular pit	?Neo.?	-	-	+						3 fragments of hand collected charcoal from site. Large enough for ID.	No
-	3148	?	?Neo.?	-	-	+						4 fragments of hand collected charcoal from site. Large enough for ID.	No
345	3156	Secondary fill of pit	Neo.	?	100%	+++						100% of flot scanned. Occasional charcoal, mostly <4mm but some larger fragments that will be suitable for ID. No other charred remains observed. A few modern seeds, *cf. Chenopodium* sp., and occasional modern rootlets indicate some degree of modern contamination.	No
346	3158	Primary fill of pit	Neo.	?	100%	+++++		++				100% of flot scanned. Common charcoal, mostly <4mm but some larger fragments that will be suitable for ID. No other charred remains observed. A few modern seeds, *cf. Chenopodium* sp. A separate bag from the same context, representing remains hand collected on site (?) contained occasional hazelnut (*Corylus avellana*)	No

												and charcoal fragments.	
347	3153	Primary fill of pit	Neo.	?	100%	+++++	++	+	++			100% of flot scanned. Frequent charcoal, mostly <4mm but some larger fragments present that will be suitable for ID. Occasional grain, *cf. Triticum* spp. but examples too highly abraded and clinkered to produce a definite ID. Several unidentified small round seeds, possibly vetch (*Vicia* spp.). Occasional uncharred modern seeds, including *Chenopodium* sp. and other unidentified varieties.	No
348	3161	Primary fill of pit	Neo.	?	100%	++++						100% of flot scanned. Frequent charcoal, mostly <4mm but some larger fragments that will be suitable for ID. Occasional uncharred modern seeds including *Chenopodium* sp.	No

349	3160	Secondary fill of pit	Neo	?	100%	++++						100% of flot scanned. Frequent charcoal, mostly <4mm but some larger fragments that will be suitable for ID. Occasional uncharred modern seeds. 2 additional bags of charcoal from this context, one probably hand collected, the other maybe from residue? Hand collected bag contains large charcoal fragments that will be suitable for ID.	No
350	3166	Primary fill of pit	Neo.	?	100%	++++		+				100% of flot scanned. Frequent charcoal, mostly <4mm but some larger fragments that will be suitable for ID. One unidentified rounded seed. Occasional modern uncharred seeds including *Polygonum* sp. and *Chenopodium* sp. One bag of charcoal from this context (hand collected?)	No
351	3092	Primary fill of pit	Neo.	?	100%	+++						100% of flot scanned. Occasional charcoal, mostly <40mm but possibly one or two fragments large enough for ID if required. Occasional modern uncharred seeds	No

352	3104	Primary fill of pit	Neo.	?	100%	+++++	+					100% of flot scanned. Frequent charcoal, mostly <4mm but some larger examples that will be suitable for ID. One highly clinkered indeterminate grain. Occasional uncharred modern seeds. One bag from same context of charcoal hand collected (?) from site.	No
353	3090	Primary fill of pit	Neo.	?	100%	++++		+				100% of flot scanned. Frequent charcoal, mostly <4mm but some larger examples that will be suitable for ID. One possible vetch (*Vicia* sp.). Occasional modern uncharred seeds including *Chenopodium* sp. 2 additional bags from this context containing hand collected (?) charcoal.	No
354	3094	Quaternary fill of pit	Neo.	?	100%	+++++		+				100% of flot scanned. Common charcoal, mostly <4mm but some larger fragments that will be suitable for ID. No other charred remains observed. A few modern seeds, cf. *Chenopodium* sp. and *Polygonum* sp. A separate bag from the same context represents remains hand collected on site and includes some large fragments of	No

												charcoal and one fragment of hazelnut (*Corylus avellana*) shell.	
355	3124	Tertiary fill of pit	Neo.	?	100%	+++++			+			100% of flot scanned. Frequent charcoal, mostly <4mm but some larger example suitable for ID. One possible vetch (*Vicia* spp.). No other charred remains observed. Occasional modern uncharred seeds including *Chenopodium* sp. and *Polygonum* sp.	No
356	3170	Secondary fill of pit	Neo.	?	100%	+++++		++				100% of flot scanned. Frequent charcoal, most <4mm but some larger examples suitable for ID. Two fragments of hazelnut (*Corylus avellana*). Occasional modern uncharred seeds.	No

357	3180	Primary fill of pit - same as <358?>	Neo.	?	100%	+++++	+	+				100% of flot scanned. Abundant charcoal, mostly <4mm but some larger examples suitable for ID. Rare hazelnut (*Corylus avellana*) fragments and rare fragmented highly clinkered indeterminate grain. Some modern uncharred seeds. 3 bags of hand collected (?) CPR from this context containing hazelnut (*Corylus avellana*) and charcoal.	No
358	3180	Primary fill of pit - same as <357?>	Neo.	?	50%	+++++	+					*c.*50% of flot scanned. Abundant charcoal, mostly <4mm but common larger examples that should be suitable for ID. <5 examples of fragmented unidentified grain. Some modern uncharred seeds.	No
359	3186	Primary fill of pit	Neo.	?	50%	+++++			+			*c.*50% of flot scanned. Abundant charcoal, mostly <4mm but plenty of larger examples that should be suitable for ID. <10 unidentified seeds. No other CPR observed. Some modern uncharred seeds.	No

360	3172	Primary fill of pit	Neo.	?	100%	+++++	+	++				100% of flot scanned. Abundant charcoal, mostly <4mm but some larger examples suitable for ID. Occasional hazelnut (*Corylus avellana*) fragments and rare fragmented highly clinkered indeterminate grain. Some modern uncharred seeds. 1 bag of hand collected material containing 2 fragments of charcoal.	No
361	3184	Primary fill of pit	Neo.	?	100%	+++++			++			100% of flot scanned. Frequent charcoal, majority <4mm but some larger identifiable examples. Some small round seeds, possibly vetch (*Vicia* spp). Frequent modern rootlets and modern uncharred seeds, including *Chenopodium* sp. and *Polygonum* sp.	No

362	3178	Primary fill of pit	Neo.	?	100%	+++++	++	+				100% of flot scanned. Abundant charcoal, mostly <4mm but some larger fragments suitable for ID. Rare highly clinkered, highly fragmented indeterminate grain. Rare small hazelnut (*Corylus avellana*) fragments. Infrequent modern rootlets and uncharred modern seeds. One bag of hand collected CPR from this context containing 6x fragments of charcoal, some >4mm, and 1 fragment of hazelnut (*Corylus avellana*) shell.	No

363	3176	Primary fill of pit	Neo.	?	50%	+++++	+++	++	++			*c.*50% of flot scanned. Abundant charcoal, mostly <4mm, some larger examples which may be identifiable but many examples highly clinkered and are indeterminate. Frequent grain fragments, but highly fragmented and highly clinkered, no identifiable examples observed. Possible pea (*Pisum* sp.) but again very highly clinkered. Small amount of possible vetch (*Vicia* spp.). Infrequent other indeterminate seeds, one possible sedge (*Carex* sp.) noted. Larger indeterminate clinkered fragments are probably wood that has become clinkered, indicating this deposit was burned at an extremely high temperature. Infrequent modern uncharred seeds.	No

364	3174	Secondary fill of pit	Neo.	?	100%	+++++	+++		++			100% of flot scanned. Frequent charcoal, mostly <4mm but some larger examples suitable for ID. Common grain but very fragmented and highly clinkered, hence is indeterminate. Small weed seeds, probably vetch (*Vicia* sp.). Frequent modern rootlets, uncharred modern seeds and worm presence highlights a degree of modern intrusion, more so than any of the other samples.	No
365	3229	Primary fill of post hole	Neo.	?	100%	+++++	+		+			100% of flot scanned. Frequent charcoal, mostly <4mm but some larger fragments may be suitable for ID. One fragmented clinkered indeterminate grain and one vetch (*Vicia* sp.) noted. One piece of slag/industrial waste. Some modern uncharred seeds.	No
366	3227	Primary fill of post hole	Neo.	?	100%	+						100% of flot scanned. Flot consisted of <10 charcoal fragments, none of which appear big enough to positively ID. One modern uncharred seed.	No

367	3233	Primary fill of post hole	Neo.	?	100%	+	+					100% of flot scanned. <10 fragments of charcoal all <2mm, hence wood ID is not possible. One cereal grain.	No
368	3223	Primary fill of post hole	Neo.	?	100%	++	+	+?				100% of flot scanned. Common charcoal, all under 4mm hence wood ID is not possible. One fragment and one whole cereal grain, in poor condition, shape suggests wheat (*Triticum* sp.) although characteristic features are no longer distinguishable. Three other unidentified rounded seeds.	No
369	3225	Primary fill of post hole	Neo.	?	100%	++						100% of flot scanned. Frequent charcoal fragments, all under 4mm so wood ID unlikely. No other CPR observed. Some modern uncharred seeds.	No
370	3239	Primary fill of ?	Neo.	?	100%	+++++	++		++			100% of flot scanned. Frequent charcoal, mostly <4mm but possibly some identifiable larger examples. Common highly clinked indeterminate grain fragments. One identifiable cereal grain. Rare stalk/ unidentified material. Some	No

												unidentified weed seeds. Infrequent white industrial waste/slag. Common uncharred modern seeds.	
371	3225	Primary fill of post hole	Neo.	?	100%	+						100% of flot scanned. <10 fragments of charcoal all <4mm, hence wood ID is unlikely. No other charred remains observed.	No
372	3241	Primary fill of pit	Neo.	?	100%	++++	+		+			100% of flot scanned. Common charcoal <4mm, one slightly larger example that may be suitable for ID. Rare indeterminate grain fragments. Rare unidentified seeds, likely to be weed seeds. Some uncharred modern seeds. Also associated with this sample is a bag of unwashed soil (?), marked (3241) 'associated with large pot'.	No

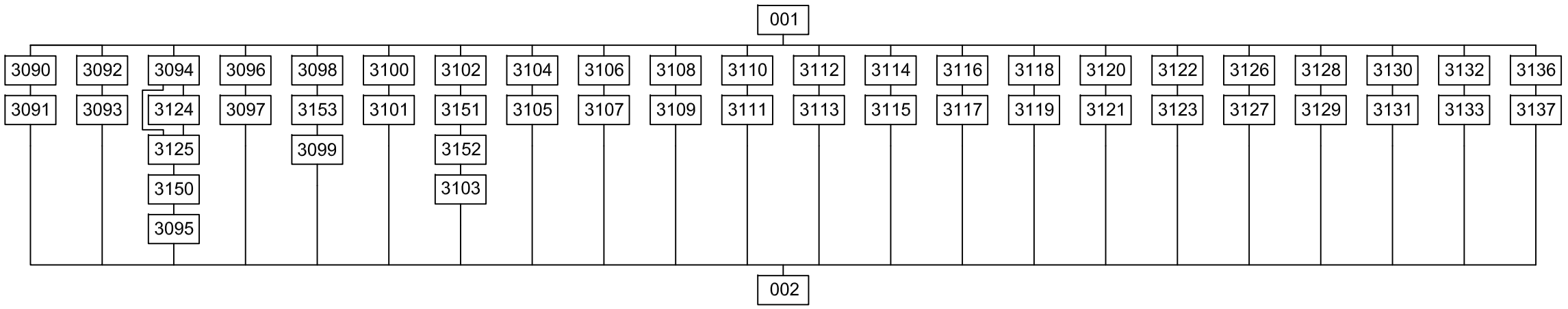
373	3237	Primary fill of post hole	Neo.	?	100%	++	+		+			100% of flot scanned. Infrequent charcoal <4mm, unlikely to be suitable for ID. One indeterminate grain. Rare unidentified probable weed seeds. Some white industrial waste/slag. Some modern uncharred seeds.	No
374	3231	Primary fill of pit - same as <377>?	Neo.	?	100%	+++++			+++?			100% of flot scanned. Abundant charcoal but mostly <4mm, rare larger examples that may be suitable for ID. Frequent unidentified seeds, very spherical of various size, some possibly vetch (*Vicia* spp.)? Shape and small size of majority of them suggest weed seeds.	No
375	3235	Primary fill of post hole	Neo.	?	100%	+++			+			100% of flot scanned. Frequent charcoal, one example may be large enough for ID. Rare highly fragmented indeterminate other CPR, likely to be weed seeds due to small rounded form. Rare uncharred modern seeds.	No
377	3231	Primary pit fill - same as <375>?	Neo.	?	100%	+++			++			100% of flot scanned. Abundant charcoal, mostly <4mm and probably unsuitable for ID. Several unidentified rounded seeds, probably weed seeds, possibly	No

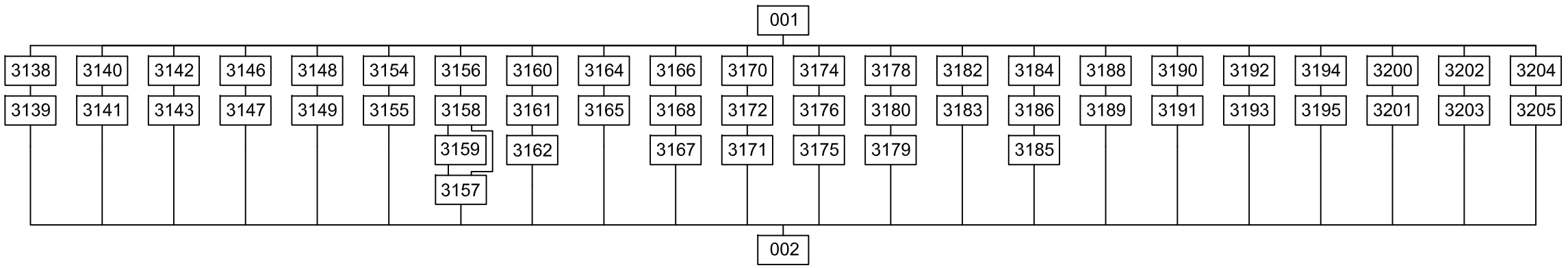
												vetch (*Vicia* spp.). Rare other fragmented indeterminate CPR.	
378	3253	Primary fill of posthole	Neo.	?	100%	++						100% of flot scanned. Some charcoal, mostly <4mm and unlikely to be suitable for ID. No other charred remains observed. Associated with this sample is 1 bag of charcoal hand collected from site (?), containing three pieces of charcoal which are likely to be suitable for ID.	No
379	3257	Primary fill of post hole	Neo.	?	100%	++++	+		+			100% of flot scanned. Frequent charcoal, rare pieces may be suitable for ID. Rare fragments of indeterminate grain. Rare small rounded unidentified seeds, likely to be weed seeds; possibly vetch (*Vicia* spp.), or wild cabbage/mustard (*Brassica* spp.). Rare uncharred modern seeds.	No
380	3259	Primary fill of small pit	Neo.	?	100%	+++			++			100% of flot scanned. Common charcoal mostly <4mm, some rare larger examples may be suitable for ID. Rare small unidentified weed	No

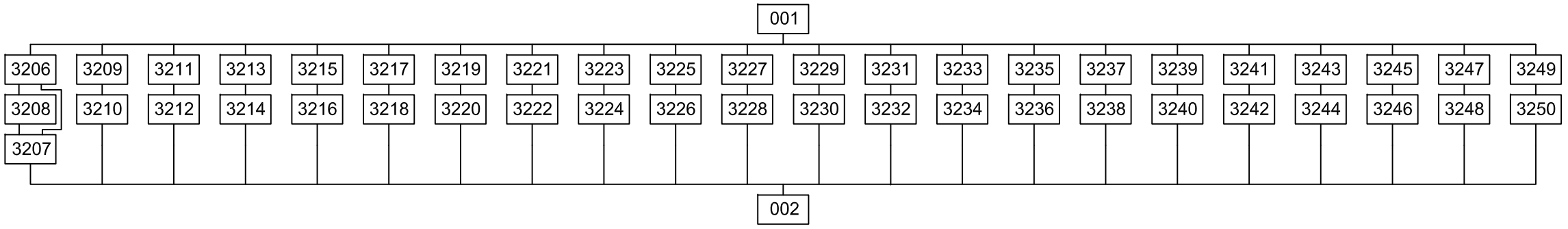
												seeds.	
381	3255	Primary fill of pit	Neo.	?	100%	+++			+			100% of flot scanned. Common charcoal all <4mm, hence is unsuitable for ID. Common slag/industrial waste. Rare unidentified weed seeds. Common modern uncharred seeds.	No
382	3249	Primary fill of giant pit	Neo.	?	100%	++++	+		+			100% of flot scanned. Frequent charcoal, some larger examples suitable for ID. Rare grain fragments (<5 observed). Rare unidentified seeds (< 5 observed). Also associated with this sample are 2 bags of hand collected charcoal from the same context which may provide suitable ID material.	No
383	3100	Primary fill of pit	Neo.	?	100%	+++++						100% of flot scanned. Frequent charcoal, mostly <4mm but some larger examples possibly suitable for ID. No other charred remains observed. Some modern uncharred seeds and modern insect remains. Also associated with this sample is a bag of hand collected (?) charcoal	No

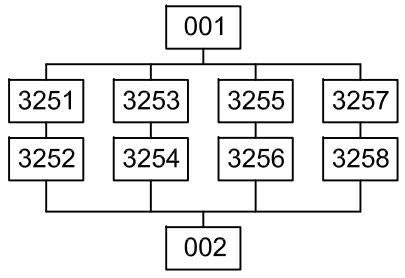
												from the same context, suitable for ID.	
384	3102	Primary fill of pit	Neo.	?	100%	+++++						100% of flot scanned. Abundant charcoal, mostly <4mm but some larger examples that should provide adequate dating material. Rare other unidentified CPR observed, <10 examples, likely to be weed seeds due to small size and rounded form. Some modern uncharred seeds.	No

APPENDIX II- HARRIS MATRIX









Harris Matrices

Key: