

Marne Barracks, Catterick, North Yorkshire

post-excavation analysis report

on behalf of

Gallifordtry Construction Ltd

for

Debut Management Services



DEFENCE ESTATES

Delivering Estate Solutions to Defence Needs

Report 1387

March 2006

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Archaeological Services Durham University

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Gallifordry Construction Ltd

*% Debut Management Services, Vimy Barracks, Scotton Road, Catterick Garrison,
North Yorkshire DL9 3PS*

for

Debut Management Services

Vimy Barracks, Scotton Road, Catterick Garrison, North Yorkshire DL9 3PS

and

Defence Estates

Gough Road, Catterick Garrison, North Yorkshire DL9 3EJ

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1. Summary

The project

- 1.1 This report presents the results of archaeological excavation and post-excavation analysis conducted in advance of development at Marne Barracks, Catterick. The excavation covered an area of 11ha to the northeast of the runway.
- 1.2 The works were commissioned by Gallifordtry Construction Ltd and conducted by Archaeological Services Durham University in accordance with a brief supplied by Defence Estates and a Project Design provided by Archaeological Services, approved by the Heritage Unit at North Yorkshire County Council.

Results

- 1.3 An early Neolithic knapping floor was identified, containing over 1100 chert flakes, all debitage from tool manufacture. The floor was situated in a bend of a palaeo-channel of the River Swale. Several other palaeo-channels were identified across the site and all were earlier than any archaeological feature on the site except for this knapping floor.
- 1.4 Overlying the knapping floor was a large late Neolithic palisaded enclosure. This was only partly exposed with *c.*40% lying to the south of the excavated area. It consisted of two concentric sub-circular palisades that, based on projections from the exposed structure, would originally have enclosed a total area of *c.*2.75ha. Each palisade was formed from a series of closely spaced radial slots separated from each other by a narrow gap of *c.*0.1m. On excavation each slot resolved into two postholes at depth, the posts being *c.*1m apart from centre to centre, indicating that each palisade had consisted of a double circle of posts. Most of these on the western side of the monument had been sufficiently carbonised for the posts to be identifiable. The start of construction of the enclosure has been radiocarbon dated to Cal 2530 BC – 2310 BC.
- 1.5 The enclosure had entrances on the northern and eastern sides with the latter entrance containing a line of smaller stakes. Similar stakes were not identified in the northern entrance although post-depositional conditions here were not conducive to the survival of such evidence. A number of postholes were present in the approximate centre of the enclosure although they formed no recognisable pattern and were all undated, so it is not known whether they were related to the enclosure or not.
- 1.6 Palisaded enclosures of Neolithic date are an extremely rare monument type and the Marne Barracks enclosure exhibits significant differences to other known examples. It is therefore in many respects unique and should be regarded as a discovery of national importance.
- 1.7 Two areas of sinuous, multi-phase ditch were present towards the east of the excavation. These had been radiocarbon dated to the Iron Age during the evaluation but produced Roman pottery during the excavation. A date range of

BC 50 to 150 AD is consistent with both the radiocarbon and the ceramic evidence. Another Iron Age gully was identified through radiocarbon sampling and a 2nd century AD broken vessel was recovered from the base of a 1930s levelling deposit. These dates are significantly earlier than those of other known Iron Age / Roman features from Marne Barracks.

- 1.8 Two shallow linear gullies produced early medieval radiocarbon dates. A third gully was possibly related on stratigraphic grounds.
- 1.9 Medieval land use was represented by remnants of furrows from ridge and furrow field systems.
- 1.10 The post-medieval Oran Road survived at the southern end of the site and proved to be a well-made road with a kerb on each side and a gravel surface. A stone culvert ran under it to a soakaway pit on the east side. Less well preserved remains of the road survived along the northern edge of the site. Ditches associated with a second track and former field boundaries were identified; these are all shown on early maps of the area. Other post-medieval deposits consisted of a field clearance cairn and a few pits.
- 1.11 Much of the site was covered with up to 1m of infill dating from the levelling of the airfield in the 1930s. Smaller areas showed evidence for truncation of deposits at this time. The depth of this cut and fill was consistent with depths shown on contemporary proposal plans for the development of the airfield. A circular brick structure (possibly a sentry box) and a slit trench underlay this infill while a brick path (possibly running round a former radio mast) and two concrete blocks that may once have held targets overlay the infill.

2. Project background

Location (Figure 1)

- 2.1 Marne Barracks, formerly RAF Catterick, is situated immediately south of Catterick village in North Yorkshire, and is bounded to the west by the A1 and to the east by the River Swale. It occupies approximately 158ha and contains 122 buildings and 84 Service Family Quarters. The current development (centred on NGR: SE 2510 9695) covers 11ha of land to the north of the runway, but within the perimeter track.

Development proposal

- 2.2 The proposal was to construct a series of modular accommodation blocks for service personnel, along with associated car parking and services. These works are part of a national MoD initiative, Project SLAM, to upgrade living accommodation across the whole of the Defence Estate.

Objective

- 2.3 The objective of the scheme of works was to identify, record and excavate the varied archaeological resource within the proposed development area, interpreting it in the context of the known archaeological and historical framework and assessing its information potential and significance. In addition, the impact of the development on the resource was to be assessed and mitigation strategy recommendations provided as appropriate. A detailed list of research objectives is provided in the Project Design.

Methods statement

- 2.4 The works have been undertaken in accordance with a brief supplied by Defence Estates and a Project Design provided by Archaeological Services (Archaeological Services 2004), approved by the Heritage Unit at North Yorkshire County Council.

Dates

- 2.5 Fieldwork was undertaken between 2nd September and 19th November 2004. A post-excavation assessment report (Archaeological Services 2005b) was prepared between 21st November 2004 and 18th March 2005. Further post-excavation analysis work was undertaken between 28th November 2005 and 9th March 2006. This final analysis report was prepared between 3rd January and 14th March 2006.

Personnel

- 2.6 Fieldwork was conducted by Janice Adams, Neil Adamson, Barry Atkinson, Graeme Attwood, Amanda Brend, Simon Cleggett, Ben Curtis, Richard Deakin, Jacquelyn Frith, Paul Gelderd, Ian Howard, Lucy Loughman, Jason Mole, Kevin Moore, Paul Morrison, Simon Noon, Alan Rae, Owen Raybould, James Roberts, Louise Robinson, Keith Spencer, Natalie Swann, Jeff Tilbury, Vaughan Wastling and Geoff Wilson, and was supervised by Jamie Armstrong, Sarah Phillips and Mark Randerson, and directed by Andy Platell and Daniel Still.

- 2.7 Specialist post-excavation analysis was conducted by Dr Scott Martin (Roman ceramics), Dr Steve Willis (burnt clay), Dr Rob Young (lithics), Louise Gidney (animal bone), Dr Fraser Hunter (cup-marked stone), Dr Alejandra Gutiérrez (Cu-alloy ring) and Dr Charlotte O'Brien (macrofossil analysis). Conservation work on the ring was conducted by Jennifer Jones. Radiocarbon dating was carried out by Beta Analytic of Miami, Florida. These radiocarbon dates were statistically analysed by Dr Andrew Millard.
- 2.8 This report was prepared by Andy Platell with contributions by Duncan Hale and with illustrations by Linda Bosveld, Martin Railton, David Graham and Janine Fisher. The Project Manager was Duncan Hale.

Acknowledgements

- 2.9 Archaeological Services is grateful for the assistance of the Quartermaster and service personnel of Marne Barracks, staff of Gallifordtry Construction Ltd, Debut Management Services, Defence Estates, English Heritage (in particular the EH Aerial Photographic Unit), North Yorkshire County Council Heritage Unit and Blaise Vynner in facilitating this project.
- 2.10 This report is dedicated to the late Lt Col (retd) Nick Cheesman in recognition of his long-term support of the study of the archaeology of the Defence Estate.

Archive

- 2.11 The site code is MBC 04, for Marne Barracks, Catterick 2004 The OASIS code for the post-excavation assessment report was archaeol3-7320; the OASIS code for this final analysis report is archaeol3-13506. It is intended to deposit the site archive and finds with the Yorkshire Museum at York at the end of the project.

3. Landuse, topography and geology

- 3.1 At the time of the excavation the development area comprised an open area of closely-cut grass within the perimeter track of the former airfield.
- 3.2 With the exception of Castle Hills, the land is predominantly level with a mean elevation of *c.*53m AOD. The solid geology of the site comprises Carboniferous Millstone Grit which is overlain by river gravels, except for the area around Castle Hills. The 'hills' are composed of Boulder Clay, with a limited area of glacial sands and gravels immediately to the west and alluvium to the east along the line of the river.

4. Historical and archaeological background

- 4.1 The historical and archaeological background to the site has been extensively covered by an assessment report (Archaeological Services 2001a) and an evaluation report (Archaeological Services 2002) carried out in response to the Establishment Development Plan (EDP) for Marne Barracks. Since these reports were written, a major volume on Roman Catterick (Wilson 2002) and a

volume on excavations at Catterick Racecourse (Moloney *et al.* 2003) have been published. The main findings of these reports are summarised below.

The prehistoric period (up to AD 70)

- 4.2 A limited quantity of Mesolithic and later flint and chert has been found at Brough St Giles (Cardwell & Speed 1996) and also in fieldwalking as part of the A1(M) evaluation (Makey 1994). A Neolithic cursus and Late Neolithic/Early Bronze Age ring ditches and pit alignments are known from Scorton (Topping 1982); a huge Late Neolithic/Early Bronze Age chambered cairn and possible henge has been excavated at Catterick Racecourse (Moloney *et al.* 2003); and a possible Bronze Age stone-filled ring-ditch to the south of the runway at Marne Barracks was discovered and sampled during the Archaeological Services evaluation (Archaeological Services 2002). Later prehistoric remains include Iron Age settlements located at Catterick Racecourse (Moloney *et al.* 2003) and Brough St Giles (Cardwell & Speed 1996).

The Roman period (AD 70 to 5th century)

- 4.3 A Roman fort was built on the south bank of the River Swale at Catterick Bridge in *c.*80AD. This developed into the town of *Cataractonium*, one of the most important Roman settlements in Northern England. Civilian settlement spread to both banks of the river and was also concentrated further south along Dere Street at Baines Farm, to the west of the development site (Wilson 1984, Wilson 2002). This roadside settlement extends slightly into the western perimeter of the barracks and has recently been scheduled by English Heritage. In addition, a substantial Roman building, possibly part of a villa complex, exists in the centre of the barracks, in the vicinity of the Catholic Church (Hildyard 1955, Wilson *et al.* 1996). Romano-British field systems occur to both the north and the south of the runway (Geoquest Associates 1994, Archaeological Services 2002) and also to the west of the A1 (Wilson 1984, Wilson 2002, Archaeological Services 2005a).

The early medieval period (5th century to AD 1066)

- 4.4 Documentary evidence indicates that Catterick remained an important site throughout the early medieval period with several royal marriages and baptisms taking place there (Cosgrave & Mynors 1969, Whitelock 1955, Wilson *et al.* 1996). It has been suggested that the later medieval motte and bailey on Castle Hills overlies an earlier Anglian royal vill, although evidence for this remains largely conjectural (Wilson *et al.* 1996). Anglo-Saxon *Grubenhäuser* have been found at four locations in the Catterick area, including under the REME building at Marne Barracks (Geoquest Associates 1994). Numerous burials of this date have been found around Catterick. These include two sites to the north of Baines Farm, another site outside the entrance to Marne Barracks, and at two locations within the base, including some cut into the foundations of the Roman 'villa' (Wilson *et al.* 1996).

The medieval period (AD 1066 to AD 1540)

- 4.5 Castle Hills, immediately northeast of the airfield, is thought to be a Norman motte and bailey castle and is a scheduled monument. A number of authors

(e.g. MacLauchlan 1849, Wilson *et al.* 1996) have suggested that it overlies earlier earthworks although this has never been proven. A topographic survey carried out by Archaeological Services in 2001 recorded other features which did not appear to be contemporary with the castle, although the date of these is not known. Ridge and furrow field systems are clearly visible on geophysical survey plans of the airfield (Archaeological Services 2001a), although these proved ephemeral during trial trench evaluations (Archaeological Services 2002).

The post-medieval period (AD 1541 to AD 1899)

- 4.6 No records survive for the date of the parliamentary enclosure of Catterick parish. Certainly this was carried out before the date of the earliest detailed plan in 1739. This shows the field pattern to be little different to that of today, save for the removal of numerous field boundaries to increase the size of fields (Archaeological Services 2001a). A road is shown on this and later maps, running north from Oran House to Catterick village. Sometime between 1822 and 1842 it was realigned back to the original course of the Roman Road (*i.e.* to the line of the current A1).

The modern period (AD 1900 to present)

- 4.7 A Royal Flying Corps unit was posted to Catterick in 1916, beginning the development of what would become RAF Catterick (Francis 2001). This development was small-scale at first, since the land was not then owned by the Air Ministry (it was finally purchased in 1924/5). After 1925 the pace of development increased, particularly during the late 1930s as the threat of war increased. As part of this development the runway was extended and hardened, involving considerable landscaping of the site. Following the war, the airfield became the headquarters of the RAF Regiment until 1994, when the RAF station was closed and the site taken over by Land Command.

Previous archaeological works

- 4.8 Numerous archaeological interventions have taken place at Marne Barracks over a number of years. These are more fully described in our earlier assessment report (Archaeological Services 2001a), which included desk-based research and geophysical, topographical and auger surveys. Following on from this, further geophysical surveying in the northern part of the base (Archaeological Services 2001b) and evaluation by trial trenching (Archaeological Services 2002) was carried out. Geotechnical boreholes excavated by the Babbie Group in advance of the proposed construction of the National Army Museum (North) were also monitored (Archaeological Services 2003).

5. The excavation

Introduction

- 5.1 The excavation, occupying an area of *c.* 11 ha, covered the eastern half of all the land to the north of the runway but within the perimeter track of the former airfield (Figures 1, 2 & 37). Topsoil and infill from the 1930s landscaping of the airfield was removed by 360° tracked excavators working under strict

archaeological supervision. Following machine stripping, the extents of features identified at this level were surveyed by a Leica Total Station Theodolite connected to PenMap surveying software. These features were then sampled and recorded by hand excavation. During excavation, the site was sub-divided into five areas to comply with the client's work programme. These sub-divisions have been retained where appropriate in this text to aid the location of excavated features.

5.2 The natural subsoil [3] across most of the site consisted of gravel although this was replaced by sand and boulder clay at the eastern end of the site close to Castle Hills. The gravel varied from place to place across the site, with this variation being most apparent on aerial photographs (see Figure 38). Three broad distinctions were present:

- a very light brown gravel containing silty lenses that was present mainly in area 1 and the southwest corner of area 4
- a reddish-brown gravel containing few silt lenses that was present across the southern half of areas 2 and 3
- a more mixed dark brown gravel containing frequent silt patches was present across the remainder of the site

The first of these types occurred only in areas levelled during the 1930s and was surrounded by gravel of the second type. It is interpreted as the unweathered counterpart of the second gravel that has not been exposed to aerial conditions for long enough to have been oxidised to a reddish-brown colour or had its silt lenses washed out. The third of these types is interpreted as terrace gravel that has been reworked by later stream channels (see below, paragraph 5.4).

5.3 Since the gravel generally contained many sand and silt lenses, some of these were investigated to determine whether they were of natural or archaeological origin. Features that were investigated and then interpreted as natural deposits are listed in Appendix 1 and full details of these contexts can be found in the site archive. A number of dark silt patches within area 5 [51-52 / 113-7 / 125-126 / 160-1 / 424-5] were interpreted as former tree boles, dating from before the airfield was levelled. Again, details can be found in the site archive.

Phase 0 (Figures 3, 4, 38 and 39)

5.4 A number of patches of dark silt, filling definite depressions in the gravel, were present across the site. Almost all of these were located within the third of the gravel types described above. Where archaeological features were present, these silt patches invariably pre-dated them (with the exception of the Early Neolithic activity described below, paragraph 5.9). From the ground they appeared to be discrete patches of silt although from the air they were more continuous. Aerial photographs showed them to be sinuous in shape and often braided (see Figure 38). They have been interpreted as palaeo-channels of the River Swale. Soil columns and environmental samples were collected from a number of these deposits; however no useful information was obtained from any of them due to a poor state of organic preservation (see section 7 below).

- 5.5 The most prominent of these channels [27 = 238] was aligned northwest to southeast along the foot of the scarp slope that marked the edge of the higher ground of area 1 which had been levelled during the 1930s (Figure 39). This channel measured 5m in width and 0.25m in depth and contained a noticeable break, where it was replaced by a yellow silty gravel [80]. This can be seen on aerial photos to have been deposited from a stream flowing from the higher ground towards the southwest. Another less prominent channel on a similar orientation [28] traversed area 1 to the west of the Oran Road and was 3.7m wide and 0.1m deep.
- 5.6 A number of channels crossed the northern half of area 2 on a broadly east-west alignment. Although on the ground these appeared to be composed of numerous small patches of silt, aerial photographs show them to be more continuous and forming several sinuous channels that merged together towards the east. In order from north to south, there was a rather patchy channel [73] that ended eastwards in a large irregular area of silt [212], then a wider and more continuous channel [157] that merged eastwards with a more southerly channel [228], which consisted of a line of dark material on either side of a band of lighter gravel. A narrower fourth channel [148] merged with this latter one a little to the west. Eastwards these palaeo-channels were less obvious but appeared to continue as an area of dark silt in the west of area 3 [465] and as a second patch in the west of area 5 [418]. Further towards the southeast, two channels [188 and 702] merged together into one larger channel [718] in the north of area 4.
- 5.7 A number of other small patches of similar silt were investigated and are thought to be remnants of other palaeo-channels, too poorly preserved to be identified as such on the ground. These are catalogued in Appendix 1 and are more fully described in the site archive.

Phase 1: Early Neolithic (Figure 3)

- 5.8 A knapping floor containing over 1100 chert flakes was identified in the north of area 4. It was roughly circular, measuring 9m in diameter. Above a thin silt layer [440] was a rough floor of rounded cobbles up to 0.1m in diameter [435] overlain by a thin upper layer of silt [517]. The stones appeared to have just been pressed into the ground *ad hoc* to dry out the surface, rather than being a deliberate attempt to create a floor. Almost all the chert was found within the southwest quadrant of the platform and mainly consisted of waste from knapping activity (described in Section 6, below). A charred hazelnut shell fragment was recovered from silt [517] and radiocarbon dated, giving a 2-sigma calibrated result of Cal BC 3640 to 3490 and Cal BC 3440 to 3380 (see Appendix 3 for details).
- 5.9 A shallow gully [F188], 15m long and up to 2m wide but only 0.1m deep bounded the northeast side of the platform (Figure 4, Section 136). It was filled with a black silt [189] resembling the other palaeo-channel fills in the area and was likely to be a continuation of these. It could be proven to be contemporary with or to post-date the knapping platform, since it contained chert flakes derived from the platform.

Phase 2: Later Neolithic (Figures 1, 5 to 19, & 40 to 45)

- 5.10 A large sub-circular enclosure occupied much of areas 3, 4 and 5. The enclosure consisted of two concentric, sub-circular palisades. Parts of this feature were visible on the earlier geophysical survey (Archaeological Services 2001a). In particular, the western half of the inner palisade showed clearly as a positive magnetic anomaly and was targeted for sampling during the evaluation (Trench N4, Archaeological Services 2002). Unfortunately the location chosen proved to be within the northern entrance to the palisade, where a later silt deposit falsely suggested a continuation of the geophysical anomaly. Therefore the true nature of this feature was not determined during the evaluation.
- 5.11 With the benefit of hindsight it is possible to geophysically trace the western side of the outer palisade and also intermittently the eastern sides of both palisades. Two curvi-linear anomalies are present to the south of the runway; these are on an alignment that suggests they are the southern edge of this feature (although this has not been proven by excavation). Assuming that this is the case; then the approximate dimensions of the palisades are given in Table 1.

Table 1: Dimensions of the Neolithic enclosure

	Inner Palisade	Outer Palisade
Long axis	175m	200m
Short axis	136m	162m
Perimeter	480m	610m
Perimeter (Exposed)	262m (55%)	330m (54%)
Area	1.8ha	2.75ha
Area (Exposed)	0.98ha (54%)	1.8ha (58%)

- 5.12 A charcoal sample was collected from an *in situ* post [394] within the inner palisade and sent for priority radiocarbon dating during the excavation. It produced a Late Neolithic date for the enclosure. Further samples were collected from other posts within both palisades and following excavation 20 more radiocarbon dates were obtained. These have been statistically analysed to refine the date still further, showing with 95% probability that construction started in the period Cal 2530-2310 BC and finished sometime in the period Cal 2340-2100 BC; full details are provided in Appendix 3.
- 5.13 Each palisade was composed of a series of radial slots approximately 2m long and just under 1m wide. They were spaced 1m apart from centre to centre, leaving a very narrow gap between each slot. This pattern can be seen particularly well in the aerial photographs (Figures 39 and 40). Most slots were an elongated oval in shape, although some were ‘dumbbell’ shaped and others were visible as two discrete postholes on the surface. Upon excavation, all slots resolved at depth into two postholes, each one approximately 0.5m in diameter and between 0.5m and 1.25m in depth, with a half-depth lip between them. Variations in plan were superficial and probably related to the degree of truncation.

- 5.14 A number of these postholes contained *in situ* charcoal from carbonised posts. In places the degree of carbonisation was sufficient to allow individual wood fibres to be identified. Such remains were particularly concentrated around the western side of the monument, with virtually all posts in the inner palisade and most in the outer one surviving (see Figures 42 & 43). Elsewhere posts were only intermittently preserved by this method. Usually charcoal only survived to around half the depth of the posthole. In some slots the gravel surrounding the posts had a pinkish tinge due to heat-alteration of the surrounding fill.
- 5.15 Where carbonised posts survived, they were almost invariably between 0.2m and 0.25m in diameter, indicating a considerable degree of uniformity in the appearance of the original structure. The great difference between the width of the postholes and their associated posts was no doubt due to the practical consideration of obtaining sufficient working space during their original excavation. The low lip between the two postholes in each slot was probably also a practical measure to allow excavation of the bottom of the postholes.
- 5.16 Little evidence was seen for post pipes in the slot fills outside of the areas of carbonised remains. This was likely to have been due to the loose nature of the surrounding gravel fills, causing the voids left by the rotting posts to be filled by subsidence of the slot backfill rather than by infill with extraneous material.
- 5.17 A number of the postholes had shallower profiles on their outside edges than on their inside ones, particularly towards the top of the hole (see for example Figure 7, slots [F872], [F873] and [F604]). This may have been a deliberate design feature, creating a ramp to facilitate the erection of the post.
- 5.18 Several adjoining slots contained the same fill (e.g. [F634] / [F635], [F569] / [F670]) indicating they were backfilled simultaneously. However, others exhibited intercutting relationships, with the cutting sequence either running in a clockwise direction (e.g. [F569] cutting [F536]) or else in an anti-clockwise direction (e.g. [F673] cutting [F550]). This suggests the construction sequence was rather *ad hoc*, with people working in both directions during the original construction.
- 5.19 Where necessary a JCB fitted with a toothless ditching blade was used to remove shallow deposits of overburden (that had not been fully removed by the original site strip) in order to expose the full extent of the feature within the development area. This had occurred the day before aerial photographs were taken and explains the areas of fresh disturbance visible on these photographs. Once exposed, the full extent of the monument was planned by total station, with smaller representative sample areas being planned by hand as well.
- 5.20 23 radial slots in the outer palisade and 25 slots in the inner palisade (approximately 10% of the total) were sampled by excavation. To maximize the information potential, a variety of sampling strategies were adopted. Individual slots were sampled either longitudinally or laterally, and for some slots just the posts were examined while for others the whole slot was removed. Sampling was deliberately biased towards the western side of both

palisades since this area contained the greatest number of carbonised posts and was also the area of best preservation. Due to the loose nature of their fills, excavation had to be terminated in some slots before complete excavation had taken place.

The outer palisade [F542] (Figures 6 to 11)

- 5.21 Descriptions of the individual slots below run clockwise from the western edge of the exposed monument. Dimensions, fill numbers and section numbers are presented in Table 2.
- 5.22 The western side of the outer palisade was not visible on the ground surface in typical light conditions, largely due to a lack of carbonised posts. However, in favourable conditions it could be traced continuously in a clockwise direction for 32m from the runway, to a point where burnt postholes became more common and visibility of the feature improved. Here slot [F574] was excavated longitudinally and proved to be a typical slot with two carbonised posts [544 and 546] surviving.
- 5.23 Beyond an unexcavated slot, the next two were sampled laterally. No post pipe was visible within slot [F828] although a post survived in slot [F570]. Slot [F867] contained two post settings filled with reddish-brown gravels [639 and 624] surrounded by a more yellowish gravel [668]. Little charcoal was present in either posthole and the 'post fills' identified were far wider than carbonised posts in other slots, suggesting that these contexts were the limits of heat-alteration of general slot fill [668] rather than separate post pipe fills.
- 5.24 Slot [F594] was not fully excavated due to the instability of the fill so the depths given in Table 2 are minimum values. Slot [F868] was typical and contained two carbonised posts [626 and 641]. In slot [F506] a differentiation could be made between the general slot backfill [504] and the gravels [515 and 516] under the carbonised remains of the posts themselves [503 and 505]. These gravels had a pinkish tinge, presumably due to the burning event that carbonised the posts.
- 5.25 The next three excavated slots [F615, F507 and F872] were typical in form. In the next slot [F604], as with slot [F506], the gravel [607 and 605] surrounding the post remains [608 and 606] had a pinkish tinge, probably due to heat-alteration, and could be differentiated from the general slot fill [609].
- 5.26 In slot [F873] only the outer post [778] survived in a carbonised state. The fill of the inner post [780] could not be distinguished from the general slot backfill [777]. Slot [F487] was typical in form.
- 5.27 Due to the instability of its fills, slot [F869] was only excavated to a depth of 0.75m. The dimensions given in Table 2 are therefore minimum values. The fill of slot [F882] was even more unstable, causing the section to collapse before it could be properly recorded. Carbonised remains had been present in both post settings and the holes themselves were at least 0.9m deep.

Table 2: Dimensions (in metres) of radial slots in outer palisade

Slot no.	[F574]	[F828]	[F570]	[F867]	[F594]	[F868]	[F506]	[F615]	[F507]	[F872]	[F604]	[F873]	[F487]
Slot fill	[575]	[827]	[571]	[668]	[595]	[894]	[504]	[614]	[528]	[749]	[609]	[777]	[484]
Max. length	1.9	1.85	2.4	2.4	2.3	1.8	1.9	1.8	2.1	2.1	2.1	2.4	3.1
Max. width	0.6	1.0	0.9	1.0	1.1	0.9	1.1	1.1	1.0	0.9	1.1	1.0	0.8
Outer post setting	-	-	-	[639]	-	-	-	-	-	-	-	-	-
depth	0.8	-	-	0.8	>0.45	0.7	0.6	0.6	0.5	0.65	0.6	0.9	0.75
diameter	0.4	-	-	0.5	1.1	0.75	0.5	0.5	0.6	0.5	0.6	0.6	0.7
Inner post setting	-	-	-	[624]	-	-	-	-	-	-	-	-	-
depth	0.8	1.1	0.8	0.9	>0.45	0.7	0.6	0.3	0.45	0.8	0.6	0.8	0.75
diameter	0.4	1.0	0.9	0.6	1.1	0.8	0.55	0.6	0.6	0.75	0.75	0.8	0.75
Outer post	[546]	-	-	[639]	[523]	[626]	[503]	[603]	[524]	[751]	[608]	[778]	[486]
depth	0.4	-	-	0.45	0.35	0.7	0.2	0.5	0.3	0.4	0.2	0.25	0.6
diameter	0.2	-	-	0.4	0.5	0.2	0.25	0.25	0.25	0.25	0.3	0.3	0.4
Inner post	[544]	-	[573]	[624]	[521]	[641]	[505]	[596]	[508]	[748]	[606]	-	[485]
depth	0.4	-	0.5	0.3	0.4	0.8	0.2	0.35	0.5	0.45	0.25	-	0.75
diameter	0.25	-	?	0.35	0.4	0.2	0.25	0.3	0.3	0.3	0.2	-	0.45
Sections	319	357	274	269	252	285	215	261	218	343	257	348	284
		362				286		263					
								264					

Table 2 (cont.): Dimensions (in metres) of radial slots in outer palisade

Slot no.	[F869]	[F882]	[F862/4]	[F437]	[F689]	[F831]	[F855]	[F844]
Slot fill	[870]	[883]	[861/3]	[436]	[691]	[830]	[854]	[849]
Max. length	2.1	2.4	-	1.9	1.9	1.8	1.2	0.9
Max. width	0.8	0.7	-	0.7	0.8	0.6	0.5	0.3
Outer post setting	-	-	[F862]	-	-	-	-	-
depth	>0.75	>0.9	0.25	0.15	0.4	0.4	0.25	-
diameter	-	-	0.6	0.5	0.6	0.5	0.4	-
Inner post setting	-	-	[F864]	-	-	-	-	-
depth	>0.75	>0.9	0.5	0.55	0.35	0.6	0.2	-
diameter	-	-	0.7	0.6	0.6	0.5	0.4	-
Outer post	[499]	-	-	[439]	[690]	-	-	[845]
depth	0.1	-	-	0.15	0.4	-	-	0.15
diameter	0.2	-	-	0.2	0.25	-	-	0.25
Inner post	[495]	-	-	[438]	[688]	-	-	[846]
depth	0.1	-	-	0.5	0.45	-	-	0.1
diameter	0.15	-	-	0.25	0.2	-	-	0.2
Sections	214	-	383 384	309	313	370	375	374

- 5.28 To the north of slot [F882] there was a gap of 45.2m in the enclosure where radial slots were not observed under any lighting or drying conditions. This is likely to be due to poor visibility of the features in this area rather than due to a real break in the circuit, since the inner circuit was complete here but could only be traced in exceptional light and drying conditions, such as the day that aerial photographs of the site were taken (see Figure 40). The poor visibility was partly due to the fact that the area of carbonised post remains finished at this point. Beyond this apparent gap, the typical sequence of radial slots was visible again (Figure 9). In this area slot [F428] had been heavily disturbed by a tree root and was therefore not fully excavated.
- 5.29 At its northern extremity, there was a 16.5m wide gap in the palisade. Since this lined up with a similar gap in the inner palisade, and postholes to either side were not significantly truncated, this gap is thought to have been an original entrance to the enclosure. The western side of this entrance was not marked by any variation from the normal pattern of radial double-post slots (although it should be noted that the feature was very poorly defined at this point). Towards the east however, the palisade began again with a single large posthole [F839] that was centrally placed from the normal double-post settings (Figure 10). This posthole measured 0.8m in diameter and 0.35m in depth and was filled with a sandy gravel [840] (Section 378).
- 5.30 Beyond this single post, the sequence of double-posts began again. The first of these consisted of two discrete postholes ([F862] and [F864]) without an associated slot. No charcoal was visible in either hole and both were filled with gravel ([861] and [863] respectively). Eastwards from this, the next pair of posts sat within a more typical radial slot [F437]. The outer post [439] measured 0.2m in diameter by just 0.15m in depth while the inner post [438] measured 0.25m in diameter by 0.5m in depth. It is possible that the outer post was not fully excavated and the depth given merely relates to the carbonised remains of the post, since the slot fill [436] closely resembled the natural gravel.
- 5.31 Slot [F689] measured 1.9m in length by 0.8m in width (Section 313). It contained an outer post [690] measuring 0.25m in diameter by 0.4m in depth and an inner post [688] measuring 0.2m in diameter by 0.45m in depth. They were surrounded by slot fill [691].
- 5.32 In suitable lighting and drying conditions the palisade could be traced eastwards from this point for a further 80m until it was obliquely cut by a later ditch (see below, paragraph 5.88). It was visible again beyond this ditch as a clearly-defined slot [F831] containing a mid grey-brown sandy silt [830] (Section 370). This measured 1.8m by 0.6m and contained two post settings each 0.6m deep although no evidence for the original posts survived, either as charcoal or as a change in fills.
- 5.33 Outside the enclosure at this point were two features that on the surface resembled radial slots but were orientated tangentially to it. They had similar dimensions (1.5m by 0.6m for [F715] and 1.9m by 0.55m for [F717]) and their fills ([714] and [716] respectively) were similar to the fill of radial slot [F831].

However upon excavation neither proved to contain postholes. Both were pits 0.2m deep and their relationship to the enclosure is unknown.

- 5.34 Southwards from here, the radial slots became poorly defined again due to the very mixed nature of the natural gravel. However, on one occasion, due to exceptional lighting and drying conditions, the slots became visible for a few hours (see Figure 44). Further south again, carbonised wood began to be preserved again and the natural gravel became less variable in nature, making the postholes and slots easier to identify. A normal pattern of radial slots continued until a point 5m north of the runway (Figure 11). Here a smaller than typical slot [F855] was slightly offset inwards from the line of the palisade. It measured 1.2m by 0.5m and contained an outer posthole 0.25m deep, filled with grey sandy clay [854]. No inner posthole was identified for this slot (Section 375).
- 5.35 A second entrance began beyond this point. After a two metre gap, there was another even smaller, although otherwise typical, radial slot [F844] that measured 0.9m by 0.3m and contained well-carbonised remains of an outer post [845] 0.25m in diameter and 0.15m deep and an inner post [846] 0.2m in diameter and 0.1m deep surrounded by a grey sandy gravel fill [849] (Section 374). Half a metre south from this, and separated from each other by a half metre gap, were two stakes [847] and [848] both surviving in carbonised form. These stakes were 0.11m and 0.08m in diameter respectively and 0.13 and 0.12m deep and sat directly in holes ([F890] and [F891] respectively) with no evidence for associated fills, indicating that they had been driven into the ground rather than dug in.
- 5.36 Half a metre further south, feature [F853] was partly exposed along the southern baulk of the excavation. This appeared to be another small radial slot similar in size to [F844] containing a carbonised post [850] at its southern end surrounded by a grey sandy gravel [852] (Section 373). However, carbon in this post survived as very small specks, rather than as recognisable flecks of wood. A sample was submitted for radiocarbon dating but proved to contain too little Carbon 14 to produce a result, indicating that its age was beyond the limit of the technique (see Appendix 3). Since the deposit was located immediately to the side of the runway, it is thought that a hydrocarbon residue may have leached into the ground from the runway, explaining the anomalous radiocarbon result.

The inner palisade [F541] (Figures 12 to 18)

- 5.37 As with the outer palisade, slot descriptions run clockwise from the western edge of the exposed monument. Dimensions, fill numbers and section numbers are presented in Table 3. This palisade was clearly visible both as a soil mark and as a double line of carbonised posts for a continuous distance of 110m northwards and eastwards from the runway (see Figure 42).
- 5.38 Adjoining slots [F635 and F634] were the best-preserved slots investigated during the excavation (Figure 44). Since the natural gravel at the base of these slots contained a band of pure sand, markedly different to the gravel fills, measurements from these slots have a particularly high degree of certainty.

Table 3: Dimensions (in metres) of radial slots in inner palisade

Slot no.	[F635]	[F634]	[F530]	[F881]	[F880]	[F879]	[F673]	[F550]	[F581]	[F811]	[F536]	[F569]	[F670]
Slot fill	[631/3]	[631/2]	[529]	[802/3]	[798/9]	[794/6]	[674]	[553]	[582]	[809/10]	[535]	[568]	[669/79]
Max. length	2.6	2.9	2.1	-	-	-	2.3	2.8	2.6	2.8	2.6	2.8	2.8
Max. width	c.1	c.0.9	0.9	-	-	-	0.8	1.4	0.8	1.1	1.0	0.8	1.0
Outer post setting	-	-	-	[805]	[800]	[797]	-	-	-	-	-	-	-
depth	1.1	1.25	>0.5	0.7	0.65	0.75	0.6	0.45	0.6	0.6	>0.7	-	-
diameter	0.5	0.5	n/a	1.0	0.9	0.9	0.6	-	-	0.75	-	-	-
Inner post setting	-	-	-	[804]	[801]	[795]	-	-	-	-	-	-	-
depth	0.85	0.8	>0.5	0.9	0.85	0.7	0.6	0.6	0.6	0.8	c.1.2	0.75	0.75
diameter	0.7	0.7	n/a	0.8	0.9	1.0	0.75	-	-	0.65	-	0.5	0.5
Outer post	[576]	[514]	[526]	-	-	-	-	-	[578]	[808]	[616]	-	-
depth	0.4	0.35	0.1	-	-	-	-	-	0.4	0.5	c.0.4	n/a	n/a
diameter	0.3	0.2	0.3	-	-	-	-	-	0.2	0.2	c.0.25	0.3	0.25
Inner post	[709]	[513]	[518]	-	-	-	[672]	-	[580]	[812]	[592]	[566]	[654]
depth	0.4	0.1	0.5	-	-	-	0.25	-	0.25	0.65	>0.3	0.3	0.35
diameter	0.3	0.2	0.3	-	-	-	0.2	-	0.2	0.2	c.0.25	0.2	0.35
Sections	295	295	221	359	358	352	282	234	243	367	266	276	276
	328	328			353	288	288						

Table 3 (cont.): Dimensions (in metres) of radial slots in inner palisade

Slot no.	[F874]	[F877]	[F878]	[F565]	[F666]	[F875]	[F494]	[F531]	[F842]	[F858]	[F727]	[F705]
Slot fill	-	-	-	[564]	[667]	-	[493]	643/4	[843]	[856]	[768/70]	[706/34]
Max. length	-	-	-	c.1.6	2.4	-	1.7	2.3	-	>0.9	2.5	2.3
Max. width	-	-	-	c.0.85	1.0	-	0.7	0.9	-	0.7	0.7	0.9
Outer post setting	-	-	-	-	-	-	-	-	-	-	-	-
depth	-	-	-	>0.4	0.5	-	-	0.95	-	>0.9	1.05	0.75
diameter	-	-	-	-	0.75	-	-	0.8	-	0.7	0.5	0.55
Inner post setting	-	-	-	-	-	-	-	-	-	-	-	-
depth	-	-	-	>0.45	0.6	-	-	0.95	0.6	-	1.05	0.9
diameter	-	-	-	-	0.75	-	-	0.75	0.7	-	0.3	0.6
Outer post	[537]	[586]	[612]	[511]	[560]	[394]	[491]	[534]	-	[857]	[771/2]	[697]
depth	0.4	0.3	0.35	0.4	0.3	0.35	0.25	0.5	-	>0.75	1.05	0.7
diameter	0.25	0.3	0.3	0.25	0.2	0.15	0.2	0.25	-	0.25	0.2	0.3
Inner post	[539]	[584]	[610]	[562]	[558]	[556]	[489]	[532]	-	-	[765/6]	[698]
depth	0.3	0.35	0.45	0.45	0.25	0.4	0.25	0.8	-	-	1.05	0.95
diameter	0.25	0.3	0.3	0.3	0.2	0.2	0.2	0.25	-	-	0.25	0.3
Sections	229	-	-	-	297	281	198 199 200	247	372	377	346	323

Both were filled by the same materials, a lower darker gravel [633] and an upper reddish-brown sandy gravel [631], indicating that they were infilled concurrently. Because of this the slot widths given in Table 3 are approximations. Slot [F635] contained an outer post setting 1.1m deep and an inner one 0.85m deep while slot [F634] contained an outer post setting 1.25m in depth and an inner one 0.8m in depth. Carbonised remains of three of the four posts survived to depths between 0.3m and 0.4m, although post [513] only survived to a depth of 0.1m.

- 5.39 Further to the north, slot [F530] collapsed twice during excavation due to the very loose nature of its fill [529] and therefore was only partially excavated and recorded. Dimensions given in Table 3 are minimum values. The next three slots [F881, F880 and F879] all consisted of two discrete postholes from the surface rather than single pits resolving at depth into postholes. No carbonised remains were present in any of them, so their individual posts could not be determined.
- 5.40 Slot [F673] only contained carbonised remains of its inner post [672] while slot [F550] contained no carbonised post remains. A relationship could be determined for these two slots, with the former cutting the latter. In slot [F581] carbonised remains of both posts leaned at an angle of approximately 110° to the east. This is likely to be due to subsidence following construction rather than an original design feature since no other posts in the monument exhibited this inclination. Slot [F811] contained more-typical vertical posts.
- 5.41 The natural gravel was particularly loose around slot [F536], causing the excavated section to collapse before recording could take place, so the dimensions given for this slot in Table 3 should be regarded as approximate. It was cut by slot [F569] to the north. Only the inner half of this slot was excavated, although a carbonised outer post measuring 0.3m in diameter was recorded in plan. Although this slot could be seen to cut slot [F536] to the south, it showed no relationship with slot [F670] to the north, both being filled with identical gravels. As with slot [569], the outer post was not excavated in this latter slot, although a carbonised post measuring 0.25m in diameter was plotted on plan.
- 5.42 Only the carbonised post remains were excavated in the next three slots [F874, F877 and F878]. All these posts were 0.25m to 0.3m in diameter and 0.3m to 0.45m in depth. Slot [F565] was also not fully excavated due to the looseness of the gravel fill [564] so its measurements are minimum values. The next slot [F666] was sectioned longitudinally and proved to be typical in construction. Once again, only the carbonised remains of the posts were excavated in slot [F875]. Two further typical slots [F494 and F531] were excavated in this area.
- 5.43 For a distance of 25m beyond this point the palisade was only visible in exceptional conditions, due to the mixed nature of the surrounding gravel and the lack of carbonised remains. However, it showed up very clearly on aerial photographs of the site (see Figure 40). Beyond this, there were a few slots where the inner posts (although not the outer ones) were visible as carbonised remains and then an area disturbed by later deposits where the palisade was

not at first observable. A JCB equipped with a toothless ditching bucket was used to carefully strip soil from this area until the palisade slots became visible or the recognizably natural subsoil surface was reached. The machining exposed radial slots across most of this area with the exception of a 14m gap in line with the gap in the outer palisade. To test whether this gap was an original design feature or due to truncation of deposits, a section was excavated through the slot on either side, as follows.

- 5.44 Immediately to the west of the gap, the inner post setting of slot [F842] was excavated, proving to be 0.7m in width by 0.6m in depth. Although the gravel fill [843] contained a significant quantity of charcoal, it was spread throughout the fill rather than in the area of the former post, perhaps indicating greater post-depositional mixing of the fill here. At the eastern side of the gap, the northern half of slot [F858] was excavated; its southern half was obscured by a post-medieval tree bole that was still *in situ* below the airfield levelling deposits. The outer post [857] measured 0.25m in diameter by more than 0.75m in depth although its base was not reached.
- 5.45 The surviving depth of the above two postholes indicates that truncation of deposits could not explain this gap in the palisade. It lies directly in line with a similar gap in the outer palisade that also could not be explained by truncation of deposits and is therefore regarded as an original entrance to the enclosure. No evidence was found for any contemporary features within the entrance, however it should be noted that the natural gravel here was very dark in colour (due to manganese staining) and was also disturbed by later features. Therefore stake holes or other slight features (such as were found in the eastern entrance to the outer palisade, see above paragraph 5.43) would not have been clearly visible here.
- 5.46 Eastwards from the entrance, a continual line of radial slots (Figure 16) could be traced for a distance of 86m as far as slot [F727] (Figure 17). This measured 2.5m by 0.7m and contained post settings 1.05m deep. Both posts in this slot contained charcoal extending to the full depth of the postholes, with more charcoal at depth than on the surface. A similar situation was found in slot [F705] (see below) but was not seen elsewhere on either palisade. This was probably a result of a change in the local geology from gravel to sands and clays. Either this had caused a change in the intensity of *in situ* burning or it had allowed greater movement of material after the posts rotted away.
- 5.47 Sixteen metres to the south, beyond a number of poorly visible slots, there was a short section where pairs of carbonised postholes were visible on the surface. At the northern end of these, slot [F705] contained an outer post setting 0.75m deep and an inner one 0.9m deep. As with slot [F727], carbonised remains of the posts (outer post [697] and inner post [698]) survived to the full depth of the holes. These were surrounded by a lower grey clay [734] and an upper orange-brown silty clay [706].
- 5.48 Beyond these carbonised posts, slots became increasingly difficult to identify and could not be determined at all from a point 9m from the runway (Figure 18). Since this lined up with the clearly defined beginning of the eastern

entrance in the outer palisade, it is likely to represent a real break, rather than apparent, in the circuit at this point.

Features within the enclosure (Figure 19)

- 5.49 Twelve postholes were exposed within the enclosure, approximately at its centre. These did not form any identifiable pattern and no dating evidence was obtained from any of them. Therefore they are unphased and it is not known whether they are related to the structure or not. They have been included in this part of the report on the strength of their central location within the enclosure.
- 5.50 It should be noted that all these postholes lay along the southwest edge of a ridge of higher ground that had been machined off during the levelling of the airfield in the 1930s. This former ridge shows up as a band of lighter gravel in aerial photographs (see paragraph 5.2 and Figure 40); the area of truncation schematically depicted in Figures 5 to 19 is this band of lighter gravel traced from rectified plots of these photos. According to archived Air Ministry proposal plans of the 1930s, up to 0.5m of material was to be removed from this ridge (Archaeological Services 2001a, 26). The results of the current excavations suggest that these plans were carried out to a fairly high degree of precision (see below, paragraph 5.119). Since the depth of truncation was similar to the depth of the identified postholes, there is a potential for further postholes to have been present towards the northeast, before these had been truncated by later activity.
- 5.51 Six postholes formed a tightly clustered central group. Posthole [F638] measured 0.7m by 0.6m, was 0.3m deep and contained a reddish-brown sandy clay fill [637] (Section 275). To the south, posthole [F650] measured 0.7m in diameter, was 0.3m deep and contained a similar reddish-brown sandy clay fill [649] (Section 276) while to the southeast posthole [F676] measured 0.6m by 0.5m by 0.3m deep and again contained a reddish-brown sandy clay fill [675] (Section 301). Slightly further to the south, posthole [F663] measured 0.6m in diameter, was 0.45m deep and contained a reddish-brown silty clay fill [662] that was cut by a later posthole [F661], measuring 0.6m by 0.5m by 0.4m in depth and containing a similar reddish-brown silty clay fill [660] (Section 300). Westwards from here, posthole [F652] measured 0.7m by 0.6m by 0.3m in depth and contained a similar reddish-brown sandy clay fill [651] (Section 277).
- 5.52 Three postholes were situated a few metres to the south and east of this central group. Two metres to the southeast, posthole [F678] measured 0.4m by 0.3m by 0.35m deep and contained a dark grey sandy clay fill [677] (Section 302). Four metres to the east, posthole [F680] measured 0.7m by 0.6m and was 0.4m deep and contained a dark brown sandy clay fill [681] (Section 306). Five metres to the southeast, posthole [F696] measured 0.4m in diameter, was 0.2m deep and contained a reddish-brown sandy clay fill [695] (Section 308).
- 5.53 A further three postholes were situated further to the northwest of the central group. Seven metres towards the northwest, posthole [F775] measured 0.8m by 0.6m by 0.3m in depth and contained a mid-brown sandy silt fill [776]

(Section 347). Eight metres beyond this, posthole [F762] measured 0.6m by 0.45m by 0.35m deep and contained a reddish-brown sandy silt fill [763] that became more gritty [764] towards the bottom (Section 345). Three metres northeast of [F775], posthole [F745] measured 0.6m in diameter, 0.5m deep and contained a mid-brown sandy silt fill [746] over a yellow-brown sand [747] (Section 342).

- 5.54 A pit [F648] measuring 0.3m in diameter and 0.25m in depth was located between the inner and outer palisades on the western side of the monument. It was filled with a dark brown sandy silt that also contained a little calcined bone [647] although insufficient bone was present for it to have been a buried cremation (Section 268).

Discussion

- 5.55 When first identified, the enclosure was provisionally interpreted as a henge, however, once it had been cleaned, it became apparent that both circuits were composed of a series of radial slots containing closely-spaced posts rather than continuous ditches. Since surrounding banks and ditches are defining characteristics of henges, this enclosure clearly does not belong to such a monument class. Instead it belongs to the much rarer category of Later Neolithic Palisaded Enclosures. In a survey of such sites, Gibson (2002, 16-22) listed just 19 potential palisaded enclosures for the whole of Great Britain. Six of these were unproven and consisted of unexcavated cropmarks or curving pit alignments that had not been traced for any great distance. One (Ferrybridge) has since been proven to be an Iron Age pit alignment and therefore an unrelated monument (Roberts 2005).
- 5.56 The known enclosures are located on Figure 20; comparison data is provided in Table 4. Note that the palisade at Stonehenge, although of Neolithic date, consists of a linear structure traceable for 1.3km (Exon *et al* 2000, 64-6). It is not known whether this forms part of a very large enclosure or a linear boundary. The enclosure at Blackhouse Burn in Lanarkshire consists of a double circuit of posts with a stone bank between them (Lelong and Pollard 1998) and is not strictly comparable with any of the other listed sites.
- 5.57 Even within this small group, there are significant differences between the known enclosures. Few contain more than one palisade; the only known examples being Ballynahatty, Blackhouse Burn, West Kennett 1 and Dunragit, all of which contained two palisades. Although the latter contained an inner circuit that was originally interpreted as a third palisade, this was later re-interpreted as a ring of free-standing posts (Thomas 2003). The two definite palisades at this site were thought to have represented two separate phases (*ibid.*). No known enclosures contain the 'paired post' arrangement of the two palisades at Marne Barracks. This is a unique feature of this site.
- 5.58 Statistical analysis of the radiocarbon results shows no significant difference in date between the two palisades at Marne Barracks, although the dating is not sufficiently precise to completely exclude this possibility (see Appendix 3). The parallel alignment and identical construction techniques of the two palisades supports the view that they were contemporary rather than

sequential. When pairs of posts from individual slots were analysed, they produced almost identical dates, confirming the stratigraphic evidence for their contemporaneous emplacement. The Marne Barracks enclosure should therefore be regarded as a single phase structure with both palisades in use at the same time.

Table 4: Comparisons between Neolithic palisaded enclosures in Britain

	No. of palisades	Size (ha)	Post dia (m)	No. posts	Entrance
Ballynahatty	2	1	0.3		Post structure
Blackhouse Burn	2	7	0.2-0.4		n/a
Dunragit	2	7	n/a		Avenue
Forteviot	1	6	n/a		Avenue
Greyhound Yard	1	c.11	0.9-1.2	n/a	n/a
Hindwell	1	34	0.8	1400	Narrow gap
Leadketty	1	7	n/a		Avenue
Meldon Bridge	1	8	0.25-0.6	135	Avenue
Mount Pleasant	1	4.5	0.3-0.5	1600	Narrow gap
Stonehenge	1	n/a	0.25-0.4	n/a	n/a
Walton	1	8	0.6		Avenue
West Kennett I	2	4	0.25-0.4	2800	n/a
West Kennett II	1	6	0.25-0.4	1600	n/a
Marne Barracks	2	2.75	0.2-0.3	2000	Stake structure

- 5.59 In terms of size, these enclosures range from *c.*1ha for Ballynahatty up to *c.*34ha for Hindwell (although these two sites are exceptional, all other known enclosures lie between 4ha and 11ha). The Marne Barracks enclosure, measuring 2.75ha (outer palisade) is the second smallest known, but is still significantly larger than Ballynahatty.
- 5.60 Although smaller than average, the fact that the Marne enclosure contained two palisades and each of these was composed of ‘paired posts’ effectively giving the enclosure four timber circuits, means that the total number of posts in the monument compares favourably with other larger examples. Assuming the geophysical anomalies to the south of the runway represent the southern edge of the monument, the unexposed part continued in a similar fashion to the exposed part, the part-exposed east entrance was similar in size to the north one and there were no further entrances, then originally there would have been a total of *c.*580 post slots and *c.*1160 posts in the outer palisade and *c.*450 post slots and *c.*900 posts in the inner palisade. This gives a total of just over 2000 posts in the whole monument compared to 1600 posts for Mount Pleasant (Wainwright 1979, 237), 2800 posts for West Kennett 1 - a double palisade (Whittle 1997, 154), 1600 posts for West Kennett 2 (*ibid.*) and 1400 posts for Hindwell (Gibson 1999).
- 5.61 Posts in the Marne enclosure averaged 0.2 to 0.3m in diameter. This compares well with post diameters from the palisades at Ballynahatty, Blackhouse Burn, Meldon Bridge (western portion), Stonehenge and West Kennett (Table 4). It is slightly smaller than those at Meldon Bridge (northern portion), Mount

Pleasant and Walton, although it is substantially smaller than post diameters at Hindwell and Greyhound Yard (Dorchester). In all enclosures where known, oak was used for the posts.

- 5.62 The radiocarbon samples produced a tight cluster of dates with none that could be statistically shown to be significantly later than the others. This reinforces the stratigraphic evidence for a lack of repairs or rebuilding to either palisade. Only one sample (from post [394]) could be statistically shown to be significantly earlier. Although its radiocarbon date range does slightly overlap the dates obtained from the other samples, there was only a 4.5% probability that it had been contemporary and it is more likely that it was an earlier post that had been reused in the monument.
- 5.63 It has been suggested (Whittle 1997) that the posts at the West Kennett enclosures could have been obtained by splitting large trunks, thereby reducing the number of trees that needed felling. No such evidence is present for the Marne enclosure. Radiocarbon samples were collected from the outside edges of the posts. If these posts had been split trunks, then some of these samples would have come from the outside edges and some from the centres of the trunks, producing a broad range of radiocarbon dates. The date range obtained at Marne Barracks was fairly small, making this improbable.
- 5.64 No evidence was present to determine whether the gaps between individual posts had been filled to form a solid barrier or whether these gaps had been left open. It is unlikely that horizontal timbers were slotted between the inner and outer posts in each palisade, as the spacing of the radial slots was so close that only very short sections of horizontal timber would have fitted within its curvature. It would have been much more efficient to build such a structure by using more widely spaced radial slots and longer horizontal members. In addition, the gap (0.5m) between inner and outer posts was very wide, necessitating either extremely wide horizontal timbers (as wide as they were long) or else a very loose fit (if they were thinner).
- 5.65 It would have been possible to attach wickerwork panels (or similar) to the posts to form a continuous screen. Such a screen would be too flimsy to seriously inhibit access into or out of the enclosure and would therefore be cosmetic in function. If part of the intention of the palisade was to screen activities on its inside, then it may have been regarded as unnecessary to have a complete barrier. The close-spaced posts would create a 'Venetian blind effect', allowing a partial view from close-up but effectively screening the inside from a distance; this may have been regarded as sufficient.
- 5.66 Two entrances were identified in the Marne Barracks enclosure, a gap of 14m along the northern edge (of both palisades) and a part-exposed gap of at least 5m along the eastern edge. Stakes were present in the eastern entrance but no such features were found in the northern one, although this could have been due to preservation conditions at this point. These entrances are in marked contrast to those of other palisades. Dunragit, Forteviot, Leadketty, Meldon Bridge and Walton palisades all contain externally pointing double avenues of posts that approach the palisade at a slant, (although the avenue for the central

palisade at Dunragit approaches at a more perpendicular angle). No such external avenue was present within the excavated portion of the Marne enclosure. Very narrow gaps, flanked by exceptionally large posts, form the entrances to Hindwell and Mount Pleasant enclosures. Again no such entrances were present within the excavated part of the Marne enclosure. Its wide entrances are not paralleled by any other enclosure and may strengthen the suggestion that these gaps were filled by stake-built structures.

- 5.67 A number of authors have attempted to calculate the ratio of above to below-ground portions of posts. Using the lengths of post ramps in timber circles as a guide, Mercer (1981, 149-50) estimated that it would be of the order of 3.5:1 and other authors (e.g. Gibson 2002, 14, Speak and Burgess 1999, 107) have accepted this estimate. The maximum depth of any posthole within the Marne enclosure was 1.25m; several other posts were over 1m deep. Since there is evidence from later deposits for a general truncation of the ground surface, this figure should be regarded as a minimum depth. Posts within the enclosure would therefore have originally stood over 4.4m above the ground.
- 5.68 The Marne Barracks enclosure does not appear to be defensive in nature. There is no evidence for either ditches or banks, or for quarrying to provide material for such features. The circumference is too large to be easily defended, especially as there are gaps between individual posts that were wide enough to squeeze through and, as argued above, these were unlikely to have been filled by any substantial barrier. In addition, the entrances are wide and, even if they were filled by smaller stakes, would present a weakness in the structure at its most vulnerable point. The site is in a lowland location overlooked by a hill and near a river. All this evidence suggests that the enclosure was not intended as a defensive structure. Similar arguments have been applied to most other investigated Neolithic palisaded enclosures. However, the excavators of Meldon Bridge gave a defensive interpretation for their enclosure, (Speak and Burgess 1999, 106) although this interpretation has been questioned (Gibson 1998, 77).
- 5.69 It is also improbable that the structure was intended as a stock enclosure. The gaps between the posts would allow small animals to escape. While larger animals, such as adult cattle, would not be able to get through these gaps, it would be difficult to explain double palisade or the purpose of the outer posts if this was the function. These outer posts were free-standing rather than angled to brace the inner posts so they would serve no useful purpose. In addition the entrances are too wide to be secured by a simple gate and would provide a weak point in the enclosure.
- 5.70 The lack of cultural material within or surrounding the enclosure suggests that it did not surround a farm or other domestic space. Although a limited number of postholes were identified in the centre, there was no other evidence (such as pits, houses, burials etc) for occupation of the interior. It is therefore suggested that this site may have been used for ritual or ceremonial purposes such as funerary rites or religious observances. This suggestion has been proposed for the other known Neolithic palisaded enclosures in Britain (Gibson 2002, 15).

- 5.71 Palisaded enclosures are typically placed in ritual landscapes, surrounded by other ceremonial monuments, such as henges, timber circles, burial mounds and pit alignments, reinforcing the view that they are ritual monuments. The enclosure at Ballynahatty lies to the north of the Giant's Ring henge and chambered tomb and is surrounded by smaller ring ditches and pits; Dunragit overlies a cursus and again is surrounded by ring ditches and pit alignments; ring ditches are associated with Forteviot, Leadketty and Walton; Mount Pleasant is located within a hengiform enclosure and the ritual landscapes at Stonehenge and West Kennett are well-known.
- 5.72 The Marne Barracks enclosure is no exception to this. Closest to the site is a stone-filled ring ditch of possible Bronze Age date located 375m to the south, within Marne Barracks (Archaeological Services 2002). A late Neolithic / early Bronze Age kerbed burial cairn, later modified into a circular ring-work thought to be a henge, was excavated 2km to the north, at the southern end of Catterick Racecourse, in 1995 (Moloney *et al.* 2003). A cursus (Topping 1982) and various ring ditches and pit alignments (GeoQuest Associates 1997, Wessex Archaeology 1998a, 1998b and NAA 2000) have been identified at Scorton, on the opposite side of the Swale. An unexcavated circular feature, visible as a cropmark near Colburn Hall, 5km away, has been identified as a possible second henge (MacLeod 2002, 44). Slightly further afield are the three henges and cursus at Thornborough, with further henges at Nunwick, Hutton Moor and Cana Barn.
- 5.73 In addition to being surrounded by post circles, ring ditches or other such features, many of these palisades also enclose such features. A double post circle stands within Ballynahatty enclosure; a penannular ring ditch surrounded by a post circle is present within Forteviot; ring ditches within Leadketty and West Kennett II and Mount Pleasant encloses a multiple timber circle within a penannular ditch. Significantly none of these features are centrally placed within their enclosures; all are located towards one end with the remainder of the enclosure devoid of features. Given the margins of error inherent in dating features of this period, it is generally difficult to prove that the internal features are contemporary with the enclosures. However, the close association between these features on a number of sites suggests that this is the case.
- 5.74 A small number of postholes were present within the Marne Barracks enclosure, located slightly to the east of its centre. These were undated and formed no recognisable pattern, however, they were located along the southwest side of a low ridge that had been truncated by airfield levelling in the 1930s. It is therefore possible that more features had been present, but had been removed by later activity. In addition, 45% of the interior has not been investigated, again providing the potential for further internal features. Interestingly, the ridge occupied the centre of the enclosure, running approximately along its long axis and would emphasise the position of any features within the enclosure.
- 5.75 Most of the posts in the western side of the monument survived as discrete patches of charcoal-stained gravel; elsewhere posts were intermittently

preserved in this manner. These patches were regular in outline but rarely extended to the full depth of the postholes (see Figures 42 to 44). Apart from the fact that they contained charcoal, the gravel in these patches was identical to the remainder of the posthole fills. It is unlikely that these patches have been formed by removal of the posts and then infill of the post pipes by surface material; the regular shape of the charcoal patches (rather than distorted by the rocking and twisting that would be necessary to extract the post), similarity of their fills to those of the surrounding postholes and the high concentration of charcoal in the patches all argue against this. Nor is this due to charring of the post before setting, in order to prolong its life. Such a procedure would result in a ring of charcoal rather than a solid mass, and this ring would extend to the full depth of the post hole. Instead it is thought that the above-ground portions of the posts were burnt *in situ*. If the posts were rotten, this would allow the below-ground portions to smoulder for some time, carbonising this part of the timber (Atkinson 1985, 47). Presumably this carbonisation was only intense enough to affect the upper part of the buried post, accounting for the fact that charcoal only extended part-way to the base of the cuts. Local variations in ground conditions and the intensity of burning are likely to account for the spatial variation in the survival of carbonised posts.

- 5.76 A large number of other palisaded enclosures also show signs of having burnt down. Such evidence has been found at Ballynahatty (Hartwell 1998, 43), Greyhound Yard (Woodward 1984, 30), and both West Kennett enclosures (Whittle 1997, 158). It requires considerable heat to ignite a full-sized timber post. While plausible causes of chance conflagrations can be suggested (*e.g.* lightning strikes or forest fires that engulf the enclosure), such events would be rare. It lies beyond the realm of co-incidence to suppose that all these palisades had independently burnt down by accident. In addition, these structures are not designed for defence (see above, paragraph 5.68) and in general there is little evidence for significant conflict in this period (Whittle 1997, 157) so it is unlikely that they were burnt as a result of hostile action. Therefore it has been suggested that these monuments were deliberately burnt down as a de-commissioning ritual for the structure, perhaps symbolising death and re-birth (*ibid.* 158).
- 5.77 Gibson (1998) recognised three morphological types amongst such palisades: Type 1 Palisades consisting of spaced individual posts, each set in their own post pit (*e.g.* Meldon Bridge); Type 2 Palisades consisting of close set but not contiguous posts set in closely spaced pits (*e.g.* Hindwell); and Type 3 Palisades consisting of contiguous posts set within a palisade trench (*e.g.* Mount Pleasant). The Marne Barracks enclosure consists of close-set posts and, in this respect, fits most readily into the second of these morphological types. However, the other two examples of this type (Hindwell and Greyhound Yard) are the two largest such enclosures, with the most massive posts. Being smaller than average, and with average diameter posts, the Marne enclosure does not fit this typology well in these respects. Also the entrances at the Marne enclosure do not fit the pattern of narrow avenues typical of Type 1 palisades, nor the narrow gaps between massive posts at Type 2 palisades such as Hindwell (N.B. only part of the circuit has been identified at Greyhound

Yard, a Type 2 enclosure; no entrances are present within this section). The Marne enclosure therefore does not readily fit into this typology and it may be that Gibson's three-fold division is too narrow and further work will identify a greater range of such monuments.

- 5.78 A number of large Late Neolithic mounds are known and many of these are associated with henges or palisaded enclosures. The best known of these is Silbury Hill, which overlooks the West Kennett palisades. Other examples include Conquer Barrow in Dorset, overlooking Mount Pleasant henge and palisade, Marlborough Mound (Wiltshire), Hatfield Barrow (contained within Marden Henge, Wiltshire) and Duggleby Howe. It has been suggested (Barrett 1994, 31) that Silbury Hill formed a raised platform to allow a select group to observe activities in the surrounding enclosures and that other such Neolithic mounds had a similar function.
- 5.79 The Dunragit palisade is overlooked by a large mound (Droughduil Mote) 400m to its south that had long been interpreted as a medieval motte. However, the form of the mound appeared slightly unusual compared to other local mottes and therefore it was recently investigated as part of an excavation programme on the palisades. This excavation proved it to be an artificial mound of uncertain date but capped by an Early Bronze Age cairn (Thomas 2003). It therefore appears to be a similar Neolithic 'viewing platform'. In a similar vein, it has also been suggested that Knapp Mount (which lies outside the Walton palisade), another unexcavated mound long identified as a motte, is also a mis-identified Neolithic mound (CPAT 2004).
- 5.80 Interestingly the Marne Barracks palisade is overlooked by a similar unexcavated mound (Castle Hills), again long identified as a motte but recognised to be slightly abnormal in shape. A number of authors (e.g. MacLauchlan 1849, Wilson *et al.* 1996, Archaeological Services 2001a) have commented on this and suggested that the feature is a natural hill that may have been occupied in the Roman and/or Anglian periods and with a medieval motte being added later. The discovery of the palisaded enclosure raises the possibility that the motte may originally have been a mound of Neolithic date placed on the top of an already prominent hill and modified by later use.

Phase 2a: Bronze Age

- 5.81 A shallow gully was identified in evaluation Trench N5 that was dated to the Late Bronze Age on the basis of a plant macrofossil that produced a radiocarbon date of Cal BC 920 to 800 (Archaeological Services 2002, 10). This feature was not identified during the excavation, although digital enhancement of aerial photographs during post-excavation identified a narrow linear feature aligned NNW to SSE in the correct location to have been this gully (Figure 46).

Phase 3: Iron Age to Roman (Figures 21 to 23)

- 5.82 Two Iron Age radiocarbon dates were obtained from plant macrofossils collected during the evaluation (Archaeological Services 2002); a third such date was obtained during the main excavation. The evaluation samples were collected from two ditch sections within Trench N6; further excavation proved

these ditch sections to be part of a large east-west aligned ditch system in the northeast of area 5. During the excavation, 48 sherds of early Roman pottery were recovered from two of the later cuts within this system (42 sherds coming from a single vessel). It is therefore thought that the ditch system spans the transition from the late Iron Age to the early Roman periods, with the radiocarbon samples having been collected from the earlier phases of the ditch and the ceramics having been collected from the later phases. A date range of *c.* 50 BC to AD 150 would be consistent with both the radiocarbon and the ceramic dates. Although the pottery assemblage collected from this ditch appears typical of a military site (see below, paragraph 6.13), this should be treated with caution due to the small size of the sample and the pre-Roman origin of the ditch system. The sinuous plan and rounded profile of the ditches is more suggestive of a domestic rather than a military site.

- 5.83 A north-south aligned ditch system was located at the eastern end of areas 4 and 5. A sherd of late 1st/early 2nd century pottery was recovered from this latter ditch system. The junction between the two systems was not exposed and it is not known whether they were related or not. However, the ceramic dates and the environmental evidence from both sections are similar (see below, paragraph 7.12), suggesting they are of a broadly similar date (although only a single pot sherd was recovered from the north-south section, so any date from this should be treated with caution).
- 5.84 Six sections were excavated across the east-west ditch system, identifying at least four phases of use. The earliest phase [F885] was largely truncated in all the excavated sections. At its eastern end, it was represented by cut [F707], which lay to the north of the later cuts and was filled with a dark grey-brown sandy gravel [708]. Further west, this earliest cut lay to the south of the second one, although this cross-over was not noticed on the ground. The first phase was represented by [F309] in Section 111 and was filled by a similar gravelly fill [312], although containing silt patches [311] and [313] in its base and another thin silt layer [871] at its top (N.B. this section was cut to examine the terminus of later cut [F308] and intersected cut [F309] at a very acute angle; dimensions for cut [F308] are therefore distorted). Further west, the first phase was represented by cut [F318] in Section 160, which again had a gravel fill [46] underlain by silt [319]. Two silt patches [42] and [44] within the gravel may have been very truncated postholes, but their shallowness (0.15m and 0.05m) in relation to their width (0.7m and 0.5m) makes it more likely that they were simply areas where the gravel had been pulled out in the roots of a fallen tree. The ditch was represented by cut [F121] in Section 74, filled with gravel fill [122], and cut [F127] in Section 70, filled with gravels [128] and [129], then a silt band [130] and then another gravel [131]. West of this section, the ditch came to a butt end; a re-cut to this butt end [F32] was visible towards the south. Again this was filled with gravel [34], with a thin band of overlying silt [33]; Roman pottery was obtained from both fills.
- 5.85 The second phase [F886] consisted of a cut [F712] to the south of the Phase 3.1 ditch in Section 356 at the eastern end of the exposure but to the north elsewhere ([F321], [F123] and [F162] in Sections 160, 74 and 70 respectively). It could not be traced to the west of this point and appears to

- have terminated at a similar point to the Phase 3.1 cut. It contained gravel fills ([713], [320], [124] and [163] respectively) similar to those of the first phase cuts. After a gap of 3m, a partly truncated ditch cut [F754] again with a gravel fill [755] could have been a continuation of either the first or second phase cuts.
- 5.86 The third and best preserved phase [F887] consisted of a ditch cut running eastwards for 60m (and crossing the earlier ditch termini) before turning south and coming to a butt end. After a gap of 7m, the ditch continued again with another south-pointing terminus. Six sections sampled this cut; [F756] in Section 344 to the west, [F164] in Section 70, [F118] in Section 74, [F47] in Section 160, [F307] in Section 151 and [F826] in Section 356 at the eastern end of the site. This ditch was filled with a yellowish-brown clay silt [757/758], [132], [119/120], [70], [308] and [825/824/823] respectively. Forty-two pot sherds from a single vessel, as well as two sherds from a second vessel were recovered from context [70] in this ditch cut.
- 5.87 A fourth phase [F759] was visible towards the western end of the exposure. This measured 5m in width, 0.25m in depth, contained a dark brown silty clay fill [760] and came to a butt end after 13m. It had been re-cut [859]; with this containing a similar fill [761]. This fourth phase was not present across the rest of the excavation.
- 5.88 The north-south ditch system consisted of a long sinuous ditch running for 100m northwards from the helicopter landing pad to the north of the runway. This north-south ditch cut the outer palisade of the Neolithic enclosure along its eastern edge. In most places two cuts were present to this ditch; an earlier one in the east and a later one to the west. Fills of the earlier cut were generally of gravel, becoming more silty northwards, while fills of the later cut were generally of silt with occasional gravel lenses.
- 5.89 Five sections were excavated through these ditches. Towards the south, ditch [F685] was filled by gravel [686] (with silt lens [704]) and re-cut by [F683], filled by gravel [684]. A silt layer [687] overlay both ditch cuts and was probably a later re-cut (Section 304). Northwards, ditch [F728] was filled by gravel [729] and re-cut by [F730], filled by [731] (Section 331). Northwards again, ditch [F788] was filled by gravel [786] (with silt lens [787]) and re-cut by [F785], filled by upper and lower silts [782] and [784], separated by gravel lens [783]. A deeper section of this ditch was filled with a grey silt [791] similar to [784]. This deeper section was over 1.2m deep and was not fully excavated (Section 351). In the fourth section, ditch [F186] was filled by silty gravel [187] and re-cut by [F299], filled by silt [300] (Section 133). Finally, its northern end, ditch [F821] was filled by silt [820] and re-cut by [F819], filled by upper and lower silts [818 and 834] separated by gravel lenses [833] and [835]. Here cut [F821] came to a butt end but cut [F819] continued and a third cut [F817] was present towards the west, pre-dating [F819]. This contained a silt fill [816] underlain by a thin gravel band [832] (Section 364).
- 5.90 Immediately towards the north, these ditches were cut by the butt end of an eastwards running ditch [F174]. Two more butt ends were present 5m towards

the east, close to the baulk. The northern cut [F173] was the earliest of the three and was 3.5m wide by 0.2m deep and contained a lower fill of silty gravel [172] and an upper one of silty clay [171]. It was cut by ditch [F174], 6m wide by 0.8m deep and containing a lower fill of grey gravelly clay [177] and an upper one of mid brown silty clay [175] separated by a gravel lens [185]. To the south this was cut by ditch [F180], measuring 5m by 0.6m deep and containing similar gravelly clay [182] and silty clay [181] fills (Section 111).

- 5.91 A shallow sinuous gully [F263] crossed area 2 in an east-west line for 110m before curving southwards at its eastern end and northwards at its western end. This western end followed the foot of a natural scarp slope that had been preserved by infill during the 20th century levelling of the airfield. No dateable finds were recovered from this gully, although a plant macrofossil recovered from a soil sample produced an Iron Age radiocarbon date (Cal 170 BC to AD 60, see Appendix 3 for details).
- 5.92 Nine sections were excavated across this gully: [F226], [F229], [F231], [F240], [F242], [F244], [F246], [F263] and [F278], containing similar dark brown sandy silts [225], [230], [232], [241], [243], [245], [247], [264] and [279] respectively (Sections 103, 104, 105, 109, 113, 114, 117, 120 & 130). A broken copper alloy ring was recovered from [279] (see paragraph 6.98 and Figure 35); the radiocarbon date was obtained from silt [245].
- 5.93 Fourteen conjoining pot sherds from a single vessel, a jar dating from AD 50-150, were recovered from the northern end of area 3. These sherds [334] were residual within the base of the 1930s landscaping fill but do indicate Roman activity, possibly a cremation burial, within the surrounding area, although the exact location of this activity cannot be established.
- 5.94 The dates obtained for the above features range from the 1st century BC to the 2nd century AD. This is earlier than the late 3rd to mid 4th century date obtained from the 'villa' in the centre of the base (Hildyard 1955), the 4th century date obtained from the field system extending under the REME building (Geoquest Associates 1994) and begins earlier than the late 1st to 4th century AD dates obtained from the settlement at Baines Farm (Wilson 2002), indicating that the features may not be connected to these previously known sites.
- 5.95 Second century (together with post-Roman) material was recovered from an excavation on Castle Hills in *c.*1847 (Maclauchlan 1849, Wilson 2002). Details about this early excavation are sketchy but it has been suggested that the Roman material was residual within soil scraped up from a wide area to form the mound (Wilson 2002, 32). This discovery of stratified deposits containing 2nd century material directly below Castle Hills may strengthen this possibility. However, there seems little evidence for significant truncation of these deposits (or the nearby Mesolithic and Neolithic ones) and it has been argued above (paragraph 5.80) that the mound could even have been a focus for Neolithic activity. In this case the Roman material could be indicative of occupation of the hill and its surroundings at that date, with these ditches representing the outer limits of this occupation.

Phase 4: Early Medieval (Figures 24-26, 28, 47)

- 5.96 Two excavated gullies contained plant macrofossils that produced early medieval radiocarbon dates. In the southwest corner of area 1, gully [F97] was 0.75m wide, 0.2m deep, was exposed for a distance of 19m and was filled by a dark brown silty clay [96] (Sections 33 & 40). A plant macrofossil from this fill produced a radiocarbon date of Cal AD 670-890 (see appendix 3). Although most of this gully lay outside of the excavated area, it can be clearly seen on the geophysical survey as a slightly curving linear anomaly crossing the whole of the surveyed area north of the runway (Archaeological Services 2001a).
- 5.97 Towards the south of area 2 a number of gullies could only be seen in exceptional conditions, for a few hours after rain, when the ground was beginning to dry out (Figure 46). Gully [F260] was sampled in four places [F249], [F259], [F261] and [F281] and contained three fills, a lower gravel [250], a silt [251] and an upper gravel that may have been in a re-cut [252], [258], [262], [280] (Sections 115, 116, 119 & 127). Although very shallow, this upper gravel was visible throughout the length of the feature.
- 5.98 Two plant macrofossils were radiocarbon dated from this gully. A charred grain from [251] produced a date of Cal AD 690 to 900, making it comparable to the date obtained for gully [F97] above. However, a charred hazelnut fragment from [262] produced the significantly later radiocarbon date of Cal AD 1270 to 1410 (see Appendix 3 for details). Although this came from the re-cut, it is unlikely that the ditch had remained open for 500 years and therefore it is probable that one of these samples was either residual or intrusive. The gully is orientated parallel to gully [F97], which produced an early medieval radiocarbon date, and was not aligned on either the ridge and furrow or on the post-medieval field boundaries. It is therefore more likely that the early medieval date is correct and that the later one is intrusive.
- 5.99 Gully [F260] cut gully [F458] almost at right-angles. This gully was in turn cut by a post-medieval one ([F456], see below, paragraph 5.112) and was also not aligned on the medieval ridge and furrow. It contained an abraded sherd of Roman pottery but was otherwise undated. Given its stratigraphic position, it may have been early medieval as well. The gully extended for 140m in a southwest to northeast direction and was sectioned in eight places: [F290], [F344], [F346], [F352], [F367], [F390], [F463] and [F470], containing similar mid-brown silty clays [291], [345], [347], [353], [366], [389], [464] and [471] (Sections 141, 149, 150, 159, 174 and 190). The pot sherd was recovered from [389].
- 5.100 A charcoal sample collected from another gully during the evaluation produced another early medieval radiocarbon date, although at Cal AD 420 to 610 (Archaeological Services 2002, 13), slightly earlier than the above two dates. However, full excavation showed that this gully was post-medieval and had been sampled at the point where it cut the Neolithic palisade. The early radiocarbon date may be due to contamination of this sample with carbon derived from elsewhere. This gully is more fully described below (paragraph 5.110).

Phase 5: Medieval (Figures 24 to 26)

- 5.101 Isolated remains of ridge and furrow cultivation survived in a number of locations across the excavation. In the south of area 1, there were a series of southwest – northeast aligned furrows, 6m apart. In the north - centre of area 2, similarly aligned furrows were present, although here they were 7.5m apart. Southeast – northwest aligned furrows 5m apart were found in the east of area 4 and east – west aligned furrows 8.5m apart were found in the centre of area 5. These orientations correspond to the anomaly orientations that were detected in the geophysical survey of the airfield and which had been interpreted as ridge and furrow remains (Archaeological Services 2001a).
- 5.102 The ridge and furrow remains were not investigated in detail since they had already been examined as part of the evaluation and, due to their poor survival state, were regarded as being of low archaeological importance. However, sections were placed through five of the furrows within area 2: [F139/143], [192], [208], [467] and [469]. These contained similar sandy silt fills [140/144], [193], [209], [466] and [468] respectively. A shallow sub-circular depression [F153] measuring 4m by 3m by 0.15m deep and containing a similar sandy silt fill [156] occupied a gap in the sequence of furrows. Given its location, it is likely to be a disturbed furrow that is broader than the normal ones.
- 5.103 Only one sherd of medieval pottery was recovered from the entire excavation (and this was residual within a post-medieval context, [84]). This low concentration of medieval pottery would suggest that the site lay some distance from the medieval centres of occupation.

Phase 6: Post-medieval (Figures 24 to 28, 48)

- 5.104 Remains of a road were found in area 1, overlying the ridge and furrow. These were in the correct position and orientation to be the former Oran Road, known from cartographic evidence and detected as a geophysical anomaly. Remains were present at both the northern and southern extremities of the site, with those towards the south being better preserved. This fits the pattern of 20th century landscaping, since the central part of area 1 was subject to the largest degree of levelling, with less material being removed to both the north and the south. Two phases of construction were present in the southern part of the exposure.
- 5.105 A stone-built culvert and soakaway pit underlay the road surface. The culvert [95] consisted of a linear cut [F92] containing two lines of large, sub-angular stones [91] that supported a roof of flat slabs (Figure 48). Smaller cobbles overlay these slabs, sealing any holes in the structure. The culvert was filled with a mid grey-brown clay [94] that also extended to the outside of the wall stones on the northern side of the excavated section, perhaps indicating erosion of the sides during use (Section 32). A rectangular pit [F101] measuring 2.6m by 1.3m by 1.2m in depth formed a soakaway on the east side of the culvert (Section 34). It was filled with lower and upper deposits of green-grey silty clay ([100] and [98] respectively), and a middle one of brown-grey silty clay [99]. Frequent large, rounded stones up to 0.8m in length were present throughout contexts [99] and [100] although very few such stones

were present in context [98]. Most of these stones had been tipped in from the west (*i.e.* from the direction of the road).

- 5.106 Above these was the road surface. This surface was wider than the culvert, overlapping it on both ends, and also overlay the fills of the soakaway. Therefore it post-dated both. The road [F57] appears to have originally contained a pronounced camber that has since been ploughed out, as it contained two mirror image sets of deposits running each side of a central band of natural gravel [15] (Figure 25 and Figure 26, Section 12). These deposits consisted of two shallow cuts ([55] on the west and [56] on the east), bounded on their outer edges by kerbs of sub-rounded cobbles up to 0.3m in diameter ([F12] and [F18] respectively). Inside these were two strips of gritty sand ([13] and [16]), with small areas of cobbling ([14] and [17]) surviving in places over them. A clay-tile land drain ran lengthwise down the centre of the road, cutting the culvert.
- 5.107 The road surface was too well-made to have been the *ad hoc* development of a track and must have been deliberately planned. On the 1st edition Ordnance Survey map (after the road had been moved westwards to its current location along the line of the A1) it is named as the ‘Boroughbridge and Piersebridge (*sic*) Trust’. A search of the Durham County Records Office website shows that this turnpike road (correctly the Boroughbridge, Catterick and Piercebridge Trust) was sanctioned by a parliamentary act of 1742, with later modifications by acts of 1749, 1784, 1803, 1825, 1862 and 1875. Presumably the road surface relates to sometime between the creation of this turnpike in 1742 and the date that it was moved towards the west (from cartographic evidence some time between 1842 and 1857). No further details were obtained by examination of the documentary records for this turnpike.
- 5.108 Less well-preserved road remains survived at the northern edge of the excavation. A number of gullies ran in a northwest-southeast direction (*i.e.* parallel to the line of the road) for *c.*8m from the baulk. The most westerly of these [F83] was 0.6m in width, 0.3m in depth and contained an orange-brown clay silt [84]. It was cut on its east side by gully [F85], 0.6m wide, 0.5m deep and containing a grey-brown clay silt [86] (Sections 41 and 42). One metre to the east, gully [F102] was 1.4m wide, 0.3m deep and contained a grey-brown clay silt [103]. A fourth gully [F53] lay 7.8m towards the east and was 1.0m in width, 0.3m in depth and contained a grey-brown silty clay [54]. Gully [F83] lined up with the western side of the road in the main exposure while gully [F53] lined up with the eastern side. An area of cobbling [63] was partly exposed in the extreme northwest corner of the trench and overlay the gullies [F85] and [F102]. It is interpreted as road metalling with the underlying gullies being ruts or drains from the pre-turnpike phase of the track.
- 5.109 Two features were present along the western edge of the road, suggesting they were related to it. Pit [F142] measured 0.8m in diameter by 0.4m in depth and was filled with mid-brown sandy silt [141] that contained two links from an iron chain. Posthole [F112] lay 7.6m towards the north, measured 0.25m in diameter by 0.2m in depth and contained a light brown silty clay fill [111] (Figure 27, Sections 51 & 61).

- 5.110 A second north-south track was present towards the east end of the excavation. On the ground it was visible as three parallel gullies 3.25m apart. Although these gullies could only be identified in the north of area 5, they could be projected across the entire site on the earlier geophysical survey (Archaeological Services 2001a) and can be correlated with a track that is visible on historic maps of the area. This is denoted as a bridleway on the first edition Ordnance Survey map. To the west, gully [F326] was 0.4m wide, 0.1m deep and contained a dark orange-brown clay-silt [325] (Sections 168 & 169). To the east, two gullies [F411 and F413] were present, both containing similar dark orange-brown clay silts [410 and 412] (Section 175). No evidence for road metalling was present between these gullies. Projected southwards, the easternmost of these gullies had been excavated during the evaluation and a charcoal sample radiocarbon dated to the immediate post-Roman / Anglian period (Archaeological Services 2002, 10). However it is now known that the evaluation trench had been placed at the point where this gully cut the Neolithic palisade and the radiocarbon date obtained is therefore most probably due to contamination of the ditch fill with residual carbon from the palisade. The westernmost of the two trackside gullies had produced post-medieval pottery during the evaluation.
- 5.111 Where the projected line of the track crossed between areas 4 and 5, a large spread of similar clay-silt [893] covered the whole area and extended eastwards for a distance of over 35m and northwards for over 20m. It overlay the inner palisade and, following recording, was machined off to properly examine the earlier feature. A smaller but otherwise similar spread of clay-silt [682] overlay the eastern side of the inner palisade and covered an area of 6m by 5m. A rough gravel track [694] in a slight cut [F693] curved round the northern side of this spread, again cutting through the palisade.
- 5.112 A gully [F456] ran on a southwest - northeast orientation for 110m across areas 2 and 3 and was sampled in nine locations: [F234], [F253], [F292], [F336], [F342], [F348], [F354], [F378] and [F380], each section containing a similar mid-brown silty clay [235], [254], [293], [335], [341], [349], [355], [379] and [381] (Sections 126, 101, 110, 146, 140, 144, 149 & 164). Although an unabraded Samian ware rim sherd came from [F349], the gully corresponded to a post-medieval field boundary, as recorded on maps until 1842, and was demonstrably later than the unphased (but possibly Roman) gullies in this area. In places the gully had a parallel second cut 1.2m towards the northwest ([F236] / [F403], with fills [237] / [402]) and in one small area a third parallel cut ([F401], filled by [400]) lay between these two gullies.
- 5.113 A narrow gully [F270] / [F298], 0.15m wide, 0.05m deep and filled with dark brown silty clay [271] / [297] ran southwards from [F456] (Section 132). This was also stratigraphically late and was orientated in the correct position to be another field boundary as shown on early maps.
- 5.114 Towards the northern end of area 2, pit [F233] measured 0.7m in diameter and 0.5m in depth and was filled with a silt [224] containing coal, ash, cinders and small fragments of burnt bone. Modern nails and other metal fragments within

the fill proved that it was of recent date (Section 102). A second area of burnt material [255] lay at the base of the topsoil 11m towards the northwest.

- 5.115 A rough pile of rounded stones [107] up to 0.2m in diameter was located in the southwest corner of the excavation. This stone pile had no discernible structure and contained a fragment of concrete and a sherd of 19th to 20th century white-glazed pottery, suggesting it was a field clearance cairn of that date. It was cut by a posthole [F109] 0.35m in diameter and 0.2m deep, containing a silty gravel fill [110]. An area of dark brown silt containing animal bone [88] in the west of area 1 is likely to have been a fragment of the post-medieval plough soil preserved in a dip in the ground.
- 5.116 Two short linear cuts were found in the south of area 1. Cut [F72] ran northeast to southwest, was 2.9m long, 0.4m wide and 0.2m deep and contained a dark grey-brown sandy silt fill [71] that contained a bone fragment. Given the poor survival rate of bone from the site, this would suggest a post-medieval date for the cut, with it possibly being a plough furrow. Immediately to the southwest, cut [F90] ran northwest to southeast, was 2.4m long, 0.4m wide and 0.2m deep, and contained a similar fill [89].

Phase 7: Modern (Figures 24 to 26)

- 5.117 Aircraft from the Royal Flying Corps were first stationed at Catterick in September 1916, beginning the military occupation of the site (Archaeological Services 2001a). The airfield was greatly improved in the 1930s, with the runway being extended and hardened. During this phase of development, the entire site was levelled by cut and fill operations.
- 5.118 One military feature pre-dated this episode of levelling. In the centre of area 3, feature [F892] consisted of a sub-circular cut 3m in diameter and filled with a clayey sand [474] that contained frequent 20th century bricks and other modern material such as light bulb fragments and a bakelite door handle. It may have been an infilled sentry box (or similar) dating from the early phase of development of the airfield.
- 5.119 The airfield was levelled by cut and fill operations in the 1930s. Areas of truncation and depths of infill broadly followed the estimated values shown in our original assessment report (Archaeological Services 2001a, Figure 3), derived from Air Ministry proposal plans of the 1930s. This shows that these proposals were carried out to a high degree of accuracy and allow extrapolation from these plans. Up to 1m of material will have been removed from most of area 1 (excluding its northern and southern edges) together with material from the southwest corner of area 2 and a narrow ridge in the southwest corner of area 4. The remainder of the site was covered with a silty gravel infill deposit [8] of varying depth, being absent towards the western end of the site and up to 1m thick towards the centre.
- 5.120 Overlying this levelling deposit in the north of area 2, feature [F25] was a structure consisting of two crescent-shaped bays, each 29m in diameter and facing towards the runway. It was constructed from brick, concrete and plaster rubble, faced with a line of more regularly laid bricks. Steel anchoring rings

were set in the ground just outside the horns of each crescent. The western bay had been half-truncated and there had possibly been a third one to the east, now almost completely removed. This indicates that further levelling work had taken place after the initial landscaping of the airfield. These anchoring rings suggest that it had been constructed to support a free-standing structure such as a radio or radar mast, while the insubstantial nature of the brickwork would suggest that this merely formed a walkway around the structure.

- 5.121 Two concrete blocks [F150], each 0.5m square, were set in the ground to the southwest of the above feature. Each had a metal plate bolted onto its top, with a hinge on its southern side.
- 5.122 A slit trench [F165] measuring 2.9m by 0.7m by 1.2m in depth was located at the eastern end of area 5, close to the defensive position of Castle Hills. It had postholes in each corner, perhaps to support a camouflage net and had been backfilled with redeposited natural [166].

Unphased (Figures 29 to 32)

- 5.123 A large pit [F597] measuring 4.6m by 2.25m by 0.9m deep cut the inner palisade immediately south of the knapping platform (Figure 32, Section 256). Two of the palisade slots [F619] and [F621] could clearly be seen to be cut by this pit (neither of these was excavated). The pit contained five fills; a bottom one of clayey gravel [602] that was probably a primary weathering deposit from the pit sides, followed by a grey-brown clay [601], a band of red-brown coarse sand [600], an upper band of clayey gravel [599] and finally a deposit of grey-brown sandy clay [598].
- 5.124 A cobble containing a circular depression was recovered from deposit [599]. Peck marks were visible inside this depression, indicating that it had been deliberately created (Figure 34). A second very faint indentation lay to one side forming another incipient marking. While these hollows have the appearance of Bronze Age cup-marks, two other alternative explanations have been proposed. Firstly it has been suggested that the hollows may have been deliberately created as a receptacle for grinding pigments or dehusking barley. An alternate explanation is that the stone was a Mesolithic / early Neolithic flint-knapping anvil stone. These possibilities are more fully discussed in paragraph 6.93 below.
- 5.125 A series of linear gullies traversed the site, being particularly common in area 2. Although shallow, some could be traced for distances of more than 140m. One of these produced an Iron Age radiocarbon date (see above, paragraph 5.91), two produced early medieval radiocarbon dates (see above, paragraph 5.96) and two were on alignments corresponding to post-medieval field boundaries (see above, paragraphs 5.112-3). It is therefore clear that not all of these gullies are related to each other. Given the lack of artefacts recovered from them, they are thought to be former field boundaries of varying date. Their shallowness is an indication that the whole site has been subject to a certain degree of truncation; this fact should be borne in mind when considering the original depths of the postholes in the Neolithic enclosure.

- 5.126 A number of these gullies remain undated. In the northwest corner of area 3, gully [F454] measured 0.5m in width, 0.2m in diameter and contained a mid-brown sandy silt fill [455] (Sections 209 & 211). It ran east-west, curving round towards the south at its eastern end. Here it cut another east-west gully [F387] containing a similar fill [388], which was visible for a distance of 6.2m. A gully [F460] filled by a similar silt [459] (Section 206) ran northwards from gully [F454] although too little of the intersection to determine any relationship between these two gullies. Two other stretches of east-west orientated gully [F282] and [F405] crossed the north of areas 2 and 3. The former could possibly have been a continuation of gully [F454], although it lay 76m further towards the west. The latter ran parallel to and 3m south of gully [F387].
- 5.127 Slightly to the south, a short section of gully [F457] was aligned southwest to northeast and contained a butt end to the southwest. Three sections were cut across this gully: [F294], [F350] and [F376], containing similar mid-brown silty clays [295], [351] and [379] respectively. The gully pre-dated post-medieval gully [F456] and gradually converged with early medieval gully [F458]; it could have been a re-cut of the latter.
- 5.128 A north-south gully [F475] ran for 35m down the west side of area 3 and was sectioned four times: [F476], [F478], [F480], and [F482]. It measured 0.5m in width, 0.2m in depth and contained a mid-brown silt [477], [479], [481] and [483] respectively (Sections 192, 194, 195 & 196).
- 5.129 A short gully section [F284] 0.75m wide, 0.35m deep and filled with reddish-brown sandy silt [283] was partly exposed on the southern baulk of the excavation (Section 128). Another short gully section [F133] was partly exposed along the western edge of the excavation and contained a silty fill [134] (Section 54).
- 5.130 In the south centre of area 1, pit [F135] measured 1.9m by 1.0m by 0.3m deep and contained a silty gravel fill containing charcoal flecks [136]. Two pits were located 1.3m apart in the north of area 2. Pit [F198] measured 0.4m in diameter and 0.15m in depth and contained a dark brown sandy silt fill [197], while pit [F200] measured 0.5m in diameter and 0.1m in depth and contained a similar fill [199] (Sections 80 & 81).
- 5.131 A large pit [F288] was located in the south of area 3, measuring 4.6m in diameter and 0.8m in depth. It was filled with a dark brown sandy silt [287] overlying a light brown silty sand [296] (Section 132).
- 5.132 A curving ditch [F449] was part-exposed in the northeast of area 3. This was 4.6m wide and 0.85m deep and contained rather mixed lower fills of gravel [448] and silt [447] and an upper fill of dark brown sandy silt [446] (Section 191).
- 5.133 An area of large sub-angular stones [860] was located in the northwest of area 4. Although this lay within the Neolithic enclosure, the presence of lime mortar on the stones indicates that they were unrelated to it. Five stones,

measuring up to 0.3m in length, formed a right-angled corner. Several other similar stones were displaced during machining and one of these contained a circular depression, indicating that it had been a pivot stone for a door jamb. This feature lay on the western side of the ridge that had been levelled during landscaping of the airfield (see above, paragraph 5.2) and too little of the structure survived to identify its original date or nature.

- 5.134 Two isolated postholes were found in the east of the excavation. Cut [F167] in area 5 measured 0.4m in diameter and 0.2m in depth, was filled with a dark brown silty clay [168] (Section 90) and cut Roman ditch fill [131]. At the northern edge of area 4, cut [F732] measured 0.4m in diameter by 0.1m in depth and was filled with a light grey silty clay fill [733] (Section 334).

6. The finds

- 6.1 A number of unstratified finds, and some from obviously modern contexts, were discarded following cataloguing, since they had no potential to add further information about the archaeology of the site. These have been indicated in the text.

Roman pottery

Summary

- 6.2 68 sherds of Roman pottery were recovered, all from stratified contexts. Of these, 42 sherds came from one vessel and 14 from a second vessel.

Context 26

- 6.3 Two conjoining sherds from a handle, oxidised pale red fabric with moderate coarse quartz grains and clay pellets, from a flagon, the handle has three exterior grooves, 30g. Date *c.* AD 50-150.

Context 33

- 6.4 Base sherd and conjoining body sherd, the fabric has an unoxidised core and exterior surface, oxidised pale yellowish-brown interior, common to abundant quartz grains, from a jar wt 18g. *c.* AD 50-200. Burnt exterior.

- 6.5 Rim sherd, unoxidised yellowish-brown surface but with oxidised core. Fabric has fine quartz inclusions, from a jar with everted rim, wt 10g, rim diameter 120mm, surviving circumference 11%, *c.* AD 50-180. Carbonised residue on rim.

Context 34

- 6.6 Two body sherds from the same vessel, Central Gaulish Samian from Lezoux, from a bowl or dish. Date *c.* AD 120-200. Much of the interior and exterior surface is missing.

Context 70

- 6.7 Two body sherds from the same vessel, unoxidised fabric with sparse angular quartz grains from a jar form, 32g. *c.* AD 50-180. Some evidence of burning on exterior surface.

- 6.8 40 body sherds, one base sherd and one rim sherd, an unoxidised v fine pale grey fabric with powdery feel, from a thin-walled jar with everted rim, wt 57g. Rim diameter *c.* 120mm, surviving rim circumference *c.* 7%. *c.* AD 50-150.

Context 187

- 6.9 Rim sherd, Central Gaulish Samian from Lezoux, the form is probably Drag. 18/31, (rather than form Drag. 31 which is the other possibility). Wt 3g, rim diameter 180mm, surviving circumference 5%, date *c.* AD 120-140.

Context 334

- 6.10 4 rim sherds and 10 body sherds of the same vessel, unoxidised mid-grey fabric with mica and sparse quartz grains, jar with out-turned bead rim, with pronounced cordon at junction of neck and shoulder. Wt 266g, rim diameter *c.* 112mm, surviving circumference 67%, *c.* AD 50-150.

Context 349

- 6.11 Rim sherd, Central Gaulish Samian from Lezoux, the form is Drag. 18/31. Wt 11g, rim diameter 180mm, surviving circumference 11%, date *c.* AD 120-140. From a different vessel to the sherd from context 187.

Context 389

- 6.12 Body sherd in an unoxidised fabric, virtually free of inclusions, probably from a jar, wt. 3g. Date *c.* AD 50 – 200. Very abraded.

Conclusions

- 6.13 All the Roman pottery would be consistent with late 1st century and / or early 2nd century activity on the site. Although this is a small group, the strong representation of Samian items, combined with utilitarian jars and a flagon suggest it is likely to be associated with the Roman military in some way. The fabrics of these coarse-ware items are not diagnostic as to their source but they are likely to be from the English midlands or possibly more locally to the site.

Post-Roman pottery

Unstratified

- 6.14 Rim sherd, transfer-painted white ware, 19th – 20th century
Base sherd, stone ware, 19th – 20th century
Body sherd, glazed red ware, 18th – 19th century

Context 11

- 6.15 Body sherd, glazed red ware, 18th – 19th century
3 sherds (2 conjoining), unglazed red ware, 18th – 19th century

Context 17

- 6.16 Base sherd, glazed red ware, 18th – 19th century

Context 84

- 6.17 Body sherd, sandy ware, medieval

Context 107

- 6.18 Body sherd, glazed white ware, 19th – 20th century

Burnt clay

Context 88

- 6.19 2 fragments of burnt clay of amorphous form, probably not a prepared clay, so likely to be a random burning of natural clay.

Context 571

- 6.20 Amorphous fragment of yellowish-brown burnt clay, wt 2g. Probably randomly burnt, however some voids occur indicating combusted grass or chaff inclusions, suggesting a prepared clay of some type. Some slight finger moulding occurs; however the fragment is unlikely to be pottery as there are no clear surfaces.

Lithics

- 6.21 A total of 1180 pieces of lithic material was recorded from the area of the knapping platform and related contexts. 14 pieces from surrounding contexts are dealt with at the end of the main report. Total finds from the area of the knapping platform are broken down by context in Table 5.

Table 5: Lithics from knapping floor by context

Context	No.
435	389
517	669
U/S (but over 517)	121
TOTAL	1180

Raw material

- 6.22 Raw material from all contexts within the knapping platform is classified in Table 6.

Table 6: Lithics by raw material

Raw Material Type	No.
Off White/Grey Cherty Flint	1165
Blue-Grey quartz chert	12
Banded Brown Chert	1
Grey Brown Flint	1
Translucent Brown Flint	1
TOTAL	1180

- 6.23 68 pieces retain cortex to a greater or lesser degree. This ranges from hard fawn cortex to soft fawn cortex, and includes flakes and blades with cortical butts. Many pieces have cortical inclusions in the body of the parent material.
- 6.24 The main raw material exploited on the site is a dense, almost cherty, off white / grey flint. In their review of Mesolithic sites in SW Yorkshire (1963-66) Radley and Marshall noted that this kind of material was characterised by Francis Buckley in the 1920s and that it was dominant at upland Mesolithic sites like Lominot, Warcock Hill and Boar Flat (1963-66, 92). Radley actually

broke several blades and flakes made on this kind of raw material and demonstrated that the flint was in fact completely white, with grey-white inclusions in the ground mass that were chalky textured. This would seem to be exactly the same case in the Marne Barracks material. Radley and Marshall believed that the main source of this cherty flint was the chalk deposits of the coastline from Flamborough Head southwards to North Lincolnshire. Manby (1988, 42-43) was of a similar opinion and he also pointed out that glacial deposits along the same coastline could produce various shades of brown flint, along with mottled pink, amber, red, honey coloured and dense yellow material.

- 6.25 The raw material at Marne Barracks certainly seems to be different to that exploited at sites in Swaledale proper. At Sleigill and Calvert Houses, Laurie has recorded 90% translucent brown flint and 10% local chert at the former site and a high quality black flint with chalky cortex at the latter. (Coggins, Laurie and Young 1989, 173).

Typology and technology

- 6.26 The following discussion is structured around the three main context groups. Recorded artefact categories are tabulated in Table 7.

Table 7: Lithics by artefact type

Type	435	517	U/S
Cores	-	1	1
Core Fragments	-	3	1
Core Trimming Flakes (Complete/Broken)	2/5	1/6	1/1
Microliths	-	6	-
Scrapers	3	4	-
Utilised flakes	1	1	1
Primary Flakes (Complete/Broken)	1/1	5/1	1/-
Secondary Flakes (Complete/Broken)	9/6	3/6	3/3
Inner Flakes (Complete/Broken)	60/68	86/69	12/6
Primary Blades (Complete/Broken)	-	-/-	-/1
Secondary Blades (Complete/Broken)	1/3	2/4	-/1
Inner Blades (Complete/Broken)	17/74	27/97	3/25
Blade Segments	51	91	17
Denticulated pieces	-	1	-
Chips	78	245	39
Chunks	8	9	5
Natural pieces	2	1	1
TOTAL	389	669	122

i) Primary technology

- 6.27 The very low representation of primary and secondary flakes, cores and core fragments throughout the three main contexts related to the knapping floor is striking, and would imply that primary knapping was not heavily represented in the overall assemblage. The virtual lack of cores probably indicates that these were curated and the fact that only nine primary flakes were recovered

from all three main contexts, strongly suggests that the cores themselves were probably well worked, but not spent, at the time of their utilisation at Marne Barracks. This may also be backed up by the very low rates of occurrence of secondary flakes and the equally low number of pieces that exhibit any degree of cortex in the assemblage.

- 6.28 Both hard-hammer and soft-hammer percussion techniques were dominant throughout the assemblage. A comparison of extant bulbs of percussion and platform type on blades and flakes (including broken examples) can be used to gain an insight into technological processes and these data are set out in Table 8.

Table 8: Bulb and platform types

Flakes						
<i>Context</i>	<i>Pronounced Bulb</i>	<i>Diffuse Bulb</i>	<i>Plain Butt</i>	<i>Facetted Butt</i>	<i>Cortical Butt</i>	<i>Dihedral Butt</i>
435	54	46	86	1	11	2
517	46	80	115	-	11	1
U/S	12	4	14	-	1	1
TOTAL	110	130	215	1	23	4
Blades						
<i>Context</i>	<i>Pronounced Bulb</i>	<i>Diffuse Bulb</i>	<i>Plain Butt</i>	<i>Facetted Butt</i>	<i>Cortical Butt</i>	<i>Dihedral Butt</i>
435	12	51	61	1	1	-
517	9	83	86	-	3	3
U/S	6	11	17	-	-	-
TOTAL	27	145	164	1	4	3

- 6.29 The dominance of plain butt types in both the flake and blade samples from all contexts where bulb and butt morphology was observable, would suggest that the parent cores were of the simple platform type. This fact, combined with the large number of diffuse bulbs of percussion, especially in the blade sample, suggests that soft hammer percussion was the dominant method of blank removal. The diagnostic features of both hard and soft-hammer forms of flaking, in terms of resultant flake morphology, have been discussed in detail by Whittaker, (1995) and Andrefsky, (1998).
- 6.30 Several blades and flakes from all contexts show evidence for hinge fracturing at the distal end. This is shown in Table 9 (overleaf). Whittaker (1995, 109) has suggested that this is likely to occur when the exterior platform angle on a core gets closer to 90 degrees. This situation arises when cores are coming to the end of their useful lives and striking platforms are becoming smaller. The phenomenon may therefore give us further insights into the size of some of the cores being processed on the site.
- ii) *Secondary technology*
- 6.31 There is also a lack of recognisable tool forms from the site and as the discussion below will show, the range of finds from all three contexts is dominated by blade segments, with associated large numbers of either the

bulbar or distal ends of snapped blades and flakes. Simple snap fractures were the preferred method used to remove the ends of flakes and blades. The clear intention was to prepare blanks that could be further modified for tool production (but see discussion below). Only one possible piece shows signs of micro-burin technique (SF 48, [U/S]).

Table 9: Blades and flakes showing evidence for hinge fracturing

Context	Blades	Flakes
435	7	16
517	8	34
U/S	1	7
Total	16	57

- 6.32 The fact that only 6 microliths (5 broken, 1 complete), seven scrapers, one denticulated piece and three utilised flakes were recorded in the whole assemblage from the three main contexts suggests that finished tools were removed from the knapping platform area, along with the cores, when the site was abandoned.
- 6.33 Again, as the discussion below will show, there is evidence for core rejuvenation in the form of a series of core trimming flakes recorded from all of the knapping platform contexts. In the main these are either ‘core tablets’ struck parallel to the core’s striking platform so as to remove the top of the core, similar to removing the top of a hard-boiled egg, or flakes struck to remove the edge of the striking platform to provide a better flaking angle as the core sizes were reduced through use.
- 6.34 Given that the surviving material suggests an emphasis on blade / bladelet production, ultimately, for the preparation of blade segments, the lack of butt faceting on blades, flakes and bladelets is of interest. Whittaker has suggested (1995, 101) that faceting is a method for removing irregularities on striking platforms and that it can also be used to change external platform angles, helping to lengthen flake removals. The lack of the technique here may be a reflection of the knapping qualities of the raw material.
- 6.35 Seventy-eight pieces show evidence for burning and thermal spalling and damage. This is shown in Table 10:

Table 10: Lithics showing evidence for burning and thermal spalling

Context	No.
435	20
517	53
U/S	5

- 6.36 A detailed discussion of recorded material by context is presented below. Scattergrams allowing the comparison of length and breadth data for complete blades and waste flakes throughout the three main contexts are shown in Figure 36. The data are highlighted in the general discussion below.

Context 435

- 6.37 This context represents a circular 'floor', some 9m in diameter, probably formed by the ad hoc pressing of pebbles into the natural surface, when necessary, to dry out puddles.

Cores / core fragments

- 6.38 None was recorded.

Scrapers

- 6.39 Three were recorded. SF 755 (Figure 33, 1) is the remains of an end scraper on the distal end of an inner blade-like flake. It has been broken obliquely to the flake's long axis and retains scraper retouch around the distal end. SF 900 (Figure 33, 2) has been retouched around the bulbar and distal ends and also along the right edge. This is a heavily burnt and spalled inner flake; the left edge has been irregularly shattered. SF 912 (Figure 33, 3) is a scraper on the distal end of a secondary flake, retaining hard fawn cortex on the dorsal face. The piece has been retouched around the distal end and snapped transversely to its long axis at the bulbar end. None of these examples would be out of place in a later Mesolithic / Early Neolithic lithic assemblage and they can be paralleled at many sites in the north of England.

Blades / bladelets

- 6.40 Three broken secondary blades, and one complete example, each retaining fawn cortex on their dorsal faces, were recorded in addition to 17 complete, and 74 broken inner blades. Of the complete inner blades, five exhibit hinge fracturing at their distal end and one example is burnt. All 18 blades have plain butts, while 14 of them exhibit diffuse bulbs and four have pronounced bulbs of percussion.
- 6.41 Of the broken blades, 36 have been broken at the bulbar end and four of these exhibit distal hinge fracturing. A further 41 examples have been snapped at the distal end. Complete blades range in length from 16mm to 50mm with a mean length of 29.8mm and in breadth from 5mm to 17mm with a mean breadth of 10.2mm.

Blade segments

- 6.42 Fifty-one examples of blade segments of varied overall size were recorded. Forty-nine were from inner flakes or blades, including one burnt example and two were from secondary flakes or blades.

Waste flakes

i) Core trimming flakes

- 6.43 Two complete and five broken examples were recorded. SF 22 is a complete core tablet exhibiting plain butt and diffuse bulb, while SF 865 has been struck to remove the edge of a striking platform. Four of the broken pieces have been struck to remove the edge of a striking platform, while one example, SF 790 has been struck from the base of the core to remove part of the striking platform.

ii) Primary flakes

- 6.44 Only one complete primary flake (SF 1090) was recorded. It measured 19 x 22 x 4mm and retained soft fawn cortex on the dorsal face. One broken example (SF 908) was also recorded. It had a cortical butt and retained hard fawn cortex on the dorsal face. It has been broken transversely to its long axis at the distal end.

iii) Secondary flakes

- 6.45 Nine complete and six broken secondary flakes were recorded. Complete flakes range in length from 15mm to 44mm with a mean length of 24.7mm and in breadth from 12mm to 43mm with a mean width of 25mm (see Figure 36). Three of the complete examples and four of the broken flakes exhibit hinge fracturing at the distal end

iv) Inner flakes

- 6.46 Sixty complete inner flakes and 68 broken examples were recorded. Three of the complete flakes and four of the broken examples exhibit hinge fracturing at the distal end. Complete inner flakes range in length from 7mm to 42mm with a mean length of 20mm and from 4mm to 46mm in breadth with a mean breadth of 15mm (see Figure 36).

Chips

- 6.47 Seventy eight irregular chips were recorded of which 4 were burnt.

Chunks

- 6.48 Eight examples were recorded

Natural pieces

- 6.49 Two 'pot lid' flakes were identified.

Context 517

Cores / core fragments

- 6.50 One complete core and three core fragments were recorded. The complete example (SF 2) has had flakes removed from at least three directions. Its maximum dimensions are 50mm x 47mm x 24mm. Of the three fragmentary examples, one (SF 37) has been burnt, and the other two (SF 497 and SF 538) are irregularly shattered. SF 538 exhibits hard fawn cortex on one face.

Microliths

- 6.51 Six examples (five broken, 1 complete) were recorded. SF 251 (Figure 33, 4) is the distal end of a possible scalene triangle exhibiting characteristic steep blunting retouch on the right edge. SF 437 (Figure 33, 5) may be another broken scalene triangle exhibiting retouch on right edge and broken obliquely to the long axis at the bulbar end. The complete example, SF 563 (Figure 33, 6), is an obliquely blunted point exhibiting a hinge a hinge fracture at the distal end and retouch on the left edge. SF 610 (Figure 33, 7) is part of a rod microlith, broken transversely to the flake's long axis at both ends, while SF 679 (Figure 33, 8) is broken transversely at the distal end and retouched on the left edge. This piece may be part of a scalene triangle. A further possible fragment was from the south quadrant of [517]. The piece may be from a rod

but it is broken transversely at both ends and exhibits retouch on the left edge (Figure 33, 9). All of these implements are classically of later Mesolithic / early Neolithic type and have many parallels throughout the north of England (see below).

Scrapers

- 6.52 Four examples were recorded. SF 183 (Figure 33, 10) is on an inner flake with a hinge fracture at the distal end. Scraper retouch is in evidence around the bulbar end. SF 390 (Figure 33, 11) is also on a roughly circular inner flake and has been retouched at the distal end. SF 641 (Figure 33, 12) is on a secondary flake with a cortical butt. This piece has been retouched at the distal end. The dorsal face retains hard fawn cortex. SF 657 (Figure 33, 13) is another end scraper on the distal end of a primary flake. It has also been retouched on both edges. The scrapers range in length from 23mm – 55mm with a mean length 30mm and in breadth from 22mm – 46mm with a mean breadth of 25mm. None of these examples would be out of place in a later Mesolithic / early Neolithic assemblage and they can be paralleled at many sites in the north of England (see below).

Utilised flakes

- 6.53 SF 666 is a large inner flake with a plain butt, a pronounced bulb of percussion and a hinge fracture at the distal end. It shows clear evidence for utilisation down its left edge.

Denticulated pieces

- 6.54 One possible example was recorded. SF 195 is a mid section blade segment broken transversely at both ends. It exhibits denticulation on the left edge (Figure 33, 14).

Blades / bladelets

- 6.55 Six secondary blade-like removals were recorded. Two are complete and four are broken. The broken examples all had their bulbar ends removed. Twenty-seven complete inner blades and 97 broken examples were also recorded. Of the broken inner blades 32 had their bulbar ends removed and 65 had been truncated at the distal end. Complete blades range from 10mm to 52 mm in length with a mean length of 30mm and in breadth from 4mm to 21mm with a mean breadth of 11mm. These data are illustrated more clearly in Figure 36.

Blade segments

- 6.56 Ninety-one examples were recorded of which 6 were burnt. Two were on pieces from secondary removals.

Chips

- 6.57 245 examples were recorded of which 32 were burnt.

Chunks

- 6.58 Nine were recorded of which one showed signs of thermal damage.

Natural pieces

- 6.59 One pot lid flake was recovered.

Waste flakes

i) Core trimming flakes

- 6.60 Eight were recorded, 7 of which had been struck to remove either a complete or partial section of striking platform edge and one (SF 721) had been struck in parallel to the core striking platform to produce a classic 'core tablet'.

ii) Primary flakes

- 6.61 Five complete and one broken primary flakes were recorded. The complete examples range in length from 13mm to 33mm with a mean length of 23mm and in breadth from 13mm to 50 mm with a mean breadth of 30 mm (see Figure 36).

iii) Secondary flakes

- 6.62 Three complete and 6 broken secondary flakes were recorded. Of the complete examples two exhibit hinge fracturing at the distal end. Complete secondary flakes range in length from 23mm to 63 mm with a mean length of 30mm and in breadth from 15mm to 32mm with a mean breadth of 22mm (see Figure 36).

iv) Inner flakes

- 6.63 Eighty-six complete inner flakes and 69 broken examples were recorded. Of the 86 complete pieces, 22 exhibit hinge fracturing at their distal ends. Complete inner flakes range in length from 7mm to 56 mm with a mean length of 19mm and in breadth from 6mm to 37mm with a mean breadth of 14.6mm (see Figure 36).

Unstratified (over 517)

- 6.64 The knapping platform was not identified until several weeks of weathering had exposed a number of chert flakes as surface finds. Since modern material (e.g. bullet casing fragments) was also found on the surface in this area, there is a possibility of sample contamination for these surface finds and therefore they have been recorded as unstratified. Most, if not all, of the lithic material in this area is likely to have been derived from Context [517] through weathering.

Core / core fragments

- 6.65 One core SF 73 (Figure 34, 15) was recorded from this context. It has two opposed platforms, set at oblique angles to each other, and retains hard fawn cortex on one face. Its maximum dimensions are 40mm x 25mm x 4mm. Core fragment SF 126 (Figure 34, 16) has shattered from a larger piece and clearly shows knapping from two directions for the manufacture of blades.

Miscellaneous retouched / utilised pieces

- 6.66 SF 77 (Figure 34, 17) represents an utilised chunk of blue / grey quartz chert. It retains traces of retouch / utilisation on one edge.

Blades

- 6.67 Only one broken secondary bladelet (SF 118) was recorded. This was broken transversely at the distal end and retains hard fawn cortex on the right edge, dorsal face.

- 6.68 Three complete and 25 broken inner blades were recorded. One of the complete examples exhibits hinge fracturing at its distal end. Of the broken blades 14 were truncated at the bulbar end and two exhibit hinge fracturing at the distal end. Eleven were broken at the distal end. SF 48 is an interesting piece. It shows clear evidence for notching on the right edge at the bulbar end and this may be the only evidence we have for the use of the micro-burin technique of microlith manufacture at the site.

Blade segments

- 6.69 Seventeen were identified, of which one was on a secondary removal retaining hard fawn cortex.

Chips

- 6.70 Thirty-nine were recorded of which four were burnt.

Chunks

- 6.71 Five were recorded of which one showed signs of intense burning.

Natural pieces

- 6.72 One pot lid flake was recovered.

Waste flakes

i) Core trimming flakes

- 6.73 One complete example (SF 106) was recorded. This was a core tablet struck in parallel to the existing striking platform. It has a hinge fracture at the distal end. One broken example (SF 70) had been struck to remove the edge of the striking platform and had subsequently been truncated transversely at the bulbar end.

ii) Primary flakes

- 6.74 One complete example (SF 151) retains hard smooth grey cortex.

iii) Secondary flakes

- 6.75 Three complete and three broken examples were recorded. All retain hard fawn cortex on the dorsal face. Complete flakes range in length from 25mm to 48mm with a mean length of 40.3mm and in breadth from 18mm to 25mm with a mean breadth of 21.6mm.

iv) Inner flakes

- 6.76 Twelve complete inner flakes and six broken examples were recorded. Of the six broken examples, three were truncated at the bulbar end, one at the distal end and two were broken at both ends. Complete inner flakes range in length from 12mm to 33mm with a mean length of 23.3mm and in breadth from 8mm to 29mm with a mean breadth of 16.5mm.

Finds from other contexts

- 6.77 It is interesting to note that finds of flint come from the other contexts on the site. Of particular note is SF 2 (Figure 34, 18) from Context [104], a medieval silt. This is an end scraper on a dark grey inner flint flake. SF 4 (Figure 34, 19), a grey brown inner flint flake which has been retouched on both edges

comes from Context [3], the subsoil just outside a Roman ditch, while SF 23 a dark grey mottled secondary flint flake and SF 5 a broken, brown, translucent flint blade both come from Context [312], the fill of the ditch itself. SF 7 a grey mottled inner flint flake comes from Context [266], an undated silt.

- 6.78 Three chert flakes come from Context [189], the palaeo-channel that ran around the knapping platform and two pieces of flint SF 1071, 1072 and one chert chunk come from Context [436], the fill of a post setting from the Neolithic enclosure. The fills of three other post settings in the enclosure ([521], [706] and [716]) also produced chert pieces.

General observations / discussion

- 6.79 The main assemblage of material from the knapping platform and related contexts would appear to be Later Mesolithic / early Neolithic in terms of broad date. The broken microlith forms would lend support to this and the radiocarbon date from a charred hazelnut shell in Context [517] might give a good *terminus ante quem* date for the assemblage.
- 6.80 The overall aim at the site seems to have been the production of serviceable blanks for further tool manufacture. This is suggested by the number of blades, blade segments and broken distal and bulbar blade / flake ends present in the assemblage. The lack of cores and other recognisable tool types would also suggest that this was a manufacturing site and that the finished articles may well have been removed when the site was abandoned. The technology employed seems to have been fairly straightforward with both hard and soft-hammer percussion being evidenced in the surviving material. What is of interest however, is the lack of evidence for the utilisation of the micro-burin technique for the removal of either bulbar or distal ends of flakes. The technique employed at Marne Barracks seems to have been simple snap fracturing. The emphasis on blade production is broadly confirmed by the examination of Figure 36 which shows length / breadth data in the form of a scattergram for complete blades and complete waste flakes.
- 6.81 In general, all of the recognisable implement forms have clear parallels on a range of Mesolithic sites throughout the north of England (see for example: Radley and Marshall, 1963-66; Radley, 1968-1970; Cowling, 1973; Spratt *et al.* 1976; Gilks, 1994; Young, 1987; Coggins *et al.* 1989; Coggins and Fairless 1997; Waughman, 1996; Harbord, 1997; Waddington, 1999; 2004).
- 6.82 Blades segments may well have been produced to act as the blanks for microlith manufacture, but we should not overlook the possibility that their production may have been an end in itself at the site. If the segments were mounted in linear fashion in a wooden haft they would have permitted the construction of cutting edges far longer than was possible with the use of a single blade or flake. As such they may themselves, in an un-retouched state, have constituted the main armatures or elements in specific composite tools.
- 6.83 Figure 36 is a series of scattergrams showing length and breadth ratios for complete blades, bladelets, blade-like flakes and 'waste' flakes. As can be seen from the diagrams, the range of complete material from the U/S

assemblage is limited and will not receive further discussion. When considering the data from Contexts [435] and [517] however, an interesting picture emerges.

- 6.84 If one looks at the numbers of flakes / blades / bladelets contained in the arbitrary 20mm x 20mm boxes on each diagram it is quite clearly the case that the artefacts from Context [435] would appear to be larger than those from Context [517] at the point of discard. Published scattergrams for Mesolithic / early Neolithic material in the north of England are few and far between, but the Marne Barracks diagrams bear a close resemblance to those available from Weardale and Teesdale to the north. The distribution pattern from Context [517] is very similar to that from Middle Hurth in Teesdale (Young in Coggins and Fairless, 1997, 14, Fig. 11), while that from Context [435] shows close parallels with a range of sites in Weardale (Young, 1987, various Figs.).
- 6.85 Very few Mesolithic / early Neolithic sites have been excavated in the north of England in recent years and parallels for the Marne Barracks assemblage, with its concentration on blade segment / blade production, are very rare in available published sources. The writer encountered only one other site with a similar lithic assemblage composition. This was the potentially early / later Mesolithic site of Highcliff Nab at Guisborough (Rowe in Waughman, 1996). Here, cores and primary flakes were few in number and a similar pattern of core reduction seems to be visible (Rowe, 1996, 10). Rowe suggests as, has been done for this site, that 'parent nodules or pebbles were reduced elsewhere and prepared cores brought to the site where in the main an expedient blade based technology dominated' (Rowe, 1996, 10-11). A similar pattern of snap fracturing with no evidence of the micro-burin technique was also observed. Rowe also suggests that the blade segments produced at the site may have been taken away from Highcliff Nab for further working elsewhere (Rowe, 1996, 11).
- 6.86 Waughman has interpreted the Highcliff site as a transit site, occupied in the course of seasonal migrations from the valleys to the high moors. Her argument is based on the lack of domestic activity as seemingly indicated by the recovered flint assemblage. A similar suggestion could be made for the Marne Barracks site on the basis of the low representation of recognisable tool types in the assemblage. Conversely it may be that the site was occupied for a longer period of time with the sole aim of exploiting available flint resources to manufacture tool types and blanks for future use at other locations.

Animal bone

- 6.87 Four post-medieval contexts produced faunal remains. Details are provided in Table 11. Preservation is not good; the bones are flaking and crumbling. Most of the bone fragments were not identifiable. Context [84] produced three horse teeth which all appear to derive from one lower jaw. All the remaining identifiable finds from all contexts were of cattle. These are mostly teeth. One distal humerus has characteristic dog gnawing marks. No further work can be done on this small group.

Table 11: Animal bone data

Context	Species	Comments
71	Cow	Tooth enamel frags.
84	Horse	x3 maxillary teeth in wear
84	Cow	Tib dist unfused
88	Cow	Jaw M1 & M2 in wear
88	Cow	Hum dist chewed
88	Cow	Ilm
88	Cow	UM3
88	Cow	UPM3 in wear
88	Cow	Frag UM1/2
107	Cow	LM3 in wear
107	Cow	UM1/2 slight wear

Clay pipe

- 6.88 *Unstratified*
4 stem fragments (Discarded)
Context [107]
1 stem fragment, 8mm dia, 28mm long.

Glass

- 6.89 *Unstratified*
3 sherds of modern bottle glass (Discarded)
Context [94]
2 conjoining body sherds with fresh break from a thin-walled vessel in blue-green glass. From a post-medieval context.
Context [98]
1 sherd of green glass. From a post-medieval context.

Building materials

- 6.90 *Unstratified*
14 brick fragments, all of 20th century manufacture (Discarded)
6 tile fragments from the clay-tile land drains present across the site (Discarded)

Stone objects

- 6.91 *Context [599]*
Rounded sandstone cobble, dimensions: 164 x 144 x 92 mm, D-shaped in section, with a rounded base and an almost flat top. There is a central deep pecked hollow (D 54 x 59, 14 mm deep) and a second incipient pecked area (25 x 23 x 2.5 mm) on the flat surface. The main hollow has well-defined peck marks c.2-3mm dia; its regular shape suggests it was manufactured rather than arising from wear (Figure 35a).
- 6.92 Found sparsely and discontinuously over much of the stone's surface (top and underside), but concentrated in the depression, are spots of a dark coloured deposit. This was examined under x16 magnification, and was found to be smooth in appearance and compressed into small pits in the stone. A sample

was placed in various solvents, but did not dissolve in either industrial methylated spirit, acetone, toluene or white spirit. This would suggest that the deposit is not organic in origin. A further sample, and also the whole stone, was analysed using EDXRF analysis. Analysis detected only iron and manganese - elements which would be expected in an analysis of sandstone. It is possible that the deposit examined is compressed 'dirt' or soil fragments, which have become concentrated in the protected depression on the stone's surface. Other possibilities cannot be confirmed using available analysis techniques.

- 6.93 A number of conflicting interpretations have been suggested for this object:
- The stone was a Mesolithic / early Neolithic anvil stone with the apparent cup-marking being a consequence of its use for knapping small flint pebbles. In this case the shape would allow the stone to be bedded into the ground in use, while the incipient marks beside the main hollow suggest wear arising from use. Similar 'cup-marks' have been found on other Mesolithic / early Neolithic working floors in Scotland and Northern England and are associated with the knapping of small, river-worked flint pebbles. The location of this context, less than 3m from the knapping floor, supports this suggestion. Since the pit cuts the Neolithic palisade, the stone would be residual in this case (Dr M White pers. comm.);
 - The hollow had been designed as a receptacle for pounding or grinding functions. As with the above explanation, its shape would allow it to be bedded into the ground in use. It could have been a mortar for grinding pigments or a knocking stone for dehusking barley (Dr F Hunter pers. comm.);
 - The hollow had been deliberately created to form a portable cup-marked stone for ritual use (Dr M Diaz-Andreu pers. comm.).

6.94 *Context [262]*
Crinoid stem fragment ('Cuddy's Bead'), 6mm diameter, 11mm long

6.95 *Context [860]*
Squared-off sandstone cobble, 280mm by 210mm by 140mm. Circular pivot hole 60mm in diameter and 37mm in depth on top surface. Smooth base and partially smoothed sides to pivot hole. Lime-mortar fragments attached to surface of stone.

Iron objects

- 6.96 *Unstratified*
1 Fe strip, 45mm by 20mm by 10mm, little corroded (Discarded)
1 crescent-shaped sheet of iron, 110mm long, 35mm wide, tapering to 15mm wide at horn of crescent. 10mm thick
Context [26]
1 pick head, little corroded (Discarded)
1 shovel head, little corroded (Discarded)
1 bark scraper head, 140mm by 68mm by 40mm, moderately corroded
Context [68]
1 scythe head, 285mm by 18mm by 5mm, moderately corroded

Context [141] (SF 3)

2 links of a chain, each link 50mm by 25mm, made from 5mm diameter wire, moderately corroded

Copper alloy objects

6.97 *Unstratified*

4 machined copper strips, little corroded (Discarded)
4 pennies dated 1914, 1918, 1919 and 192(?), all from north end of area 2
1 brass button, 16mm diameter, uncorroded (SF 52)
1 Cu alloy button, 25mm diameter, irregular in shape, heavily corroded

Context [279] (SF 8) Figure 35

- 6.98 Copper-alloy ring (incomplete). Internal diameter: 15mm, thickness 1.5–2.5mm. D-section. The ring is very corroded and pitted, and only a little of the original surface remains, mainly on the interior of the hoop; scalloped indentations on the edge might be traces of decoration, but their location on the inside edge, rather than on the exterior, makes it likely that this is just the effect of corrosion. From what remains it is impossible to determine if this was originally a spiral finger/toe ring, the commonest type in use during the Iron Age and surviving into the Roman period. The terminals are also lost and with no defining elements present it is impossible to confirm if this was used as a personal ornament, such as those known from the local area (for example, Cool 1990; Duncan 2001; Stead 1991, 92), or may have had any other use. Found in context dated to Cal 170 BC to AD 60. (Figure 35b).

Industrial residues

6.99 *Context [89]*

1 lump of metal-working slag

Conservation

Context [279] (SF 8)

- 6.100 Part of a copper-alloy ring, Very little of the original surface remains – most being very disrupted and pitted. The corrosion surface is grey / green in colour, suggesting high tin / lead levels in the alloy. Surface EDXRF analysis found the alloy to be a leaded bronze. High levels of tin and lead were detected, but these are likely to have been elevated by disproportionate deposition of elements from the alloy at the surface during burial.
- 6.101 The object should be stored in an airtight container at a stable temperature and below 40% RH, to inhibit further corrosion. The RH should be controlled by active silica gel, which is regularly monitored and regenerated as necessary.

7. The environmental evidence

Methods statement

- 7.1 Plant macrofossil assessments were carried out on 147 bulk samples and preservation of plant remains was poor in most of them (Archaeological Services 2005b). Five litres from each sample were manually floated and sieved through a 500 µ mesh. The residues were retained, described and

scanned using a magnet for ferrous fragments. The flots were dried slowly and scanned at x 40 magnification for waterlogged and charred botanical remains. Identification of these was undertaken by comparison with modern reference material held in the Environmental Laboratory at Archaeological Services, Durham University. Total numbers of remains per species were logged and the results were interpreted in their archaeological and palaeoecological contexts. Plant taxonomic nomenclature follows Stace (1997).

- 7.2 Six samples were recommended for full analysis based on their concentration of charred remains and potential to provide information about economic and agricultural practices during Roman and later phases of occupation of the site. Contexts [71] and [251] were from shallow linear gullies on the western side of the site which may have formed part of a Romano-British field system. Contexts [686] and [704] were from a large multi-phase ditch system that ran north-south through areas 4 and 5 while [132] and [129] were from the possibly related ditch system that ran east-west through area 5. All of the remaining material from these samples was processed using the same techniques as for the assessment.
- 7.3 In addition, [26] (a dark brown soil horizon) was sampled in the field using a 25cm long monolith tin. In the laboratory, a sample was extracted from the top, middle and bottom of the tin for pollen assessment. One ml of sediment from each was assessed. Pollen was extracted using sodium hydroxide to remove humic and fulvic acids and a heavy liquid technique to separate the pollen from minerogenic material. The pollen was mounted in silicone fluid and scanned at high magnification for 5 traverses of a 22 x 40mm coverslip. Identification of pollen and spores was undertaken by comparison with modern reference material.

Results

- 7.4 Most samples produced low volumes of flots in which few plant remains were preserved. Only 22 (including the 6 samples fully analysed) contained charred seeds, most of which were present in very low numbers. They included grains of barley and wheat, and chaff of emmer and spelt wheat. Fragments of hazelnut, ribwort plantain, cleavers, grass and dock also occurred charred occasionally. Uncharred seeds included fat-hen, fumitory, knotgrass, clover and elder. The samples also contained small amounts of bone, charcoal, coal, flint fragments, insects and modern roots. The contents of the flots are listed in Appendix 2, Table 2.
- 7.5 Amongst the fully analysed samples, the flots from [71] and [251] were dominated by charred oats and indeterminate cereal grains. A few *Hordeum* sp (barley), *Triticum* sp (wheat) and *Corylus avellana* (hazelnut) shell fragments were also present. A few *Triticum* sp grains occurred in both [686] and [704] and *Hordeum* sp was present in [686]. Chaff of *Triticum spelta* (spelt) and *Triticum dicoccum* (emmer) were recorded in [704], in addition to a few *Avena* sp (oat) grains. *Triticum spelta* chaff was also present in [132] and [129] and *Avena* sp grains, *Triticum* sp grains and an *Arrhenatherum elatius* (onion couch) tuber were also recorded. The aerobic, well-drained nature of the sediment allowed the penetration of modern roots that were present in small

quantities in many of the flots. The uncharred seeds of *Chenopodium album* (fat-hen), *Fumaria* sp (fumitory), *Polygonum aviculare* (knotgrass), *Trifolium* sp (clover) and *Sambucus nigra* (elder), in addition to the fragments of insects and molluscs, are likely to be later introductions.

- 7.6 Pollen was either absent or very badly degraded in all three samples from [26]. Microscopic charcoal and fungal spores were present. The results are listed in Appendix 2, Table 3.

Discussion

Phase 0

- 7.7 Plant macrofossil and pollen assessments of material from palaeo-channel [26] could provide little palaeoecological information due to their absence and very poor preservation respectively (Archaeological Services 2005b). Microscopic charcoal was recorded in the pollen assessments, which may relate to natural fires or human activity.

Phase 1 (early Neolithic)

- 7.8 Fragments of flint occurred in the residues of [517], the knapping floor, and also in [189], [308] and [388], where they are likely to be residual. The only plant remain recovered from the knapping floor was a charred hazelnut fragment in [517]. Wild foods such as nuts would have formed an important part of the diet at this time and pollen records show that the regional landscape was dominated by a closed canopy of hazel scrub (Innes and Blackford 2003). An indeterminate cereal grain occurred in [189], the fill of a palaeo-channel which bounded the knapping platform.

Phase 2 (late Neolithic)

- 7.9 Environmental evidence from the late Neolithic enclosure was limited. The postholes from the outer and inner palisades and within the enclosure contained only charcoal, presumably from the burnt posts. The only charred macrofossil was a *Plantago lanceolata* (ribwort plantain) seed in [521], an inner post of the outer palisade. Ribwort plantain may have been growing in an area of pasture or waste ground near the site. Charred remains were absent from the slot fills. A glume base of either *Triticum dicoccum* or *Triticum spelta* wheat occurred in [714], the fill of a pit outside the enclosure. Glume wheats have been cultivated in northern England from the Neolithic to the Roman period and therefore the botanical evidence does not help to establish the relationship between the pit and the palisaded enclosure.

Phase 3 (Iron Age / Roman)

- 7.10 Plant remains were recovered from various contexts associated with the east-west ditch system in area 5. Context [129] contained a number of *Triticum spelta* glume bases, a few *Avena* sp grains, and a *Triticum* sp and hulled *Hordeum* sp grain. Context [132] contained a similar assemblage of charred botanical remains. *Triticum spelta* wheat glume bases were abundant, with a few *Avena* sp and *Triticum* sp grains also recorded. *Triticum spelta* was the most common wheat used in northern England during the Roman Period

(Huntley & Stallibrass 1995), and the abundance of *Triticum spelta* chaff in these samples reiterates the Roman date of the ditch system. In the absence of chaff, it was not possible to identify whether the *Avena* sp grains were from wild or cultivated populations. One of the *Triticum* sp grains from [132] had the characteristic shape most often associated with *Triticum aestivum* (bread wheat), suggesting that this crop was also being cultivated. The plant remains from the Roman deposits at Thornbrough Farm (Huntley 2002) indicate a similar cereal assemblage dominated by hulled *Hordeum* sp, with lesser amounts of *Triticum spelta*, *Triticum aestivum* and some *Avena* sp.

- 7.11 A charred tuber of *Arrhenatherum elatius* occurred in context [132]. These tubers most frequently occur at sites of Neolithic or Bronze Age date and are believed to have been used as kindling for funeral pyres or more rarely as a food source (Robinson 1988; Godwin 1975). It would have grown in an area of ungrazed grassland, which would have needed to be maintained by cutting to prevent its succession to scrub and woodland (Rodwell 1992). The tuber is likely to have been reworked from material that accumulated during the Neolithic activities at the site.
- 7.12 In the north-south ditch system, [686] and [704] contained charred plant remains. Chaff was abundant in [704], mainly *Triticum spelta*, but three *Triticum dicoccum* wheat glume bases were also present. A *Hordeum* sp grain occurred in [686] and three *Avena* sp grains were recorded in [704]. A few *Triticum* sp grains were present in both contexts. The predominance of *Triticum spelta* wheat chaff suggests the use of the ditch system during the Roman period, and the broad similarity of charred assemblages from the two sections of the ditch system may indicate that they were related. It is likely that the *Triticum dicoccum* chaff was reworked from older material, as this species of wheat was abundant in northern England during the Neolithic and Bronze Age (Huntley & Stallibrass 1995). Again, the few *Avena* sp grains in [704] may be from wild plants.
- 7.13 The high proportion of chaff fragments relative to cereal grains in both sections of the ditch system suggests that the cereals were processed locally and the ditch fills accumulated as a result of the disposal of crop-processing waste. Charred seeds of arable weeds such as *Chenopodium album*, *Raphanus raphanistrum* (wild radish), Poaceae (grasses) and *Rumex* sp (dock) also occurred.
- 7.14 The ditch systems would appear to form part of a larger area of Roman farming activity. Romano-British field systems occur to both the north and the south of the runway (Geoquest Associates 1994; Archaeological Services 2002) and also to the west of the A1 (Wilson 1984; Wilson 2002; Archaeological Services 2005a). Six-row hulled barley and spelt were the main crops that were cultivated around the Catterick area (Huntley 2002), and spelt chaff dominated the charred plant remains from a pottery kiln found during the A1 evaluation (Busby *et al* 1996). This was interpreted as having been used as fuel. It has been suggested that the Catterick area was favourable for cereal production during Roman times as spelt glume bases from a kiln at Scorton (Huntley 1996) are of a larger size than those from other northern

sites. Major changes in the pollen, plant macrofossil and sedimentary records at Healam Beck were also attributed to Roman farming activity in the region (Long *et al.* 2005).

Phase 4 (early medieval)

- 7.15 A charred cereal grain from [251], a fill of the field system, has been dated to the early medieval period. The charred remains from this context were dominated by *Hordeum* sp and indeterminate cereal grains and a few *Triticum* sp grains also occurred. Charred hazelnut fragments suggest that wild foods also formed a part of the diet.

Phase 6 (post-medieval)

- 7.16 Charred plant remains were present in context [71], the fill of an undated gully. Since bone fragments were present, and these do not elsewhere survive for long in the acid soil, it is thought to be of post-medieval date. The plant remains were dominated by charred *Hordeum* sp and indeterminate cereal grains and a few *Triticum* sp grains also occurred. Although *Triticum aestivum* chaff was absent, the wheat grains resembled those of this species. A few *Avena* sp grains also occurred in [71]. The combination of barley, oats and possible bread wheat normally indicates an early medieval or medieval date, although all of these cereals were also used in the post-medieval period.

8. Conclusions

- 8.1 The excavations at Marne Barracks have identified archaeological deposits from a number of different periods. These have been assessed and ranked in importance on a scale ranging from ‘local’ through ‘regional’ to ‘national’ importance.
- 8.2 The earliest archaeological deposit was an early Neolithic knapping floor, containing over 1100 flint flakes, all debitage from tool manufacture. This floor was situated in a bend of a palaeo-channel of the River Swale. Several other palaeo-channels were identified across the site and all were earlier than any other archaeological feature on the site (except for this knapping floor). Due to the low population density throughout Britain at the time, similar sites are rare. Therefore this site is of regional archaeological significance.
- 8.3 Overlying the knapping floor was a large late Neolithic palisaded enclosure, consisting of two concentric sub-circular palisades that enclosed a total area of c.2.75ha. Each palisade was formed from a series of closely spaced radial slots separated from each other by a narrow gap of c.0.1m. On excavation all the slots resolved into two postholes at depth, indicating that each palisade had consisted of a double circle of posts. Most of these on the western side of the monument had been sufficiently carbonised for the posts to be identifiable. The start of construction of the enclosure has been radiocarbon dated to Cal 2530 – 2310 BC.
- 8.4 The enclosure had entrances on the northern and eastern sides with the latter entrance containing a line of smaller stakes. Similar stakes were not identified

in the northern entrance although post-depositional conditions here were not conducive to the survival of such evidence. A number of postholes were present in approximately the centre of the enclosure although they formed no recognisable pattern and were all undated, so it is not known whether they were related to the enclosure or not.

- 8.5 Palisaded enclosures of Neolithic date are an extremely rare monument type and the Marne Barracks enclosure exhibits significant differences to other known examples. It is therefore in many respects unique and should be regarded as a discovery of national importance.
- 8.6 Two areas of sinuous, multi-phase ditch were present towards the east of the excavation. These had been radiocarbon dated to the Iron Age during the evaluation but produced Roman pottery during the excavation. A date range of BC 50 to 150 AD is consistent with both the radiocarbon and the ceramic evidence. Another Iron Age gully was identified through radiocarbon sampling and a 2nd century AD broken vessel was recovered from the base of a 1930s levelling deposit. These dates are significantly earlier than those of other known Iron Age / Roman features from Marne Barracks and the surrounding area. Because of this, these deposits are of regional archaeological significance.
- 8.7 Two shallow linear gullies produced early medieval radiocarbon dates. A third gully was possibly related on stratigraphic grounds. Medieval land use was represented by remnants of furrows from ridge and furrow field systems.
- 8.8 The post-medieval Oran Road survived at the southern end of the site and proved to be a well-made road with a kerb on each side and a gravel surface. A stone culvert ran under it to a soakaway pit on the east side. Less well preserved remains of the road survived along the northern edge of the site. Ditches associated with a second track and former field boundaries were identified; these are all shown on early maps of the area. Other post-medieval deposits consisted of a field clearance cairn and a few pits. All these deposits are of local archaeological significance.
- 8.9 Much of the site was covered with up to 1m of infill dating from the levelling of the airfield in the 1930s. Smaller areas showed evidence for truncation of deposits at this time. The depth of this cut and fill was consistent with depths shown on contemporary proposal plans for the development of the airfield. A circular brick structure (possibly a sentry box) and a slit trench underlay this infill while a brick path (possibly running round a former radio mast) and two concrete blocks that may once have held targets overlay the infill. These deposits are of local archaeological significance.

9. References

- Andrefsky, W, (1998) *Lithics: Macroscopic Approaches to Analysis*, Cambridge Manuals in Archaeology, Cambridge
- Archaeological Services (2001a) *Archaeological Investigations at Marne Barracks, Catterick Garrison, North Yorkshire. Phase 1: Assessment report*. Unpublished Archaeological Services Report 703, Archaeological Services Durham University
- Archaeological Services (2001b) *Archaeological Investigations at Marne Barracks, Catterick Garrison, North Yorkshire. Phase 2: Geophysical evaluation*. Unpublished Archaeological Services Report 801, Archaeological Services Durham University
- Archaeological Services (2002) *Archaeological Investigations at Marne Barracks, Catterick Garrison, North Yorkshire. Phase 3: Evaluation*. Archaeological Services Report 911 for GVA Grimley and Ministry of Defence; Archaeological Services Durham University
- Archaeological Services (2003) *National Army Museum (North), Marne Barracks, Catterick, North Yorkshire: archaeological monitoring*. Archaeological Services Report 982 for Babtie Group; Archaeological Services Durham University
- Archaeological Services (2004) *Marne Barracks, Catterick, North Yorkshire: Archaeological Investigations: Costed project design DH04.56 (revised)* for Gallifordtry Construction Limited; Archaeological Services Durham University
- Archaeological Services (2005a) *A1(T) Dishforth to Barton Improvement, North Yorkshire: geophysical surveys*. Archaeological Services Report 1121, Vols I-III, Archaeological Services University Durham
- Archaeological Services (2005b) *Marne Barracks, Catterick, North Yorkshire archaeological excavation: assessment*, Archaeological Services report **1219**, for Debut Management Services and Defence Estates, Archaeological Services Durham University
- Atkinson, RJC, (1985) Worms, charcoal and postholes, *Antiquity* **59**, 47-8
- Barrett, JC, (1994) *Fragments from Antiquity: An Archaeology of Social Life in Britain, 2900-1200 BC*, Oxford.
- Bronk Ramsey, C, (1995) Radiocarbon Calibration and Analysis of Stratigraphy: The OxCal Program, *Radiocarbon* **37 (2)**, 425-430
- Bronk Ramsey, C, (2001) Development of the Radiocarbon Program OxCal, *Radiocarbon* **43 (2A)**, 381-389
- Buck, CE, Litton, C, and Cavanagh, W, (1996) *Bayesian approach to interpreting archaeological data*, Chichester
- Busby, P, Evans, J, Huntley, JP, Wilson, PR, (1996) The Catterick Pottery Kiln, *Britannia*, **27**, 283-97
- Cardwell, P, & Speed, G, (1996) Excavation of the Hospital of St Giles by Brompton Bridge, North Yorkshire, *Durham Archaeological Journal*, **12**, 27-40.

- Cool, HEM, 1990 'Silver and copper-alloy objects', in Wrathmell, S, and Nicholson, A, (eds), Dalton Parlours. Iron Age settlement and Roman villa, *Yorkshire Archaeology* 3, 79–92
- Coggins, D, Laurie, T, and Young, R, (1989) 'The late upper Palaeolithic and Mesolithic of the north Pennine dales in the light of recent research'. In C. Bonsall (ed.) *The Mesolithic in Europe. Papers presented at the Third International Symposium, Edinburgh, 1985*. Edinburgh, 164-174
- Coggins, D, and Fairless, K, (1997) 'Ritual succession? Excavations at the multi-period site of Middle Hurth, Upper Teesdale, Co. Durham, 1978-79'. *Durham Archaeological Journal*, 13, 1-20
- Cosgrave, B, & Mynors, RAB, (1969) eds. *Bede's Ecclesiastical History of the English People*. Oxford
- Cowling, ET, (1973) 'A Mesolithic flint site: The Sandbeds, Otley, Yorkshire.' *Yorkshire Archaeological Journal*, 45, 1-12
- CPAT (2004) Information from internet website
<http://www.cpat.org.uk/projects/longer/pfr/pfrad/pfrad.htm>
- Duncan, H, (2001) 'The metalwork', in Roberts, I, Burgess, A, and Berg, D, (eds), A new link to the past. The archaeological landscape of the M1-A1 link road, *Yorkshire Archaeology* 7, 184–187
- English Heritage (1992) *Management of Archaeological Projects*, 2nd edition, English Heritage, London
- English Heritage (1998) *Exploring Our Past - implementation plan (Draft)*, English Heritage, London
- Exon et al 2000, *Stonehenge Landscapes*, 64-6, Oxford
- Francis, P, (2001) *RAF Catterick: Historic Aerodrome Survey*, unpublished report for Archaeological Services University of Durham
- GeoQuest Associates (1994) *Archaeological Excavations at RAF Catterick, North Yorkshire, 1994*. Unpublished report for Trafalgar House Construction Management Ltd
- GeoQuest Associates (1997) *An archaeological assessment of the proposed Scorton Quarry Extension, Brompton-on-Swale, North Yorkshire*. Unpublished report for Tilcon North Ltd
- Gibson, AM, (1998) Hindwell and Neolithic Palisades of Britain and Ireland, in Gibson, A, & Simpson, D, (eds). *Prehistoric Ritual and Religion: Essays in Honour of Aubrey Burl* 68-79.
- Gibson, AM, (1999) *The Walton basin project: excavation and survey in a Prehistoric landscape, 1993-7*: Council for British Archaeology, York
- Gibson, AM, ed. (2002) Behind Wooden Walls: Neolithic Palisaded Enclosures in Europe, *BAR International Series* 1013, 5-22.
- Gilks, JA, (1994) Early Mesolithic sites at Nab Water, Oxenhope Moor, West Yorkshire. *Yorkshire Archaeological Journal*, 66, 1-19
- Godwin, H, (1975) *History of the British Flora. A factual basis for Phytogeography*, 2nd Edition, Cambridge

- GVA Grimley (2000) *Establishment Development Plan for Marne Barracks, Catterick Garrison*. Report for Defence Estates.
- Harbord, NH, (1996) 'A North York moors Mesolithic marginal site on Highcliff Nab, Guisborough.' *Durham Archaeological Journal*, **12**, 17-26
- Hartwell, B, (1998) The Ballynahatty complex, in Gibson, A, & Simpson, D, (eds) *Prehistoric Ritual and Religion: Essays in Honour of Aubrey Burl*, 32-44
- Hildyard, EJW, (1955) A Roman and Saxon site at Catterick. *Yorkshire Archaeological Journal* 38, 241-245.
- Huntley, JP, (1996) *Scorton Quarry, near Catterick: SC96. An assessment of the environmental samples*, Durham Environmental Archaeology Report **32/96**
- Huntley, JP, (2002) The Plant Remains, in Wilson PR (ed) *Cataractonium. Roman Catterick and its hinterland, Excavations and research, 1958-1997*, English Heritage, CBA Research Report **129**, Council for British Archaeology
- Huntley, JP, & Stallibrass, S, (1995) *Plant and vertebrate remains from archaeological sites in northern England: data reviews and future directions*. Architectural and Archaeological Society of Durham and Northumberland, Research Report No. 4, 259.
- Innes, JB, & Blackford, JJ, (2003) Yorkshire's palaeoenvironmental resource. In Manby TG, Moorehouse S, & Otaway P, (eds) *The Archaeology of Yorkshire*. Yorks. Archaeol. Soc. Occasional Paper **3**, 25-30, York
- Lelong, O & Pollard, T, (1998) The excavation and survey of prehistoric enclosures at Blackhouse Burn, Lanarkshire, *Proc Soc Antiq Scot* **128**, 13-53
- Long, AJ, O'Brien, CE, Rutherford, M, Wynne, S, Davis S, & Innes, JB, (2005) *A1 palaeoecological survey*. Durham University unpublished report
- MacLauchlan, H, (1849) On the Roman Roads, Camps and Other Earthworks between the Tees and the Swale in the North Riding of the County of York. *Archaeological Journal* 6, 335-351
- MacLeod, D, (2002) Cropmarks in the A1 corridor between Catterick and Brompton-on-Swale, in Wilson, PR, (2002) *Roman Catterick (Cataractonium): A Roman town and its hinterland. Excavations and research 1958-1997*. CBA Research Report 128, Council for British Archaeology
- Makey, P, (1994) Lithics, in Wilson, PR, (1994) *A1 Motorway Leeming to Scotch Corner central sector, Stage 3 archaeological assessment field survey report*, unpublished report for WS Atkins-Northern & Highways Agency.

- Manby, TG, (1988) 'The Neolithic period in Eastern Yorkshire'. In T.G. Manby (ed.) *Archaeology in Eastern Yorkshire: Essays in Honour of T.C.M. Brewster*, 35 – 88
- Mercer, RJ, (1981) The excavation of a late Neolithic henge-type enclosure at Balfarg, Markinch, Scotland, *proc.soc. antiq. Scot.* **111**, 63-171
- Moloney, C, Holbrey, R, Wheelhouse, P, and Roberts, I, (2003) Catterick Racecourse, North Yorkshire: The reuse and adaption of a monument from prehistoric to Anglian times, *Archaeological Services (WYAS) Publications* **4** Wakefield
- NAA (2000) Recent work by Northern Archaeological Associates. *CBA Forum* **2000**
- Radley, J, (1968-1970) 'The Mesolithic period in north-east Yorkshire', *Yorkshire Archaeological Journal*, **47**, 314-327
- Radley, J, and Marshall, G, (1963-66) 'Mesolithic sites in south-west Yorkshire', *Yorkshire Archaeological Journal*, **41**, 81-97
- Reimer, PJ, Baillie, MGL, Bard, E, Bayliss, A, Warren Beck, J, Chanda, J, Bertrand, H, Blackwell, PG, Buck, CE, Burr, GS, Cutler, KB, Damon, PE, Edwards, RL, Fairbanks, RG, Friedrich, M, Guilderson, TP, Hogg, AG, Hughen, KA, Kromer, B, McCormac, G, Manning, S, Bronk Ramsey, C, Reimer, RW, Remmele, S, Southon, JR, Stuiver, M, Talamo, S, Taylor, FW, van der Plicht, J, and Weyhenmeyer, CE, (2004) IntCal04 Terrestrial Radiocarbon Age Calibration, 0-26 Cal Kyr BP, *Radiocarbon* **46** 1029-1058
- Roberts, I, (2005) Ferrybridge Henge: The Ritual Landscape, *Yorkshire Archaeology* **10**
- Robinson, M, (1988) The significance of the tubers of *Arrhenatherum elatius* (L.) Beauv. from Site 4, cremation 15/11, in Lambrick, G. (ed) *The Rollright Stones: Megaliths, monuments and settlement in the prehistoric landscape*, English Heritage Archaeological Report **6**
- Rodwell, JS, (1992) *British plant communities, volume 3, grasslands and montane communities*, Cambridge
- Rowe, P, (1996) 'The Flint'. In M. Waughman, 'Excavation of a Mesolithic site at Highcliff Nab, Guisborough', *Durham Archaeological Journal*, **12**, 1-15
- Speak, S, and Burgess, CB, (1999) Meldon Bridge: a centre of the third millennium BC in Peebleshire, *Proc. Soc. Antiq. Scotland* **129**, 1-118
- Spratt, DA, Goddard, RE, and Brown, DR, (1976) 'Mesolithic settlement sites at Uppleatham, Cleveland', *Yorkshire Archaeological Journal*, **48**, 19-26
- Stace, C, (1997) *New Flora of the British Isles*, 2nd Edition. Cambridge.
- Stead, IM, (1991) *Iron Age cemeteries in East Yorkshire. Excavations at Burton Fleming, Rudston, Garton-on-the-Wolds, and Kirkburn*, English Heritage Archaeological Report **22**

- Topping, P, (1982) Excavation at the Cursus at Scorton, North Yorkshire, 1978, *Yorkshire Archaeological Journal* **54**, 7-21.
- Thomas, J, (2003) Information from internet website
<http://orgs.man.ac.uk/research/dunragit/>
- Waddington, C, (1999) *A Landscape Archaeological Study of the Mesolithic-Neolithic in the Milfield Basin, Northumberland*. British Archaeological Reports, British Series, **291**. Oxford
- Waddington, C, (2004) *The Joy of Flint*. Newcastle upon Tyne
- Wainwright, G.J, (1979) *Mount Pleasant, Dorset; excavations 1970-71*, Society of Antiquaries, London
- Ward, GK., and Wilson SR, (1978) Procedures for comparing radiocarbon age determinations: a critique, *Archaeometry* **20 (1)** 19-31
- Wessex Archaeology (1998a) *Hollowbanks Farm, Scorton: archaeological evaluation report 1: Field 2*. Unpublished report for Tilcon North Ltd.
- Wessex Archaeology (1998b) *Hollowbanks Farm, Scorton: archaeological evaluation report 2: Fields 3 & 4*. Unpublished report for Tilcon North Ltd.
- Whittaker, J, (1995) *Flint knapping: Making and Understanding Stone Tools*, Austin
- Whittle, AWR, (1997) *Sacred Mound, Holy Rings: Silbury Hill and the West Kennet Palisade Enclosures*, Oxford
- Wilson, PR, (1984) Recent work at Catterick, in Wilson, PR, Jones, RFJ, & Evans, DM, eds. *Settlement and Society in the Roman North*, 75-82. University of Bradford and Yorkshire Archaeological Society.
- Wilson, PR, (2002) *Cataractonium. Roman Catterick and its hinterland. Excavations and research, 1958-1997*. English Heritage. CBA Research Report **129**. Council for British Archaeology
- Wilson, PR, Cardwell, P, Cramp, RJ, Evans, J, Taylor-Wilson, RH, Thompson, A, & Wachter, JS, (1996) Early Anglian Catterick and *Catraeth*. *Medieval Archaeology* XL, 1-61
- Whitelock, D, (1955) *English Historical Documents, c.500-1042*. Cambridge.
- Woodward, PJ, Davis, SM, and Graham, AH, (1984) Excavations at Greyhound Yard car park, Dorchester, 1984, *Proc. of the Dorset Natural History and Archaeol. Soc.* **106**, 99-106
- Young, R, (1987) *Lithics and Subsistence in North-Eastern England*. British Archaeological Reports, British series, **161**. Oxford

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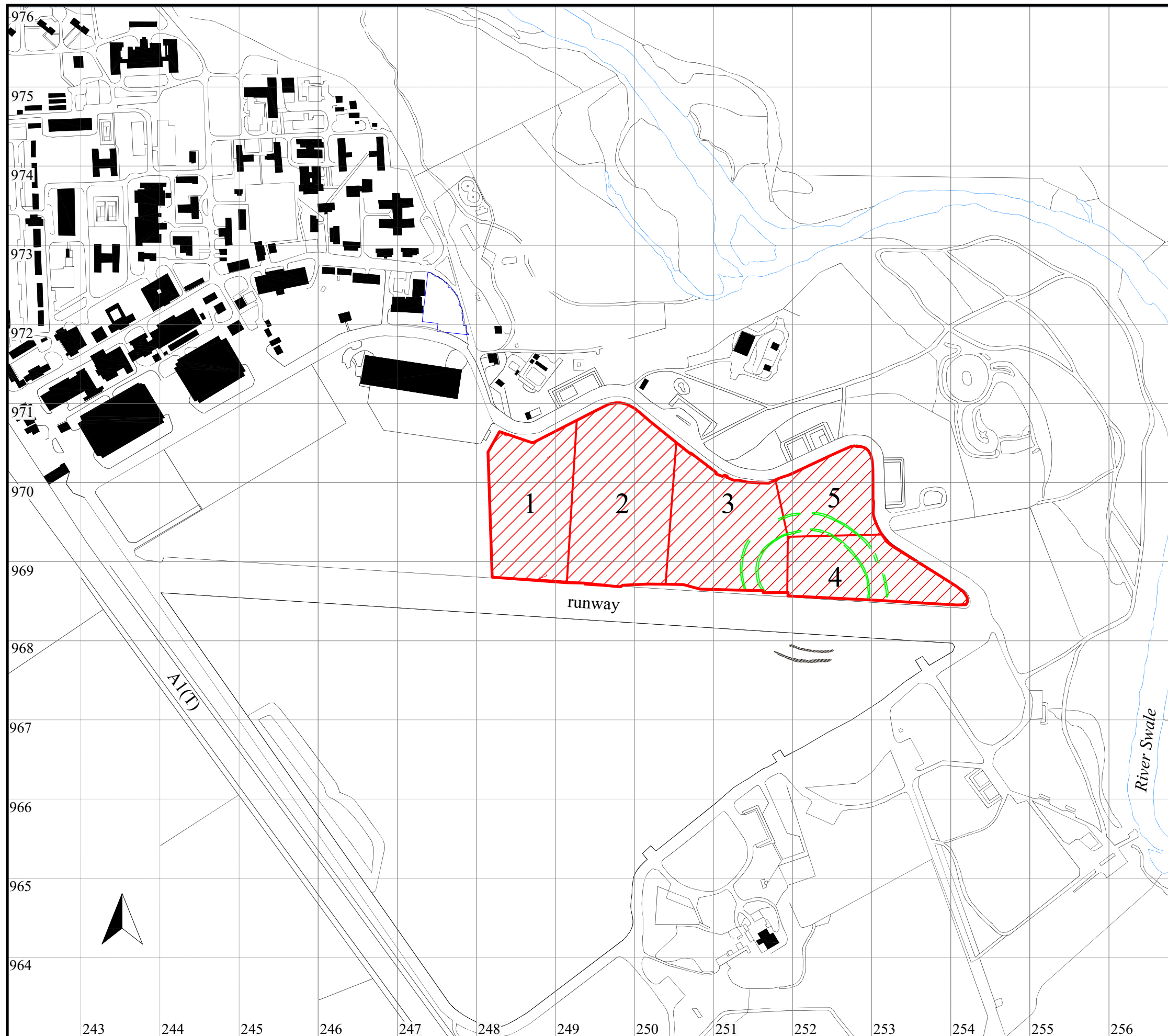
Figure 1

Location plan showing Areas 1-5

on behalf of
Gallifordtry Construction Ltd
for
**Debut Management Services
Defence Estates**

0 250m
scale 1:5000 - for A3 plot

-  area of excavation
-  outline of palisades
-  possibly associated geophysical anomalies



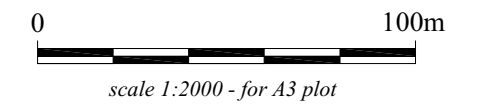
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 North Yorkshire**




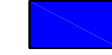





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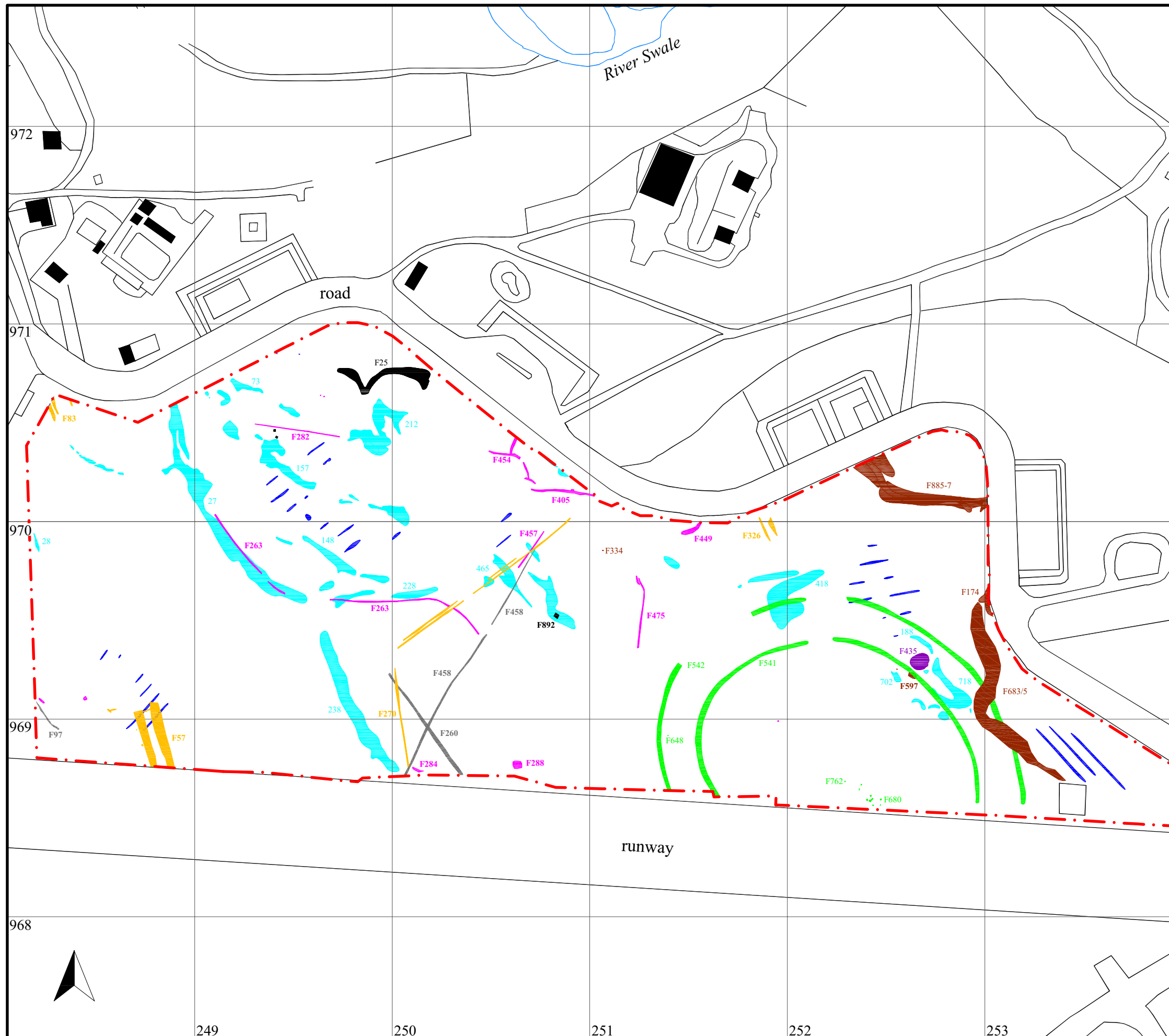
Figure 2

Phase plan

on behalf of
Gallifordtry Construction Ltd
for
Debut Management Services
Defence Estates



-  unphased
-  modern, Phase 7
-  post-medieval, Phase 6
-  medieval, Phase 5
-  early medieval, Phase 4
-  Iron Age/Roman, Phase 3
-  late Neolithic, Phase 2
-  early Neolithic, Phase 1
-  palaeo-channels



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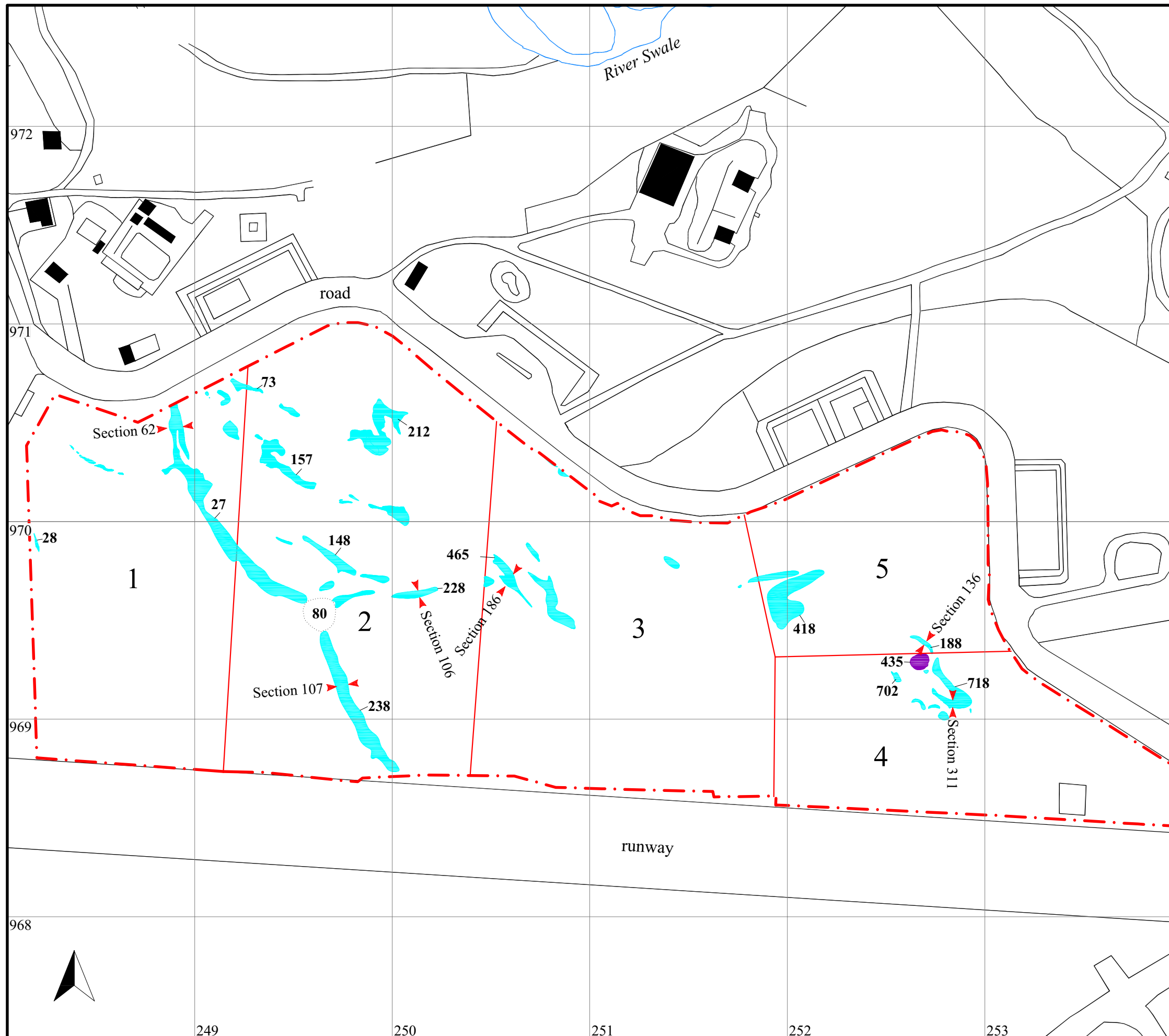
Figure 3

*Plan of palaeo-channels and Phase 1
features (early Neolithic)*

on behalf of
Gallifordtry Construction Ltd
for
**Debut Management Services
Defence Estates**

0 100m
scale 1:2000 - for A3 plot

- limit of excavation
- location of sections
- palaeo-channels
- knapping platform



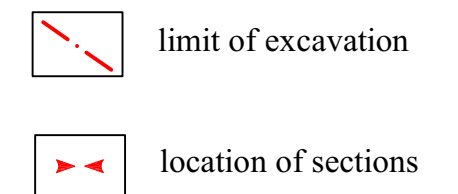
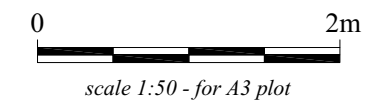
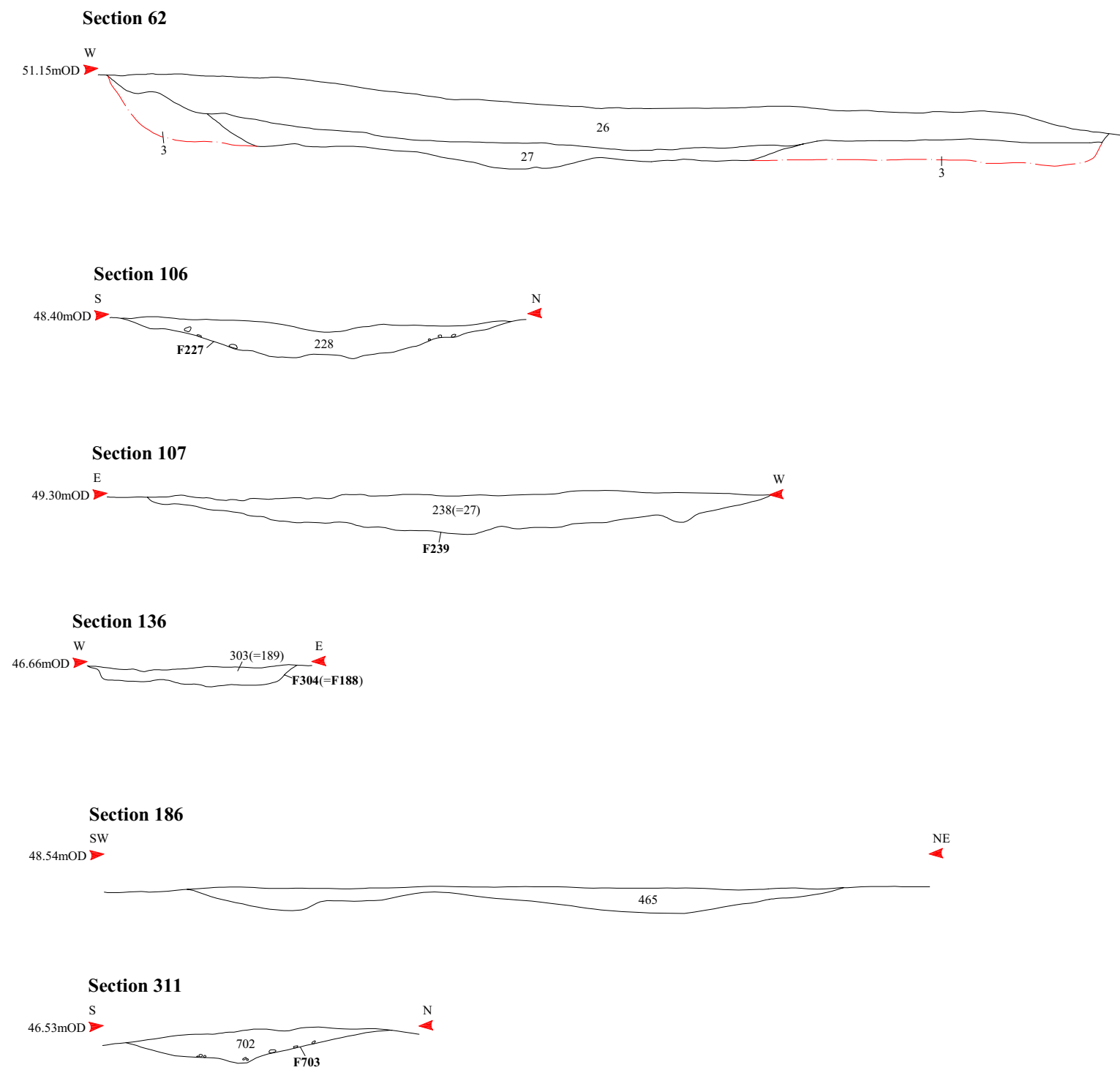
**Marne Barracks, Catterick,
 North Yorkshire**

**post-excavation analysis report
 report 1387**

Figure 4

Sections through palaeo-channels

on behalf of
Gallifordtry Construction Ltd
for
**Debut Management Services
 Defence Estates**



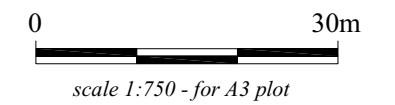
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


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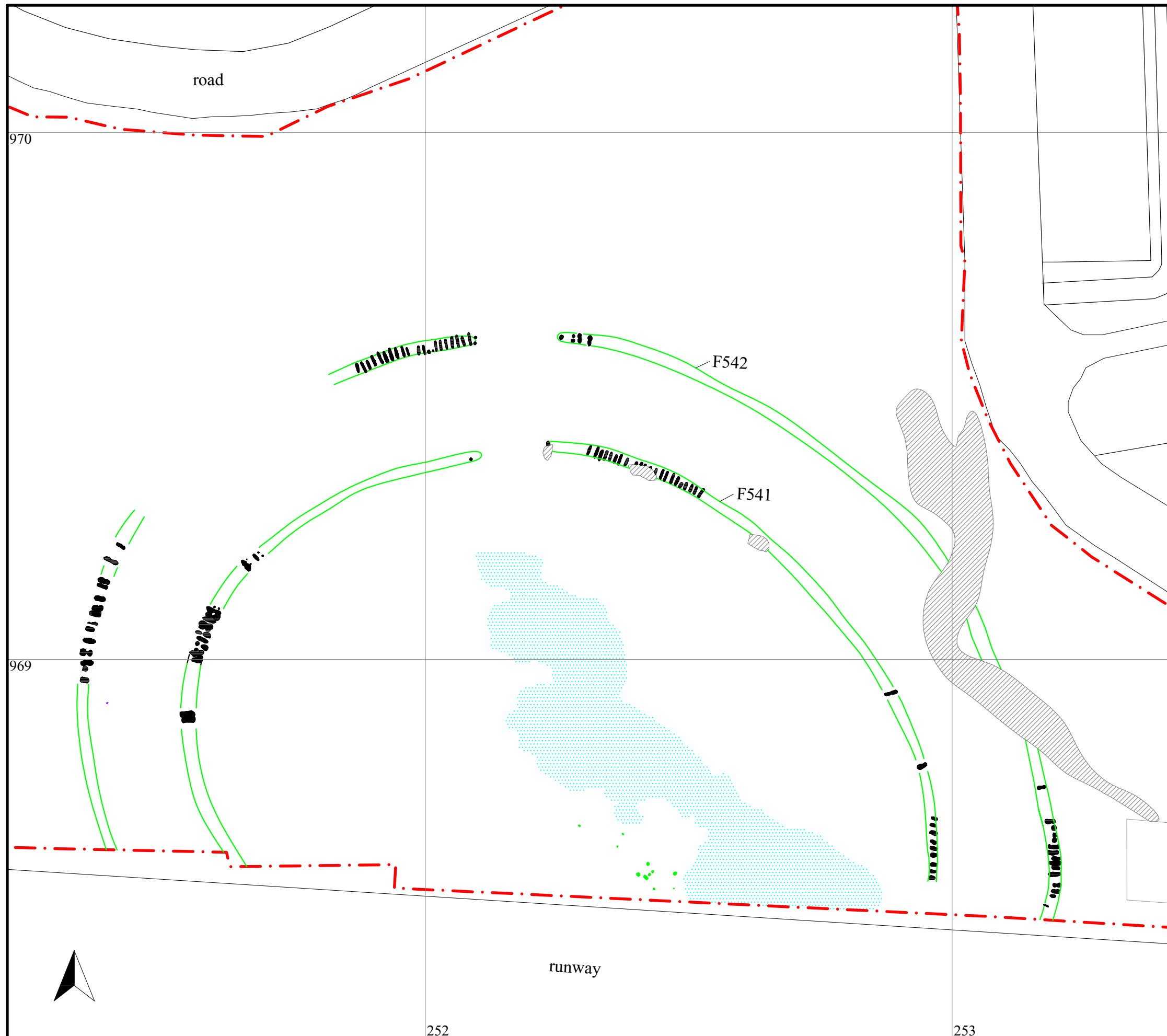
Figure 5

*Plan of Phase 2 features
(late Neolithic)*

on behalf of
Gallifordry Construction Ltd
for
**Debut Management Services
Defence Estates**



-  limit of excavation
-  outline of palisades
-  sampled palisade slots
-  possible late Neolithic features
-  later features cutting palisades
-  area truncated by 1930s levelling





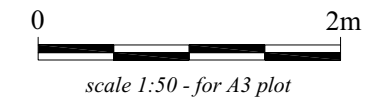
**Marne Barracks, Catterick,
North Yorkshire**

**post-excavation analysis report
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Figure 6

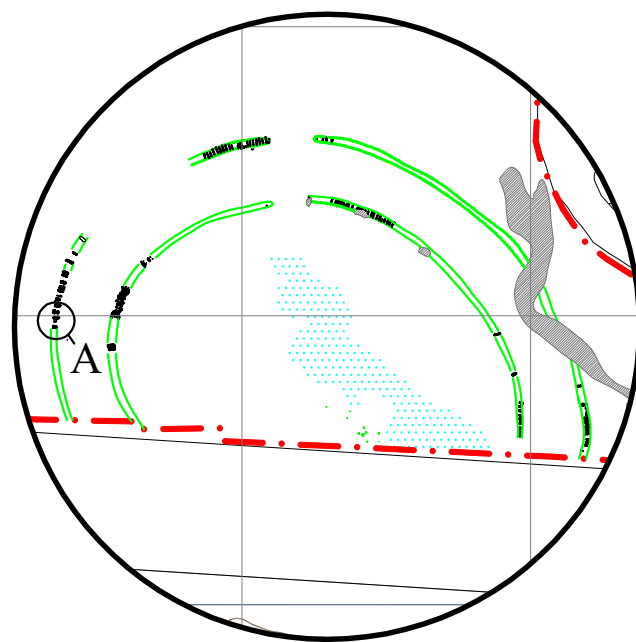
Plan and sections of features in Area A

on behalf of
Gallifordtry Construction Ltd
for
**Debut Management Services
Defence Estates**

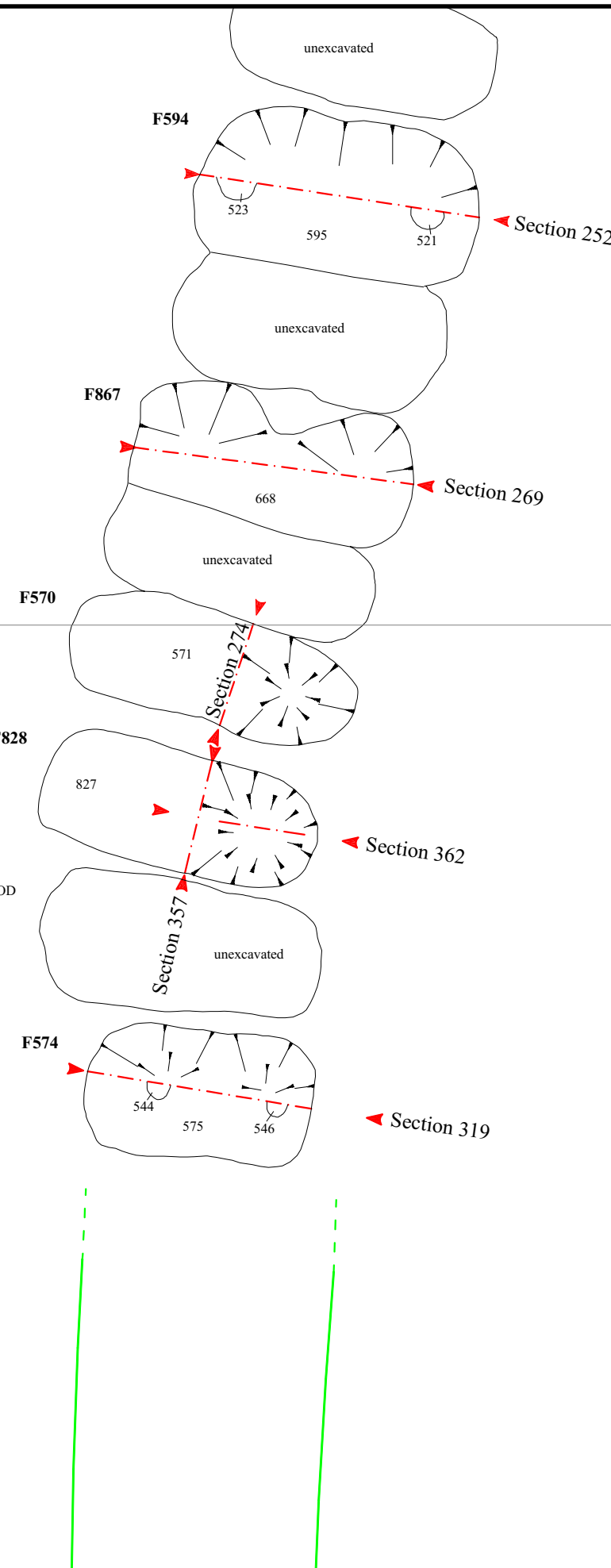


- limit of excavation
- outline of palisades
- sampled palisade slots
- possible late Neolithic features
- later features cutting palisades
- area truncated by 1930s levelling
- location of sections

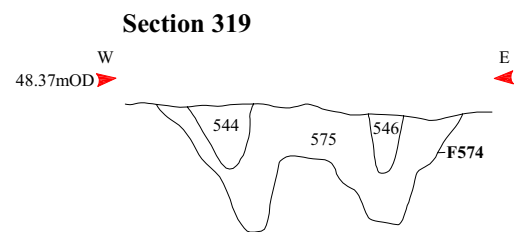
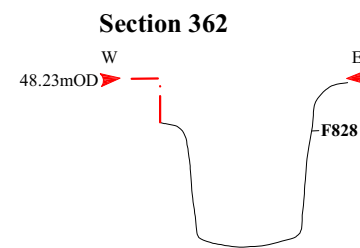
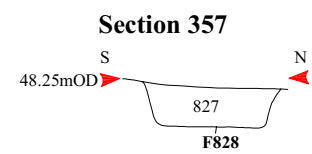
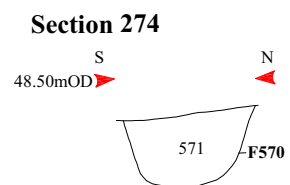
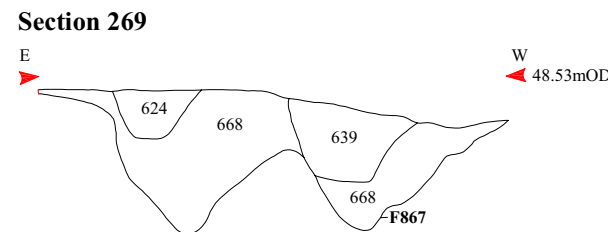
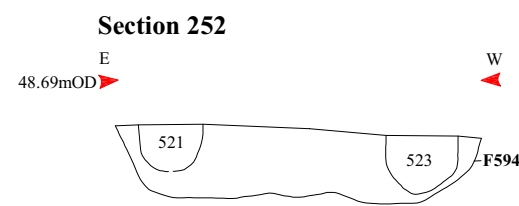
A



Insert showing location of features in Area A



969



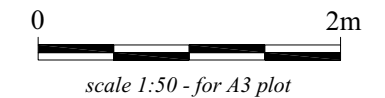
**Marne Barracks, Catterick,
North Yorkshire**

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Figure 7

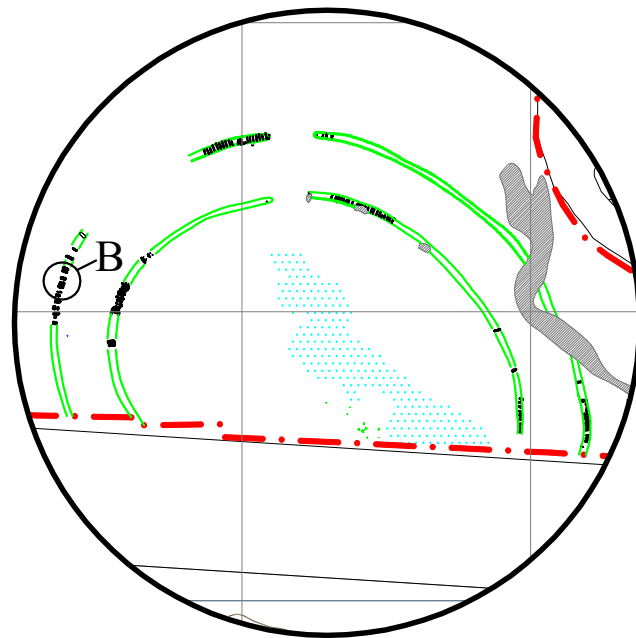
Plan and sections of features in Area B

on behalf of
Gallifordry Construction Ltd
for
**Debut Management Services
Defence Estates**

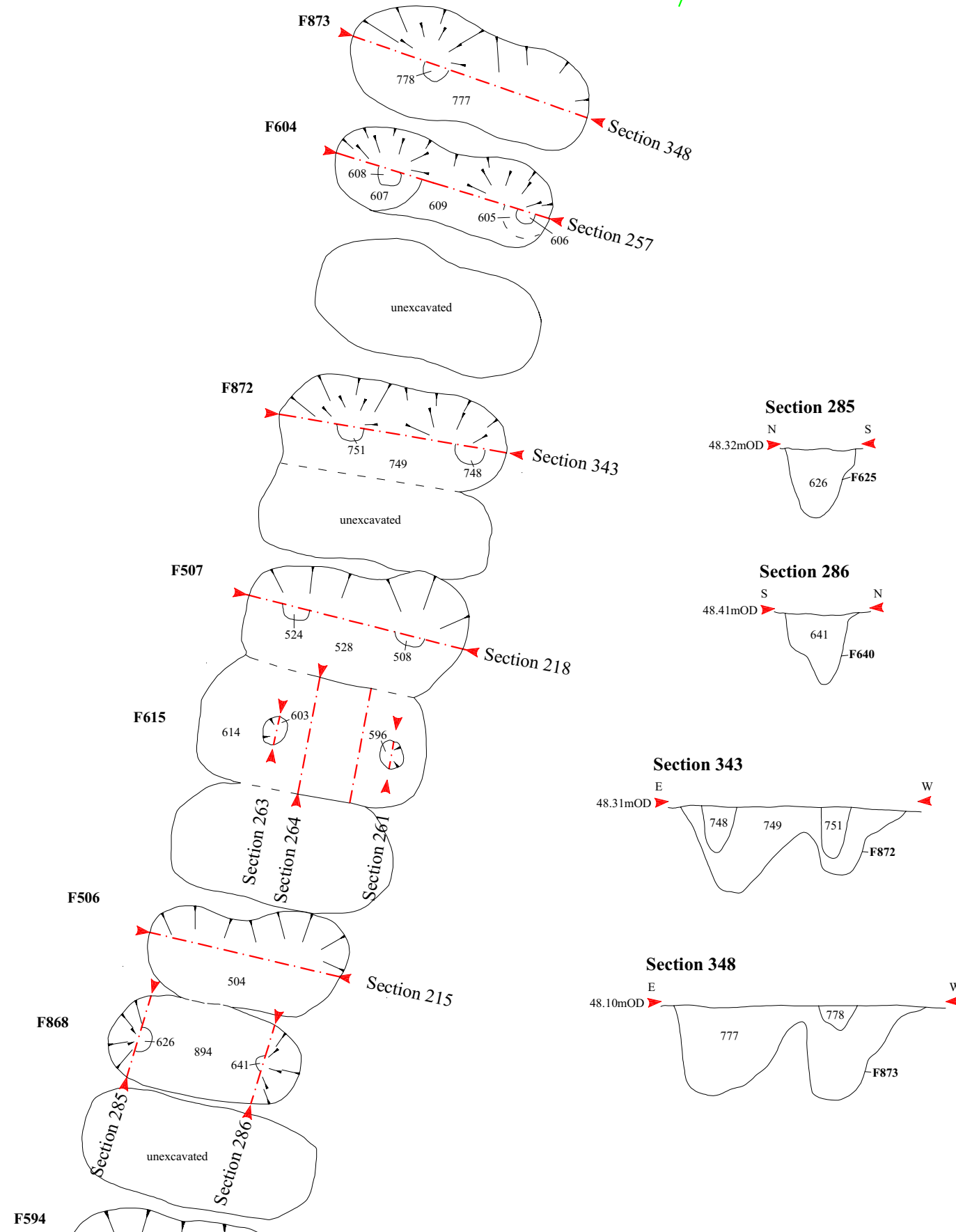
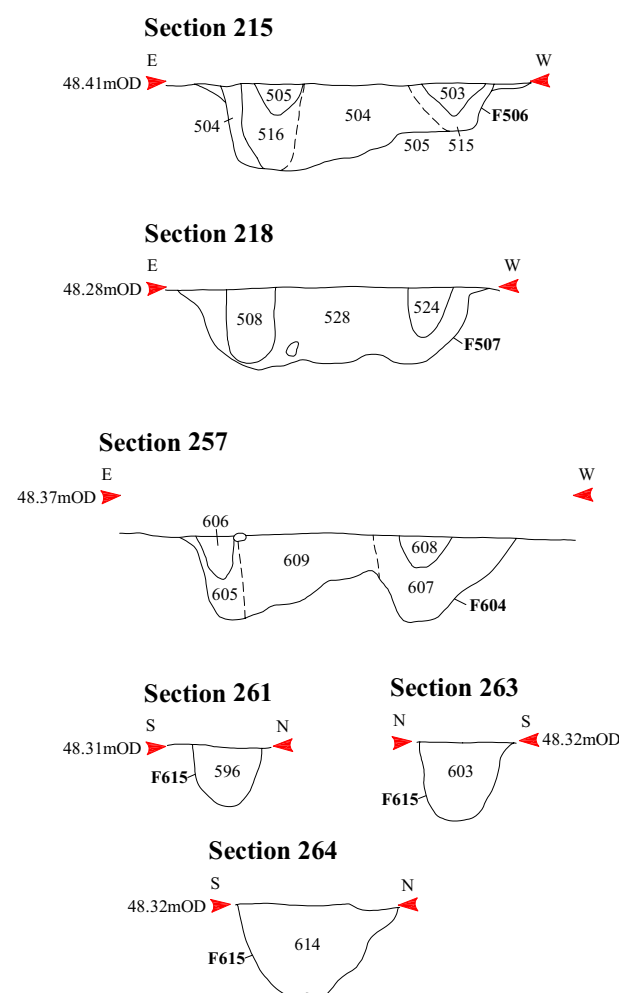


- limit of excavation
- outline of palisades
- sampled palisade slots
- possible late Neolithic features
- later features cutting palisades
- area truncated by 1930s levelling
- location of sections

B



Insert showing location of features in Area B



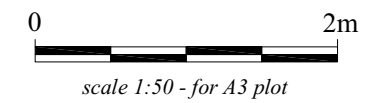
**Marne Barracks, Catterick,
 North Yorkshire**








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Figure 8

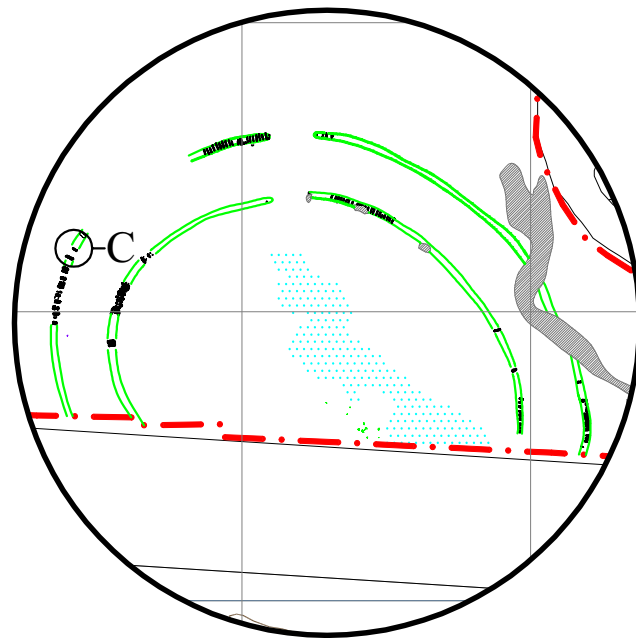
Plans and sections of features in Area C

on behalf of
Gallifordry Construction Ltd
for
**Debut Management Services
 Defence Estates**

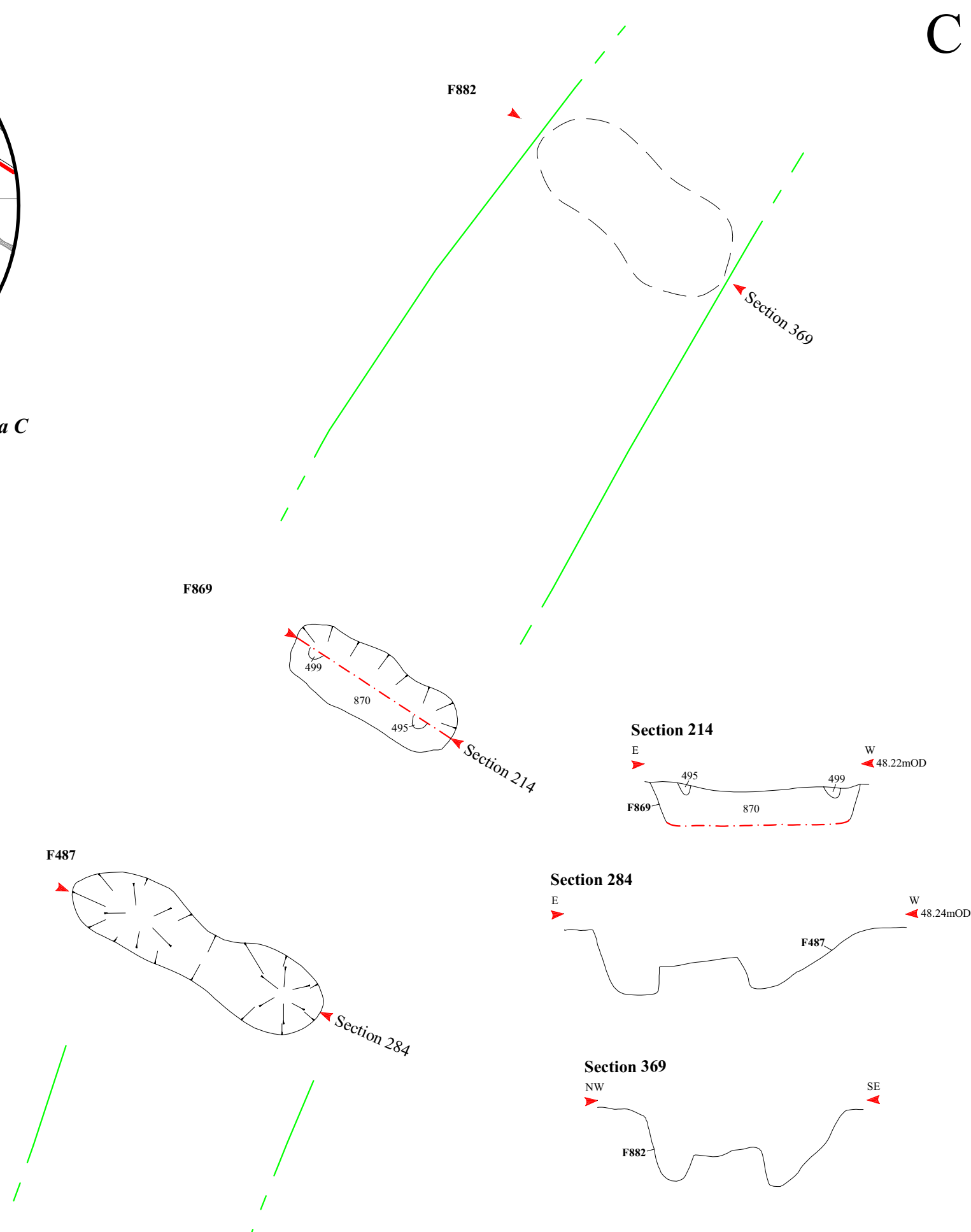


-  limit of excavation
-  outline of palisades
-  sampled palisade slots
-  possible late Neolithic features
-  later features cutting palisades
-  area truncated by 1930s levelling
-  location of sections

C



Insert showing locations of features in Area C





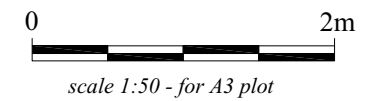
**Marne Barracks, Catterick,
North Yorkshire**







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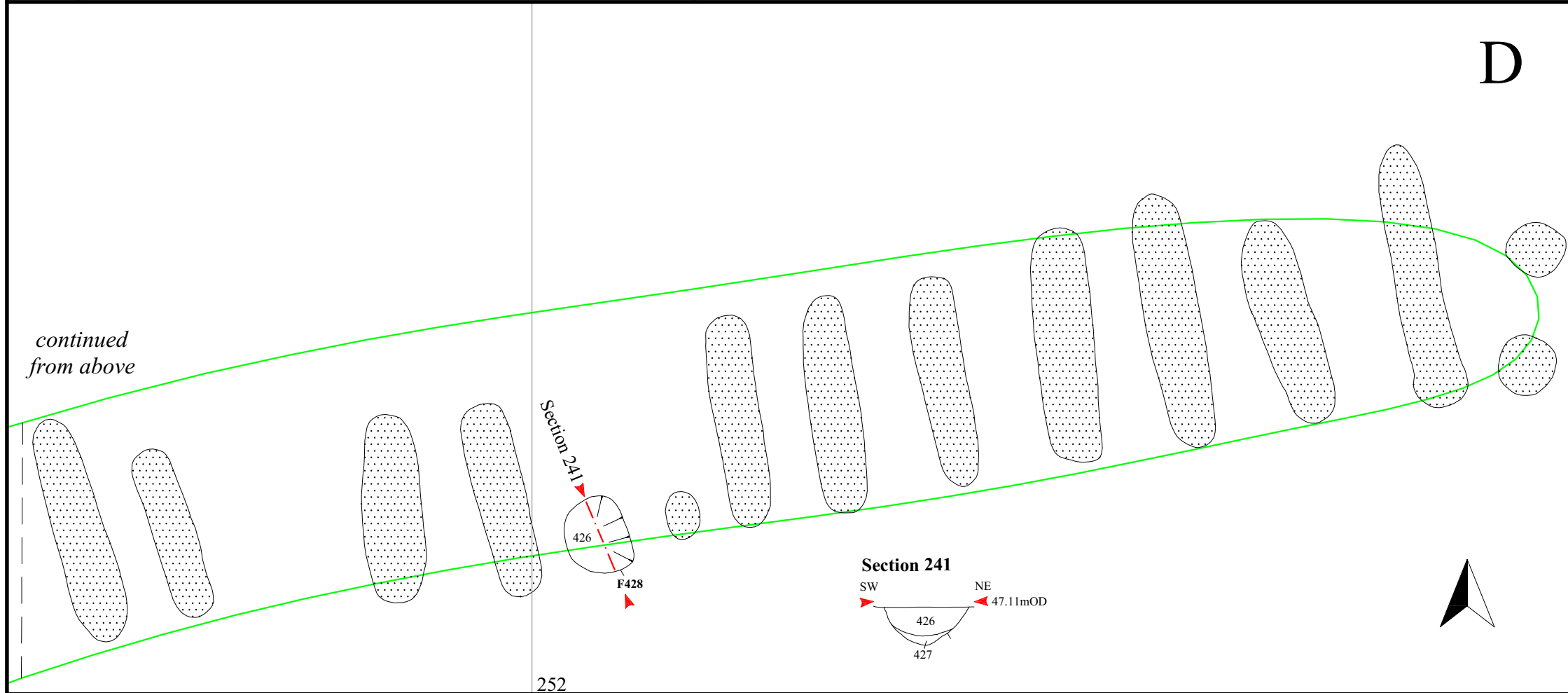
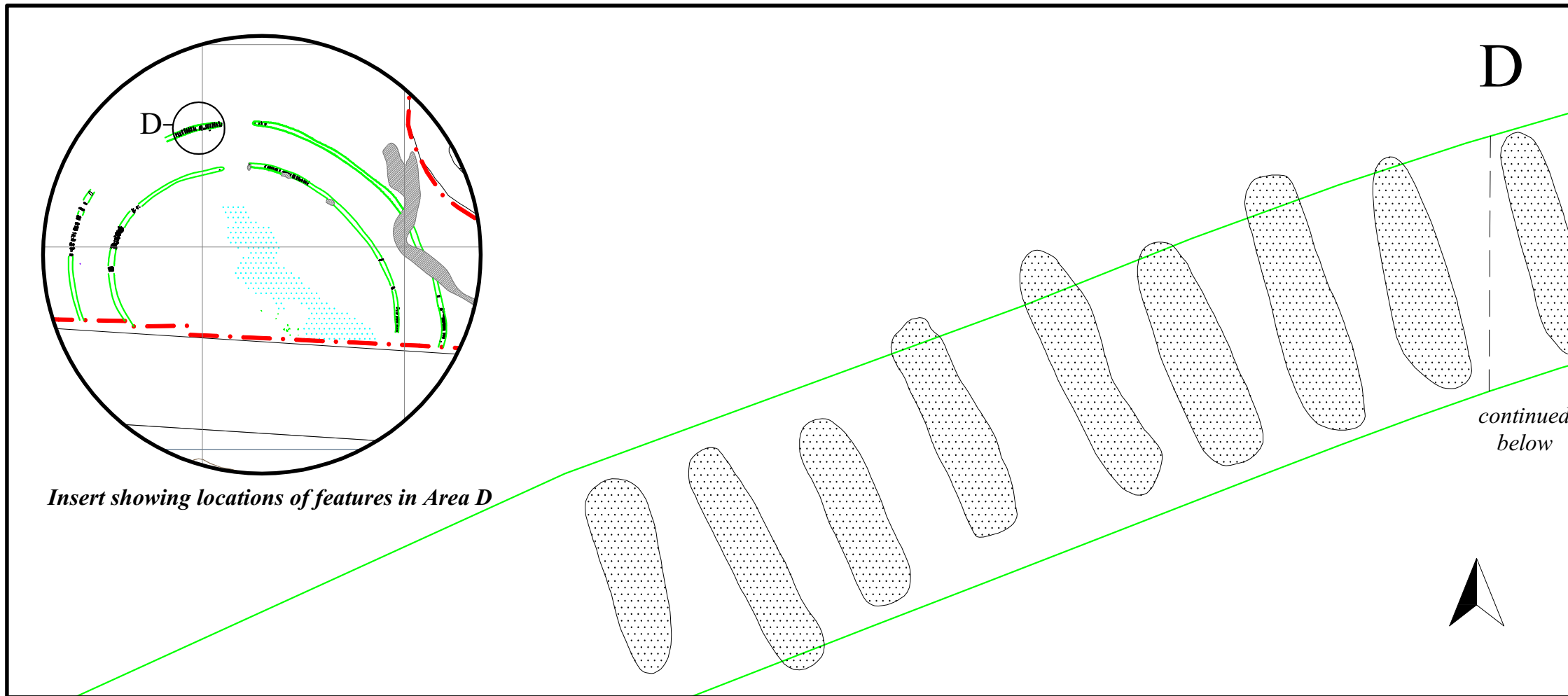
Figure 9

*Plans and section of features
in Area D*

on behalf of
Gallifordtry Construction Ltd
for
**Debut Management Services
Defence Estates**



-  limit of excavation
-  outline of palisades
-  sampled palisade slots
-  possible late Neolithic features
-  later features cutting palisades
-  area truncated by 1930s levelling



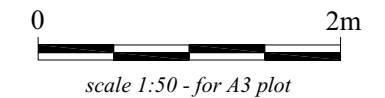
**Marne Barracks, Catterick,
 North Yorkshire**








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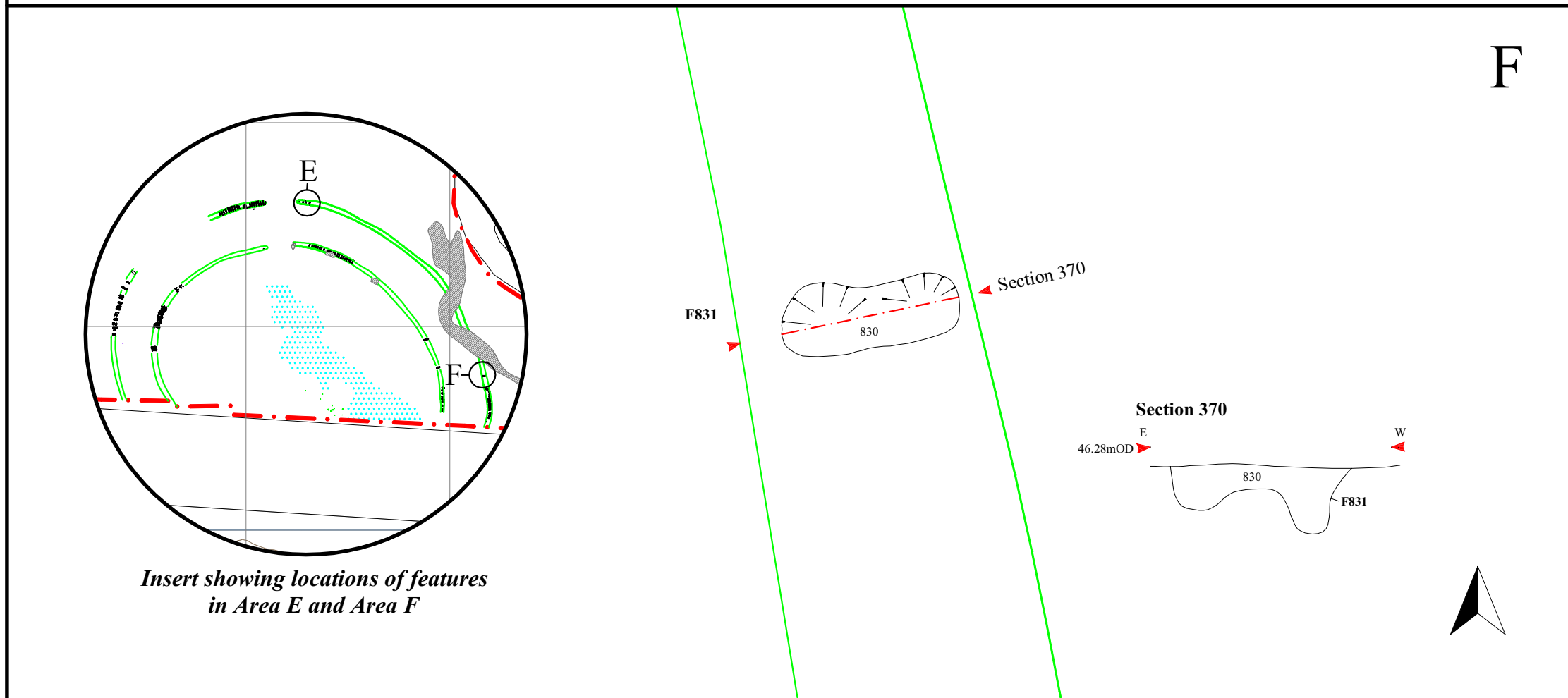
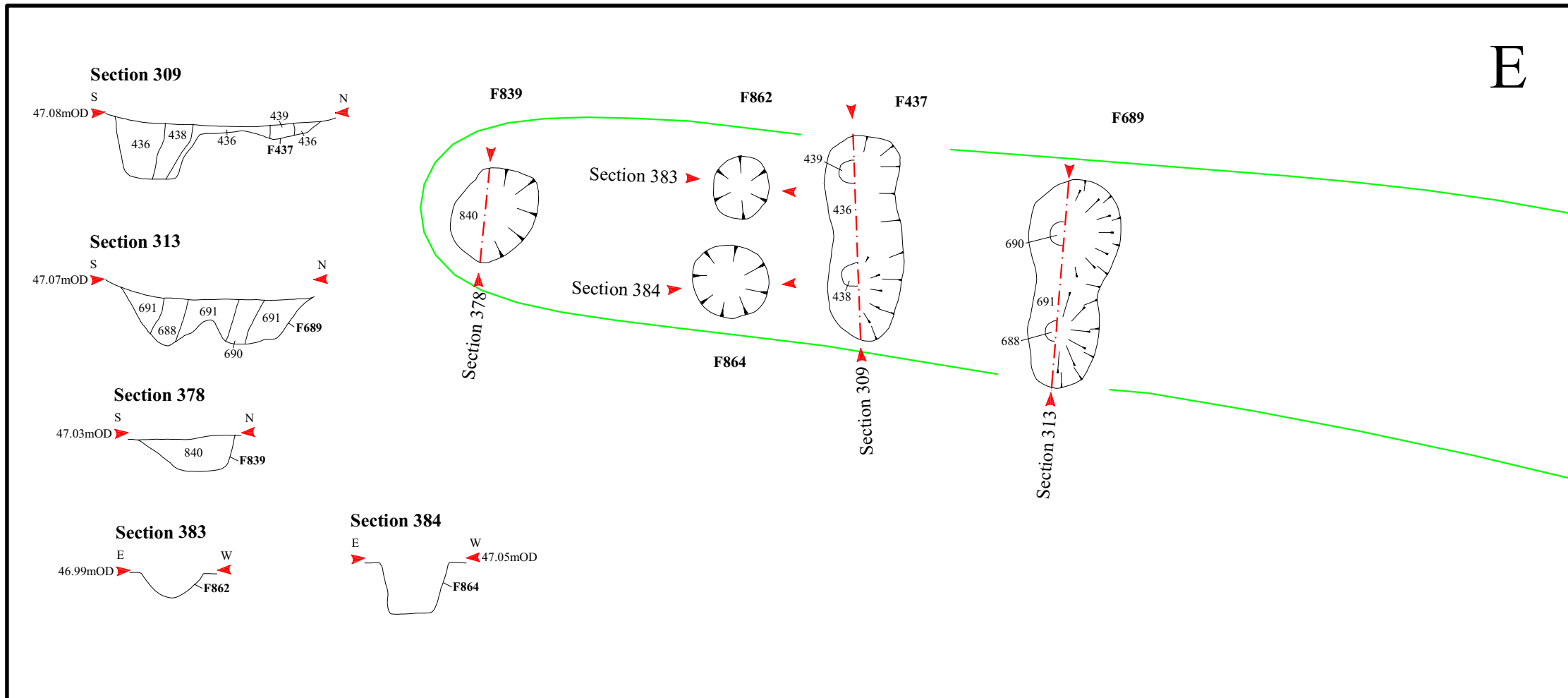
Figure 10

*Plans and sections of features
 in Area E and Area F*

on behalf of
Gallifordry Construction Ltd
for
Debut Management Services
Defence Estates



-  limit of excavation
-  outline of palisades
-  sampled palisade slots
-  possible late Neolithic features
-  later features cutting palisades
-  area truncated by 1930s levelling
-  location of sections



*Insert showing locations of features
 in Area E and Area F*

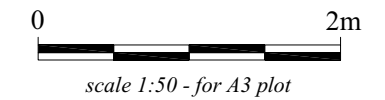
**Marne Barracks, Catterick,
North Yorkshire**








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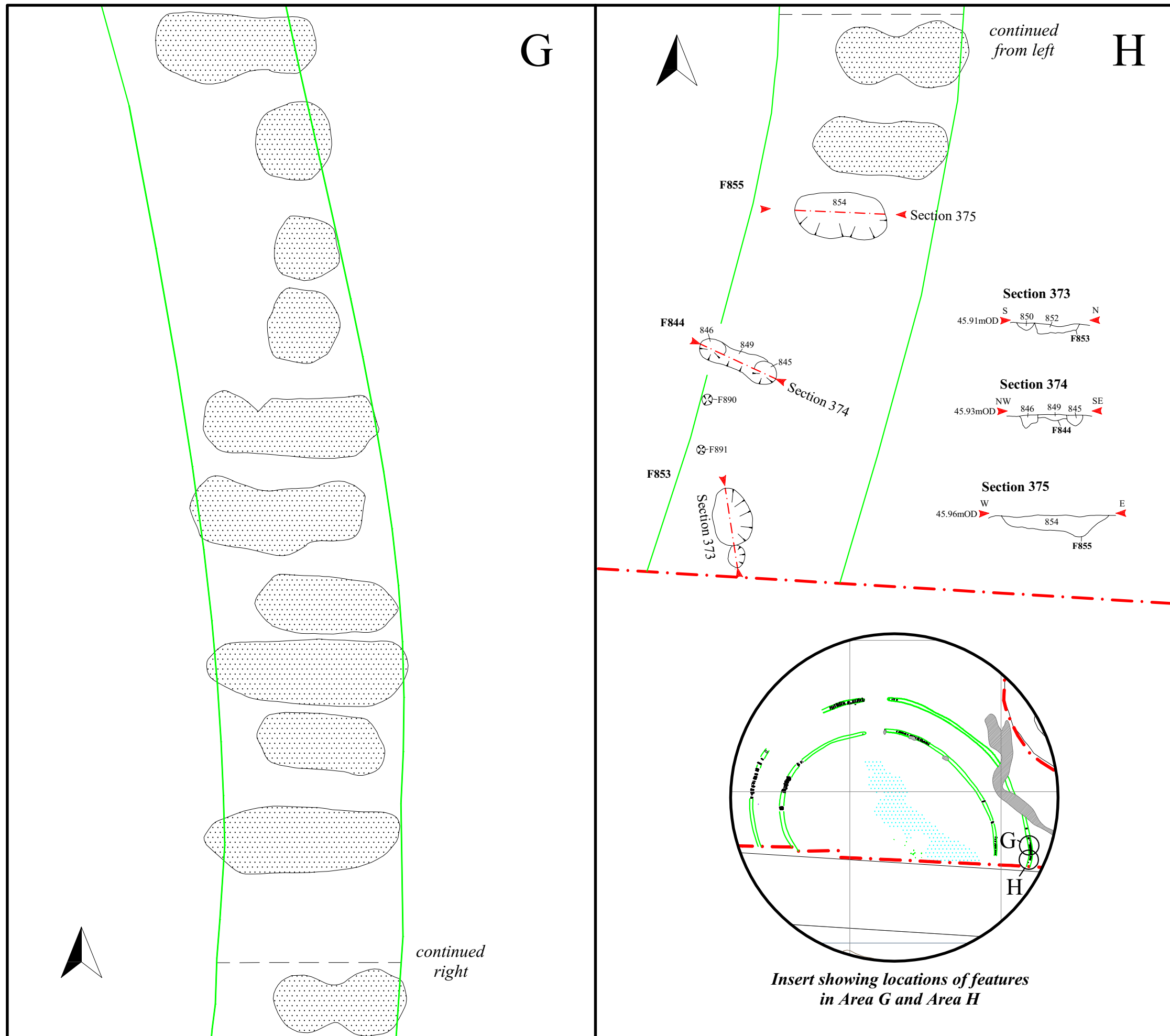
Figure 11

*Plans and sections of features
in Area G and Area H*

on behalf of
Gallifordtry Construction Ltd
for
**Debut Management Services
Defence Estates**



-  limit of excavation
-  outline of palisades
-  sampled palisade slots
-  possible late Neolithic features
-  later features cutting palisades
-  area truncated by 1930s levelling
-  location of sections



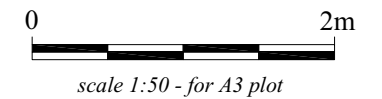
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Figure 12

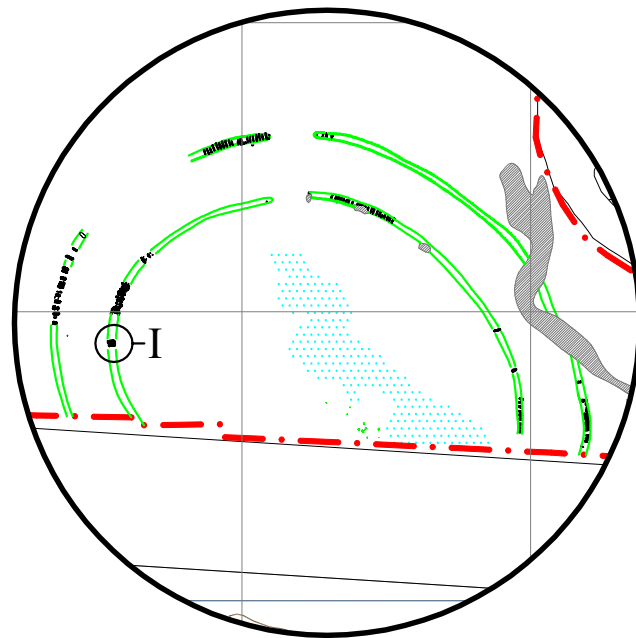
Plan and section of features in Area I

on behalf of
Gallifordtry Construction Ltd
for
**Debut Management Services
 Defence Estates**

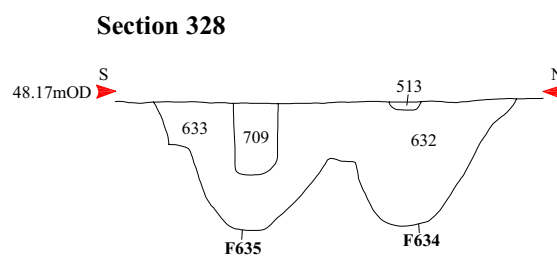
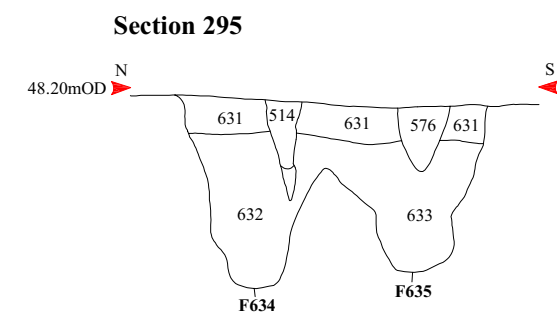
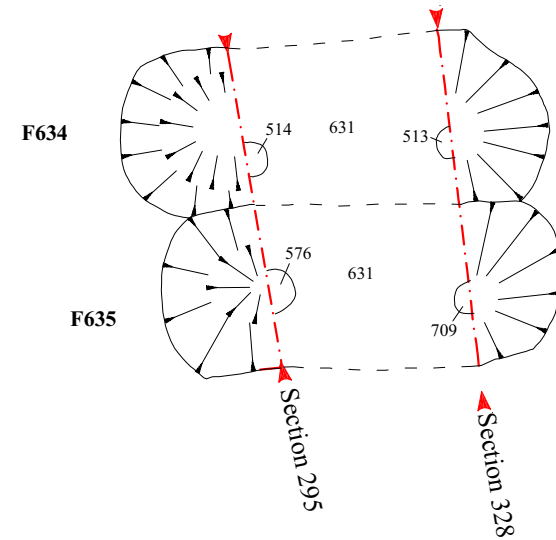


-  limit of excavation
-  outline of palisades
-  sampled palisade slots
-  possible late Neolithic features
-  later features cutting palisades
-  area truncated by 1930s levelling
-  location of sections

I



Insert showing location of features in Area I



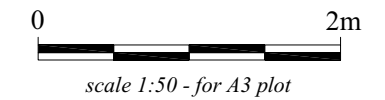
**Marne Barracks, Catterick,
 North Yorkshire**








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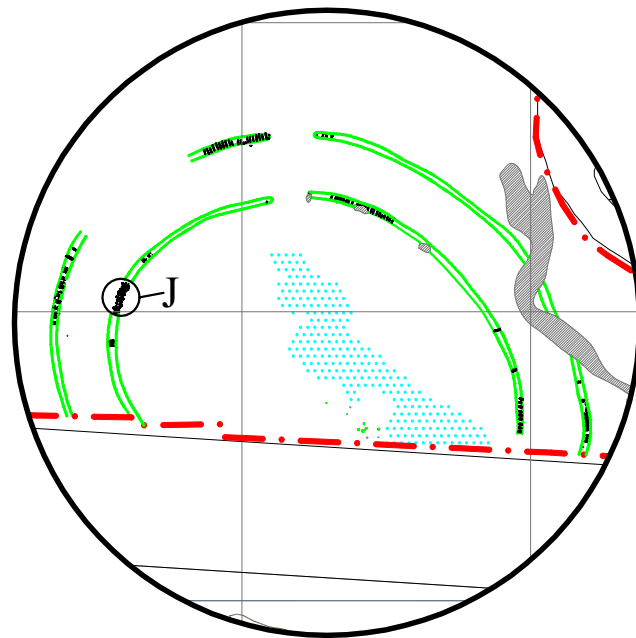
Figure 13

Plan of features in Area J

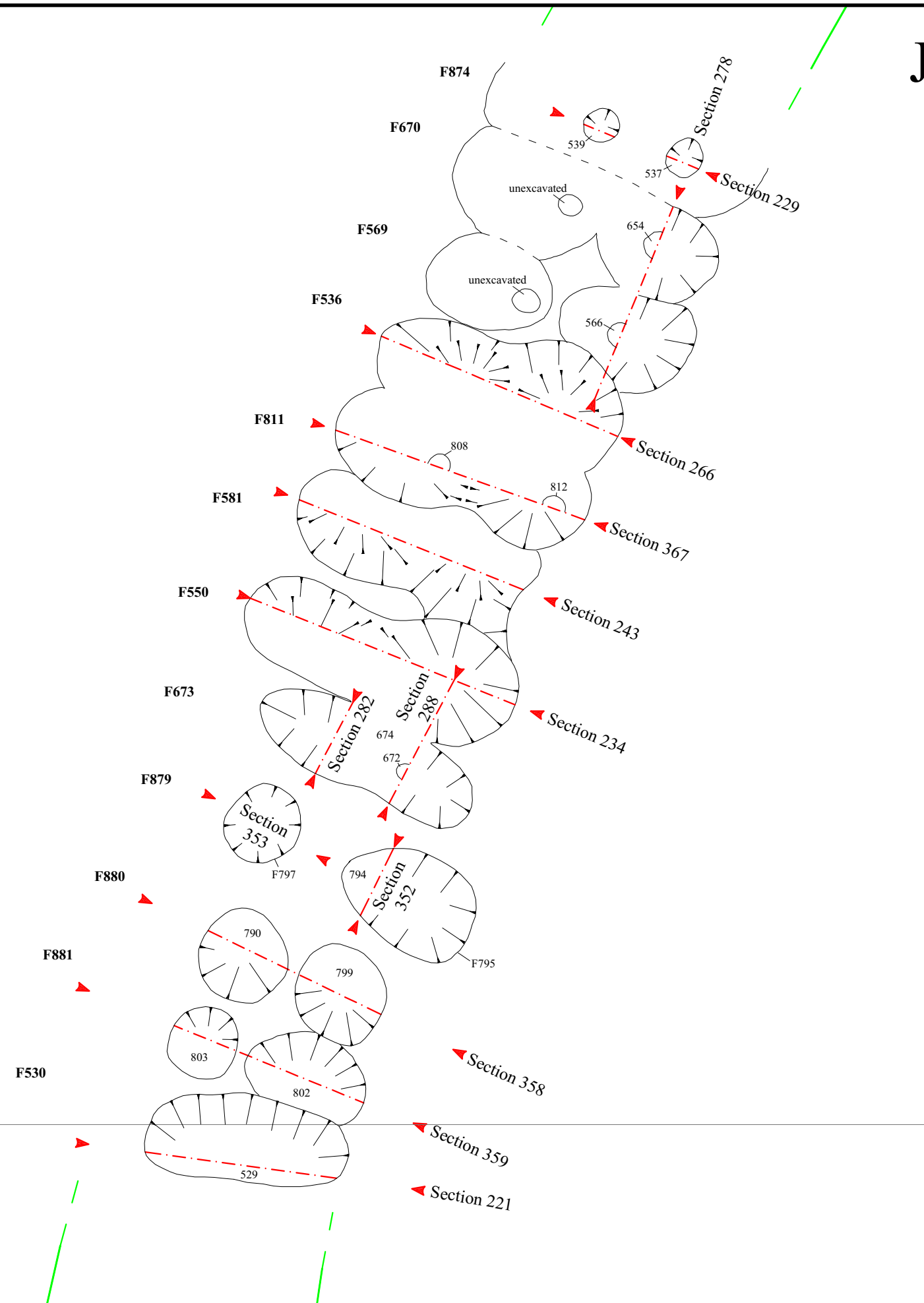
on behalf of
Gallifordry Construction Ltd
for
Debut Management Services
Defence Estates



-  limit of excavation
-  outline of palisades
-  sampled palisade slots
-  possible late Neolithic features
-  later features cutting palisades
-  area truncated by 1930s levelling
-  location of sections



Insert showing location of features in Area J



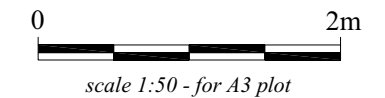
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North Yorkshire







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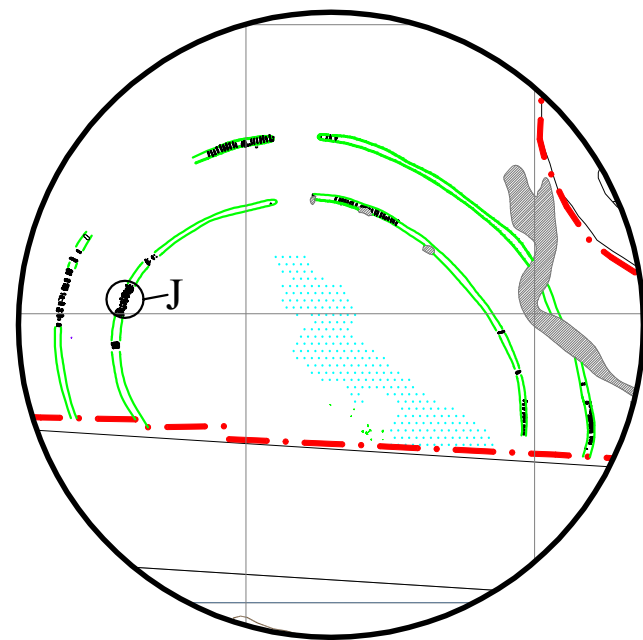
Figure 14

Sections of features in Area J

on behalf of
Gallifordtry Construction Ltd
for
Debut Management Services
Defence Estates

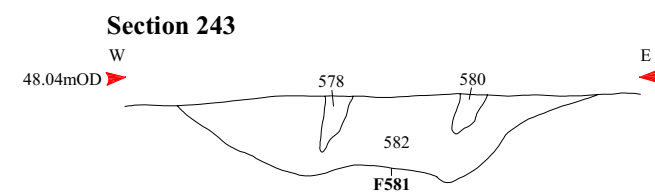
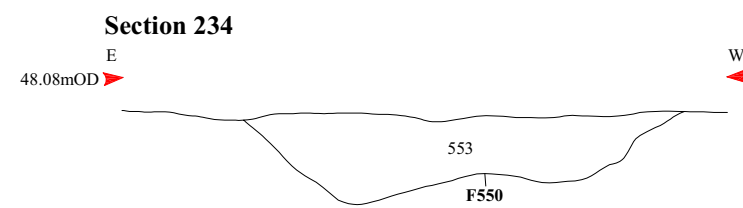
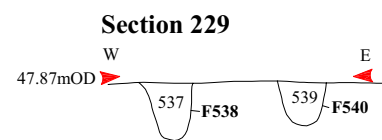
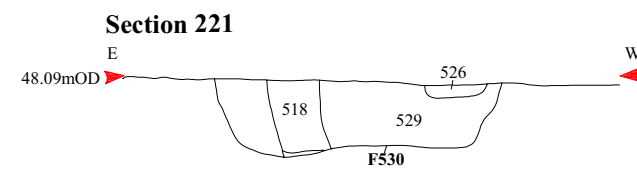
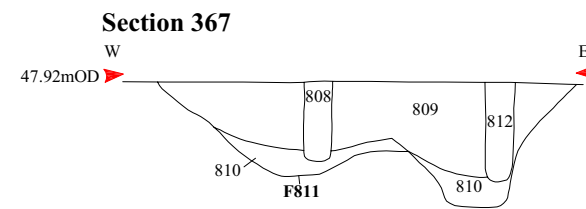
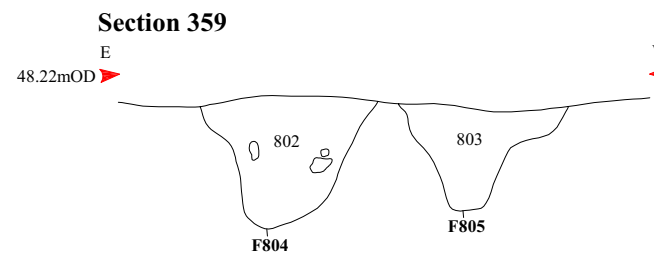
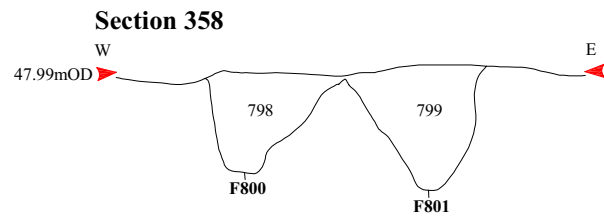
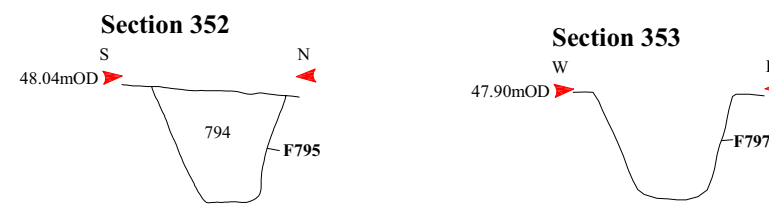
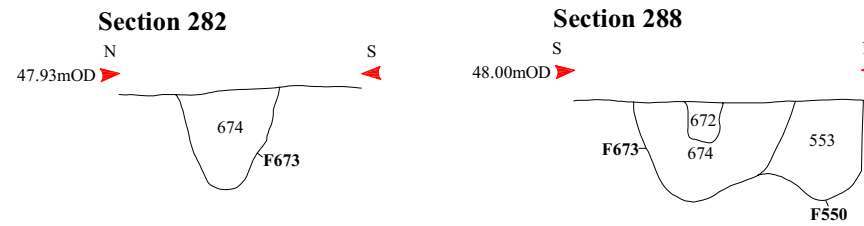
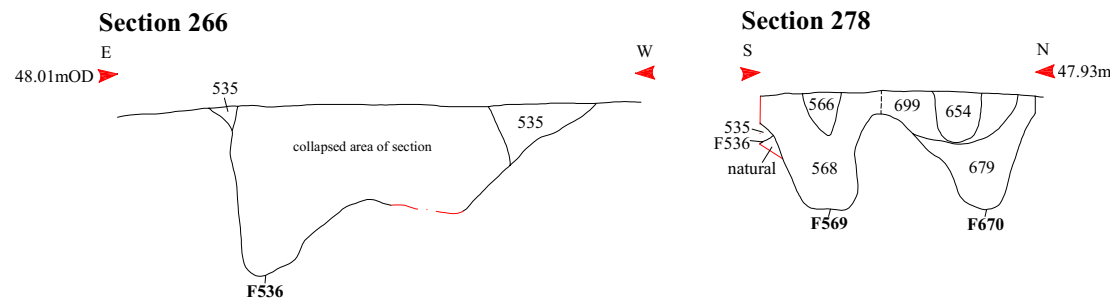


-  limit of excavation
-  outline of palisades
-  sampled palisade slots
-  possible late Neolithic features
-  later features cutting palisades
-  area truncated by 1930s levelling



Insert showing location of features in Area J

J



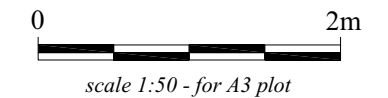
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




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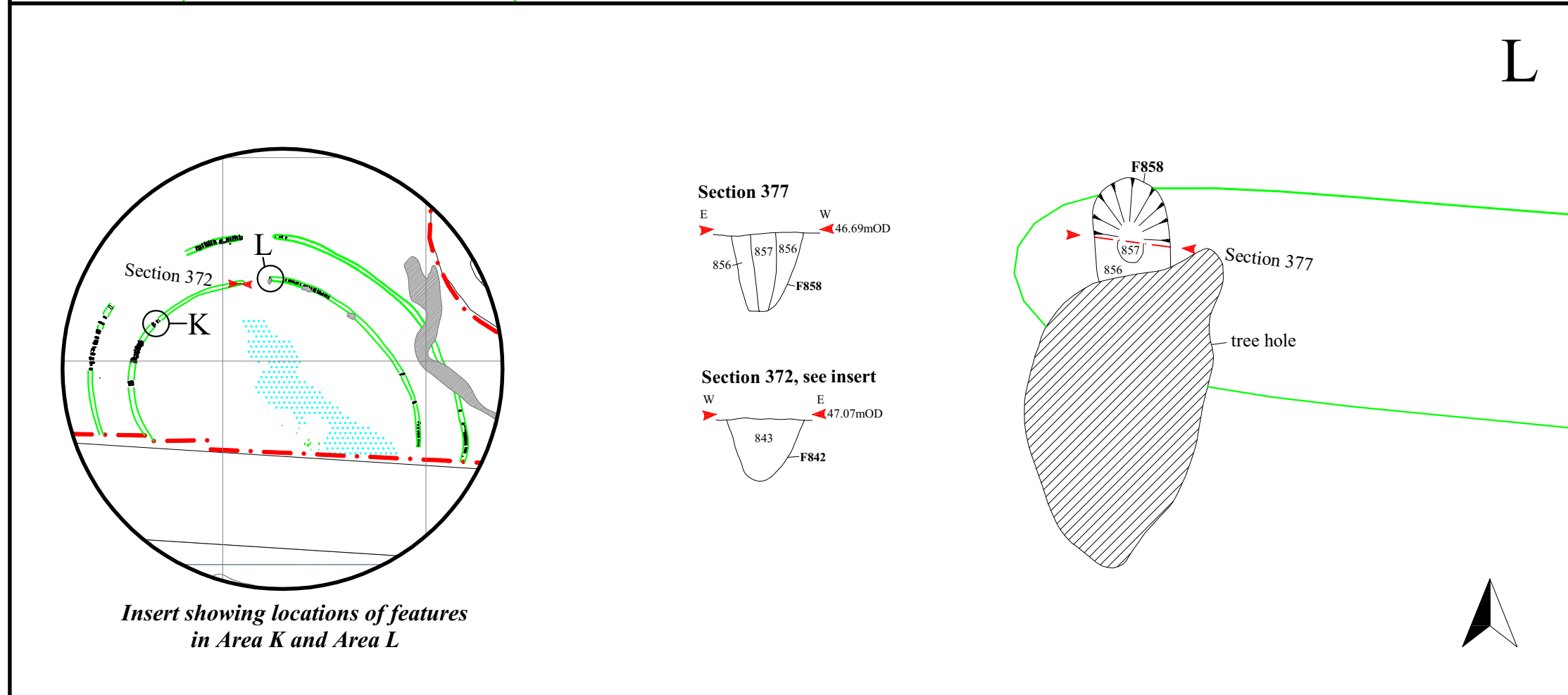
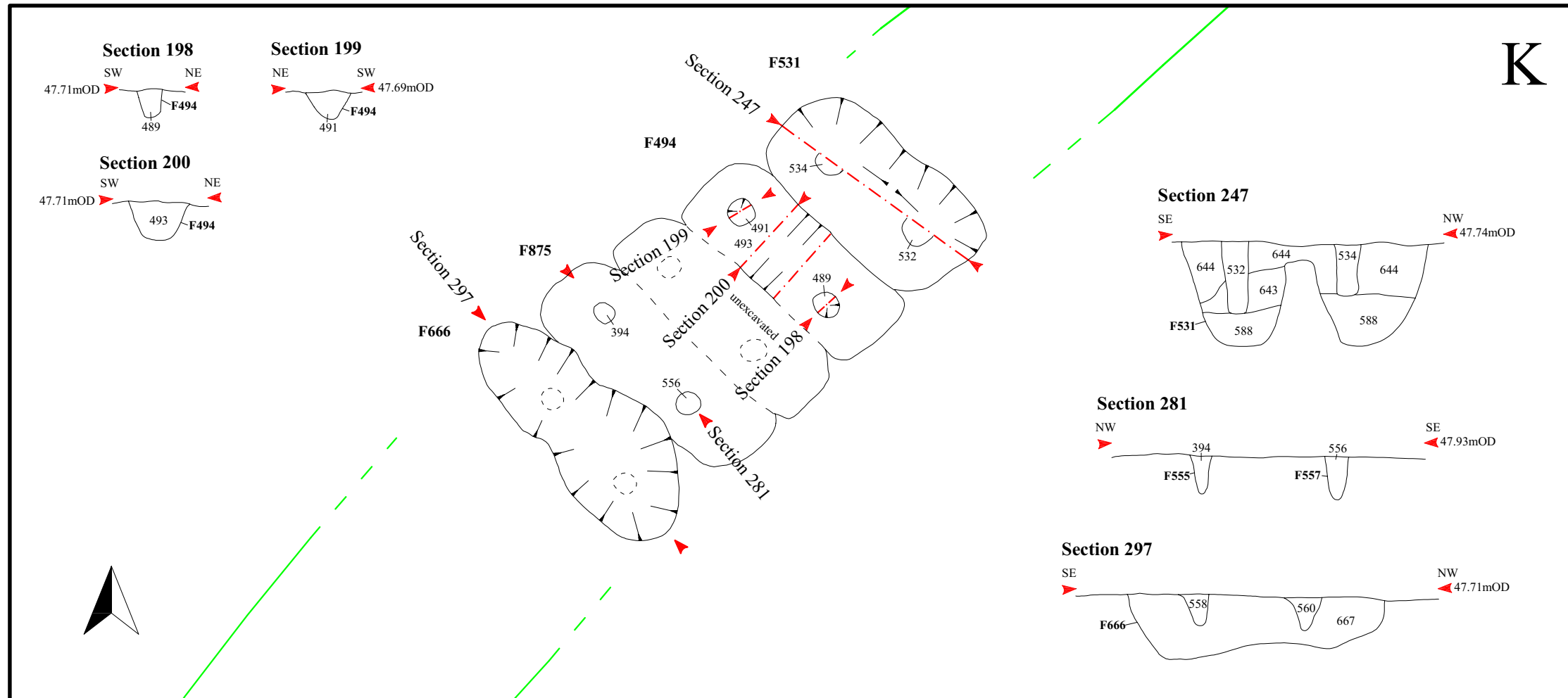
Figure 15

*Plans and sections of features
in Area K and Area L*

on behalf of
Gallifordtry Construction Ltd
for
**Debut Management Services
Defence Estates**



-  limit of excavation
-  approximate outline of palisades
-  sampled palisade slots
-  possible late Neolithic features
-  later features cutting palisades
-  area truncated by 1930s levelling
-  location of sections



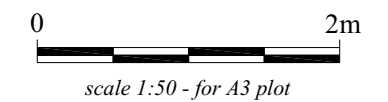
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





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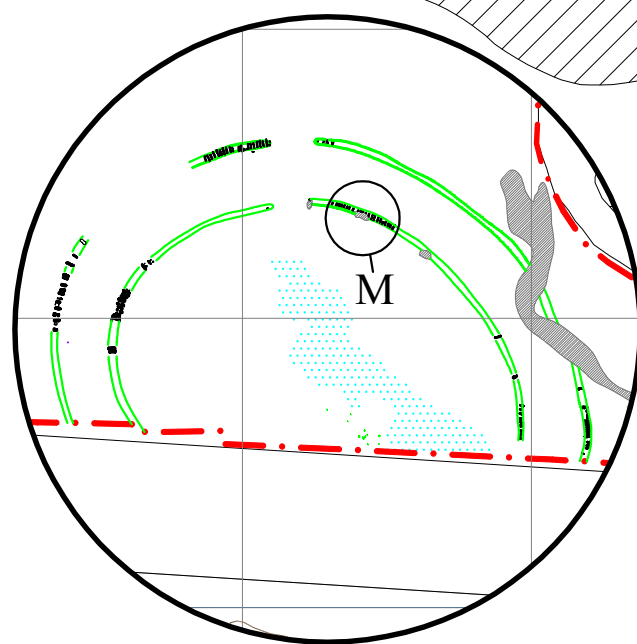
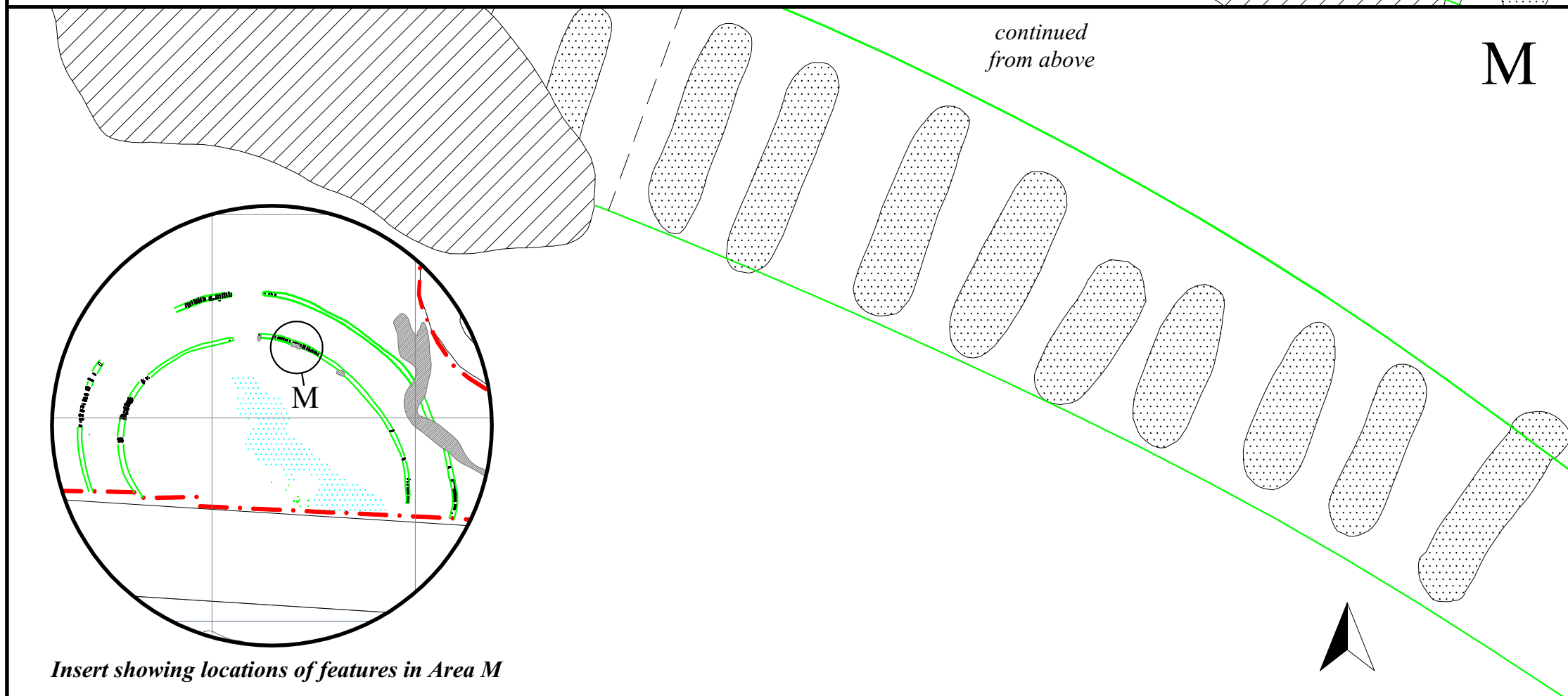
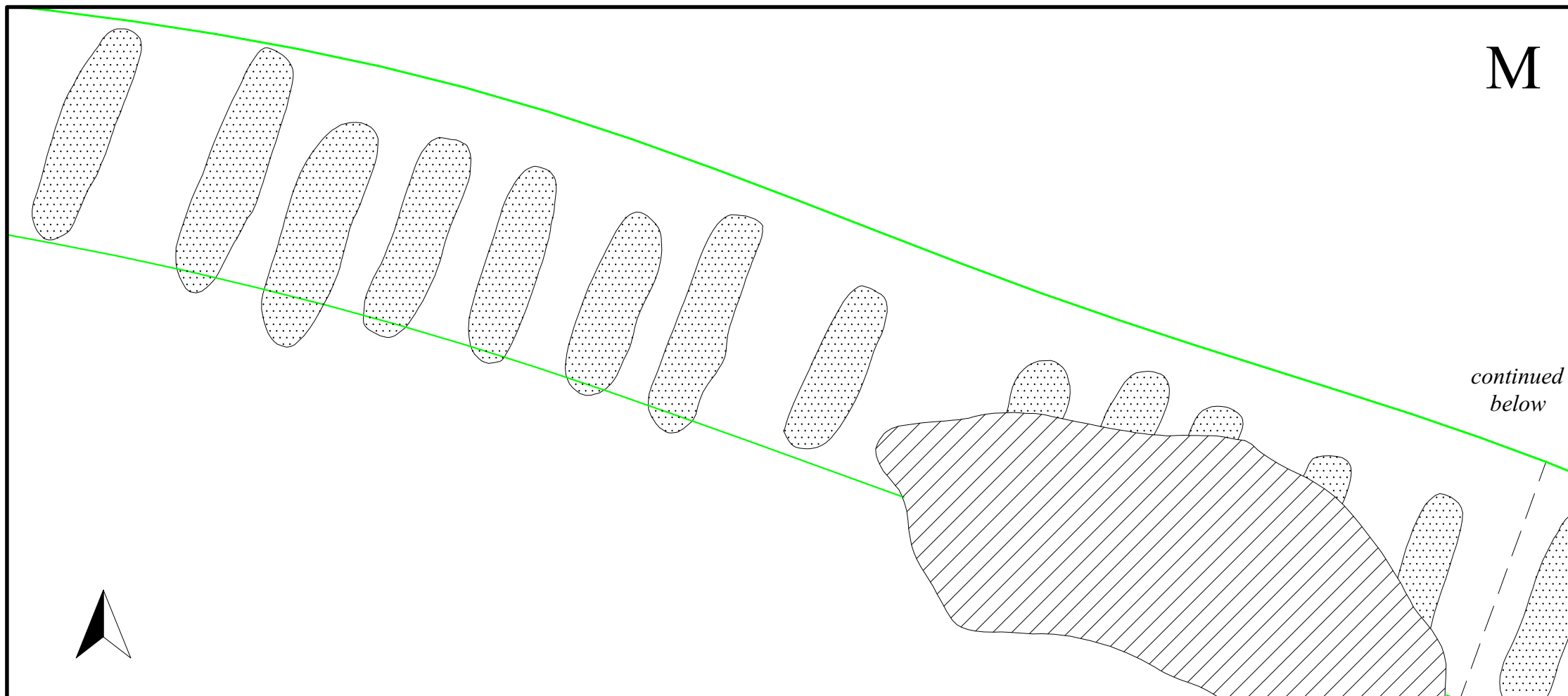
Figure 16

Plan of features in Area M

on behalf of
Gallifordtry Construction Ltd
for
Debut Management Services
Defence Estates



-  limit of excavation
-  outline of palisades
-  sampled palisade slots
-  possible late Neolithic features
-  later features cutting palisades
-  area truncated by 1930s levelling



Insert showing locations of features in Area M

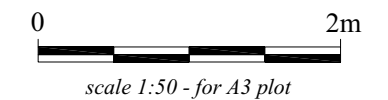
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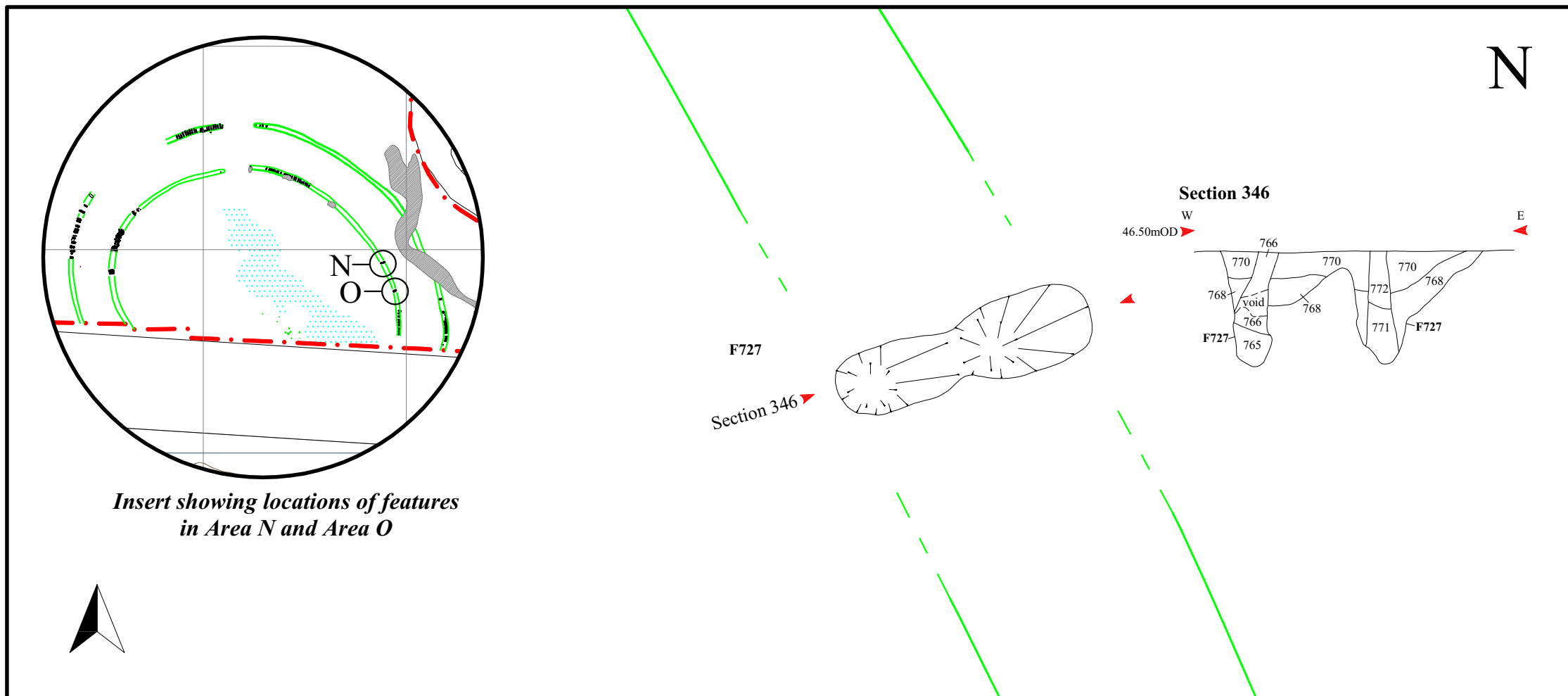
Figure 17

*Plans and section of features
 in Area N and Area O*

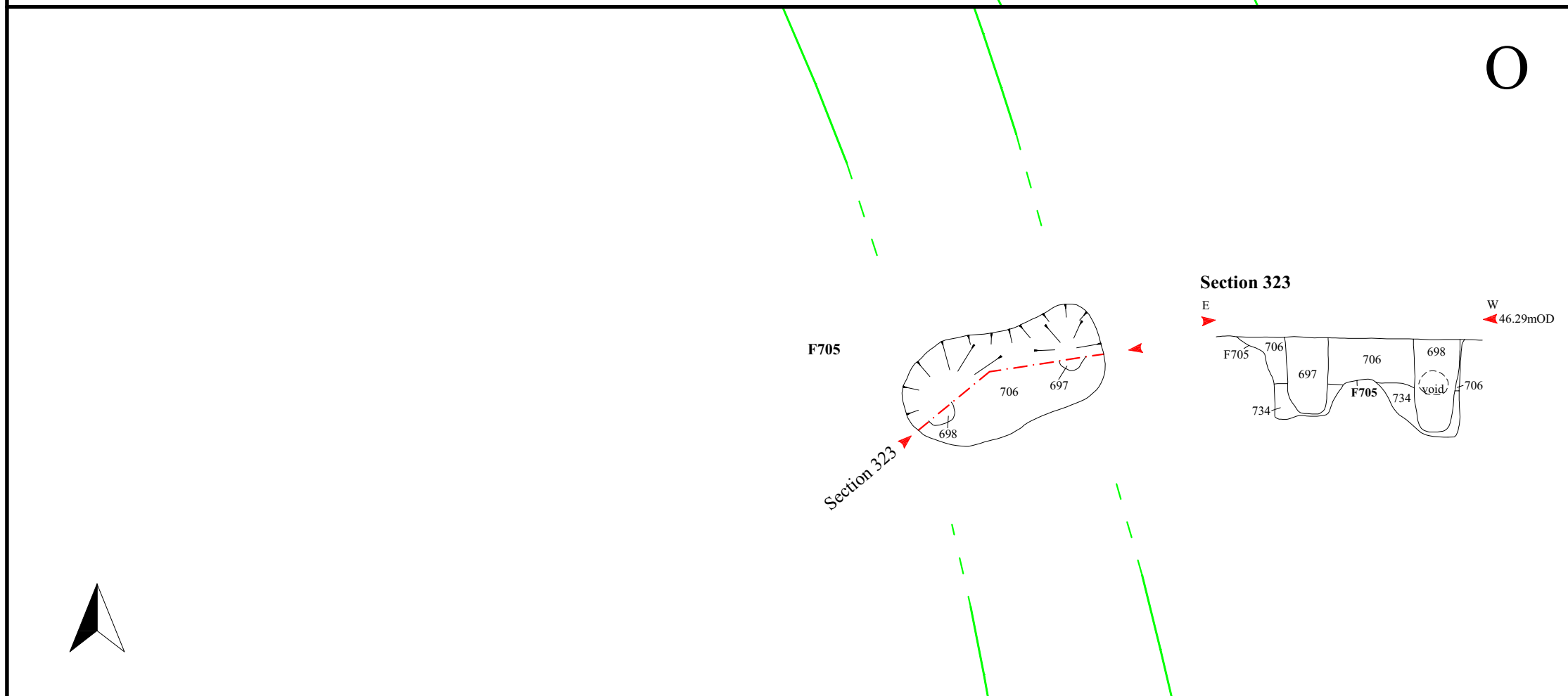
on behalf of
Gallifordtry Construction Ltd
for
Debut Management Services
Defence Estates



-  limit of excavation
-  outline of palisades
-  sampled palisade slots
-  possible late Neolithic features
-  later features cutting palisades
-  area truncated by 1930s levelling
-  location of sections



*Insert showing locations of features
 in Area N and Area O*




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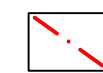
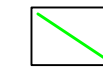




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Figure 18

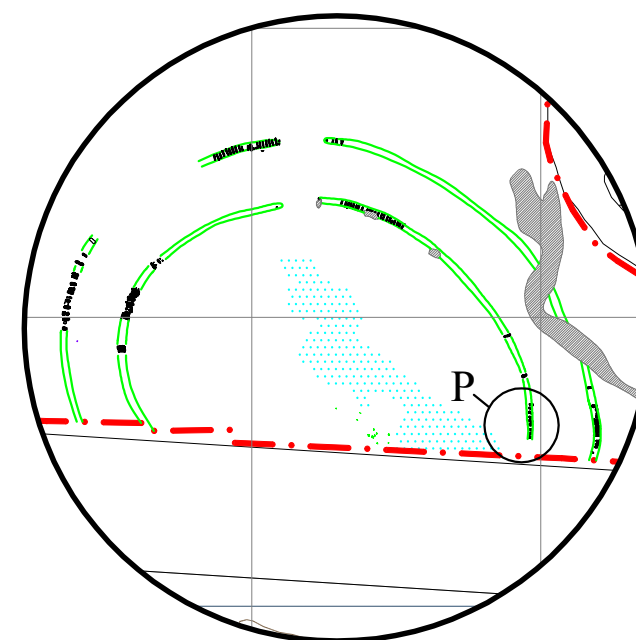
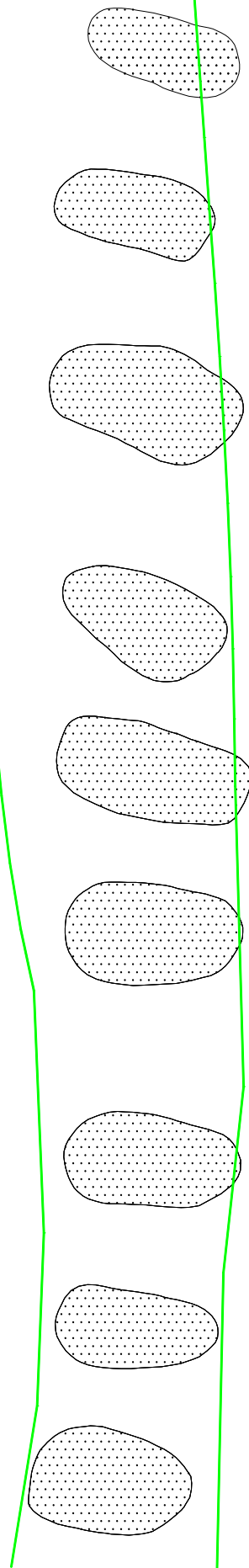
Plan of features in Area P

on behalf of
Gallifordtry Construction Ltd
for
**Debut Management Services
 Defence Estates**

0  2m
scale 1:50 - for A3 plot

-  limit of excavation
-  outline of palisades
-  sampled palisade slots
-  possible late Neolithic features
-  later features cutting palisades
-  area truncated by 1930s levelling

P



Insert showing locations of features in Area P



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Figure 19

Plan and sections of possible Phase 2
features in Area Q (late Neolithic)







on behalf of
Gallifordry Construction Ltd
for
Debut Management Services
Defence Estates



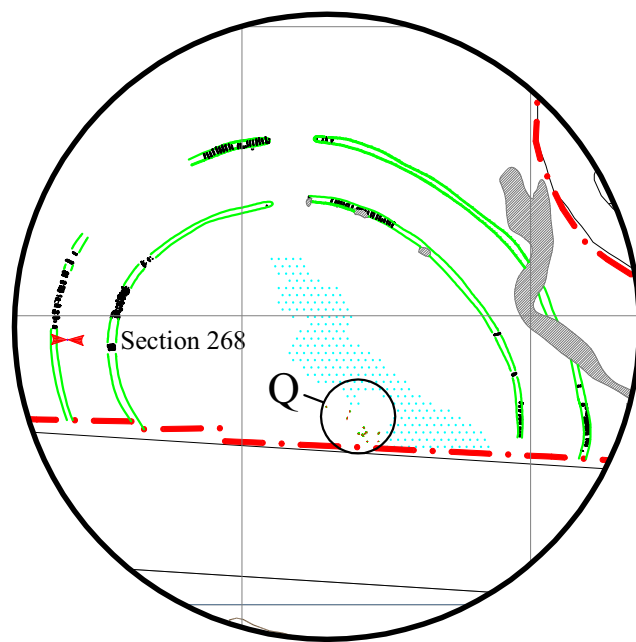
scale of sections 1:50 - for A3 plot



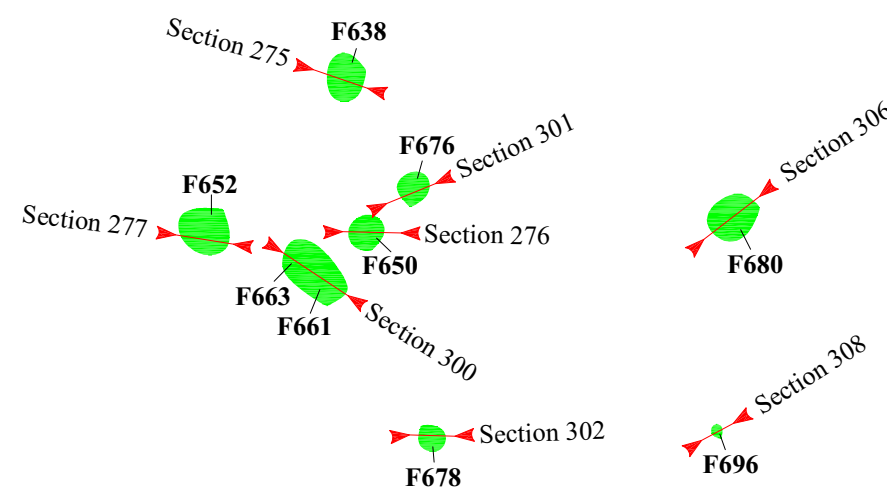
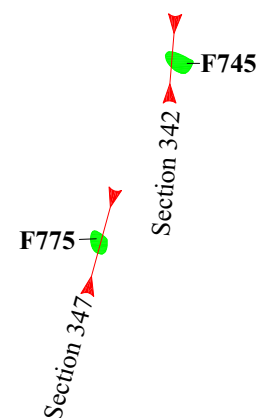
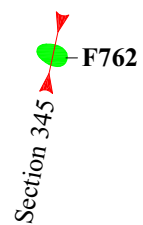
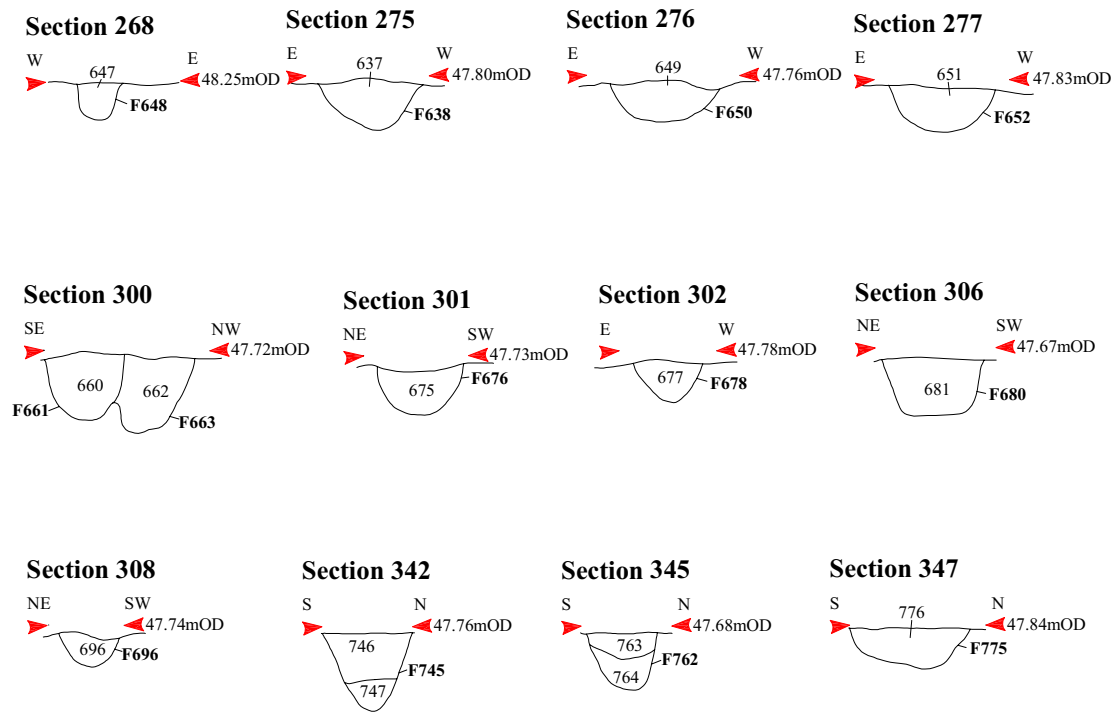
scale of plan 1:100 - for A3 plot

-  limit of excavation
-  outline of palisades
-  sampled palisade slots
-  possible late Neolithic features
-  later features cutting palisades
-  area truncated by 1930s levelling

Q



Insert showing locations of features in Area Q





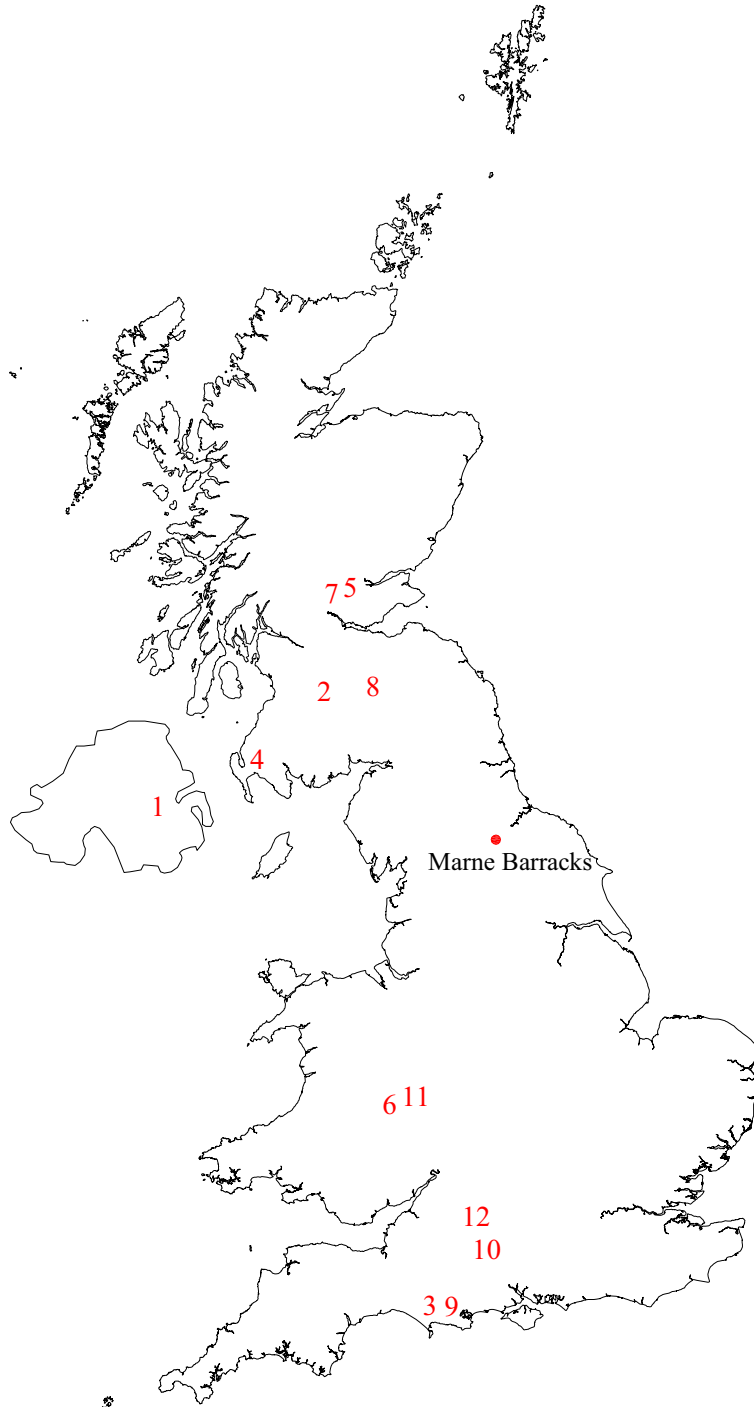
Archaeological Services
University of Durham

Marne Barracks, Catterick, North Yorkshire
post-excavation analysis report

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Figure 20 *Locations of Neolithic palisaded enclosures mentioned in the text*

on behalf of
Gallifordtry Construction Ltd
for
Debut Management Services
Defence Estates



- | | | | |
|--------------------|--------------|-------------------|----------------------------|
| 1. Ballynahatty | 4. Dunragit | 7. Leadketty | 10. Stonehenge |
| 2. Blackhouse Burn | 5. Forteviot | 8. Meldon Bridge | 11. Walton |
| 3. Greyhound Yard | 6. Hindwell | 9. Mount Pleasant | 12. West Kennet (I and II) |

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

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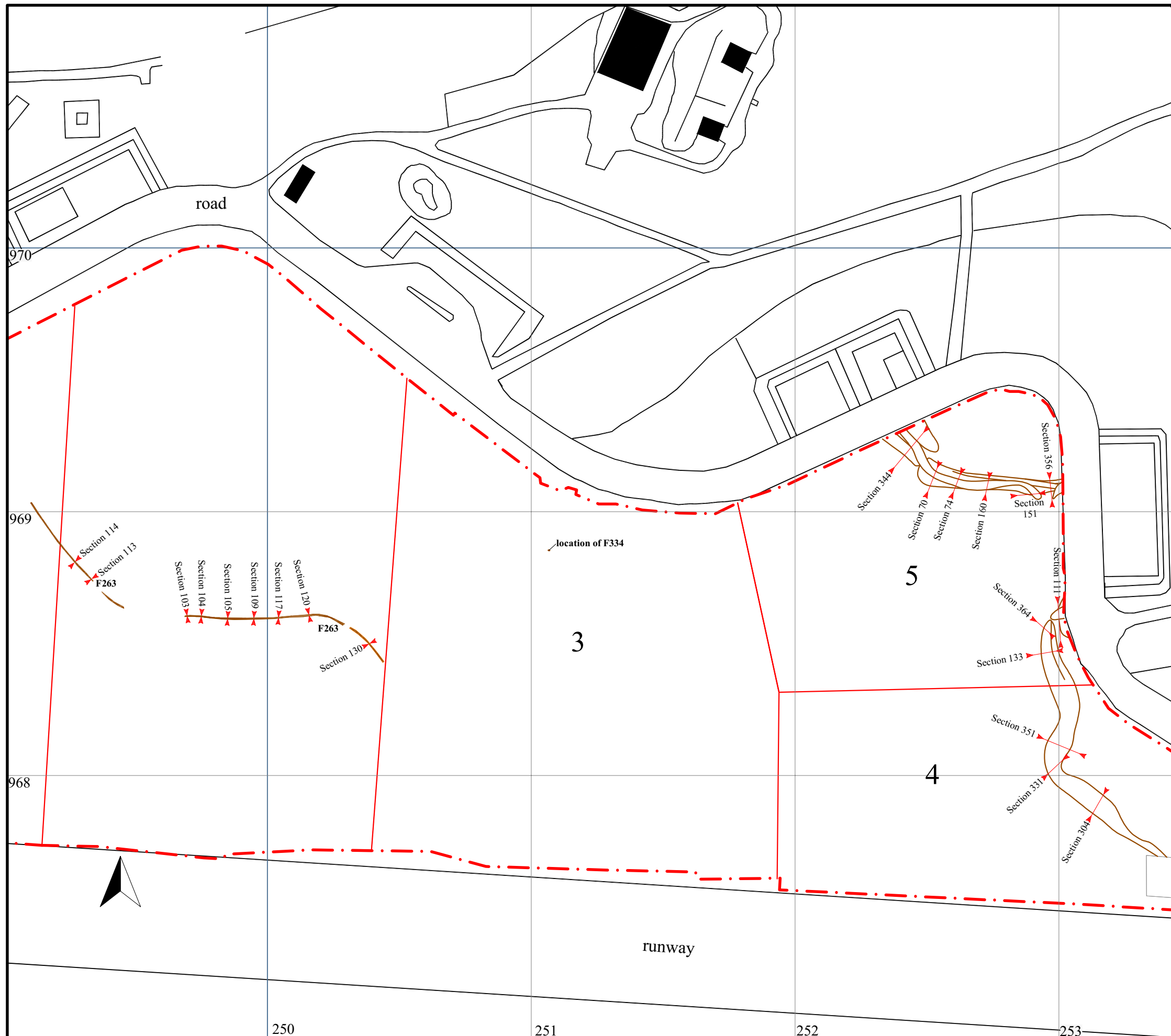
Figure 21

*Plan of Phase 3 features
(Iron Age/Roman)*

on behalf of
Gallifordtry Construction Ltd
for
**Debut Management Services
Defence Estates**

0 50m
scale 1:1500 - for A3 plot

-  limit of excavation
-  outline of Iron Age/Roman features
-  location of sections



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 North Yorkshire**

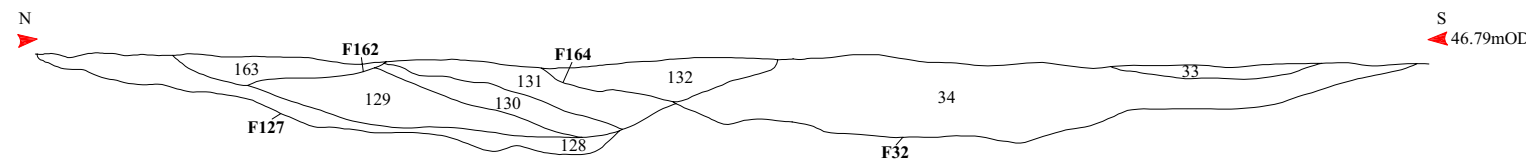
**post-excavation analysis report
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Figure 22

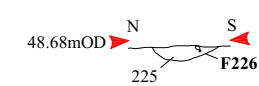
*Sections of Phase 3 features
 (Iron Age/Roman)*

on behalf of
Gallifordtry Construction Ltd
for
Debut Management Services
Defence Estates

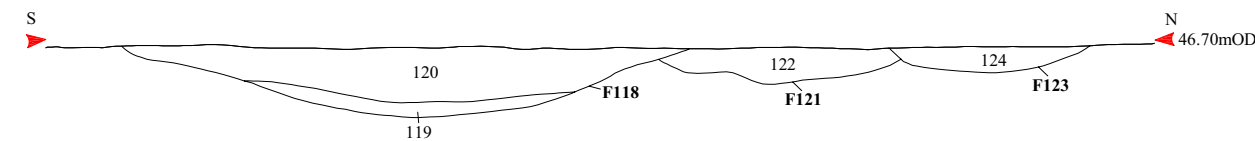
Section 70



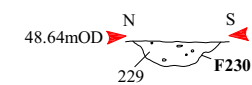
Section 103



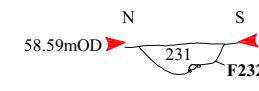
Section 74



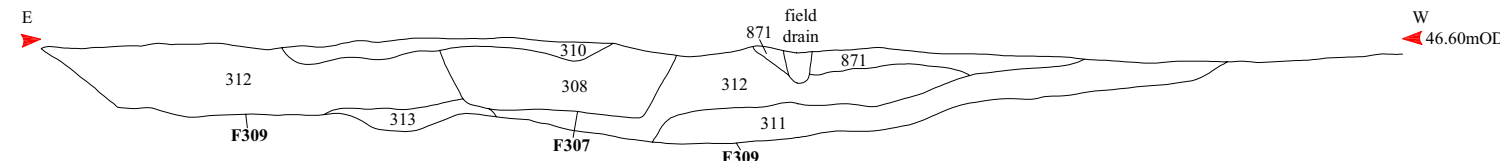
Section 104



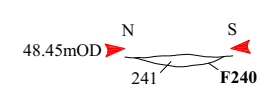
Section 105



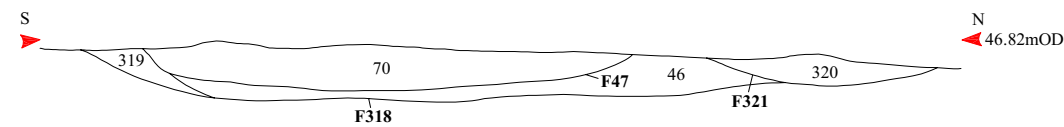
Section 151



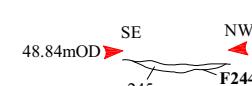
Section 109



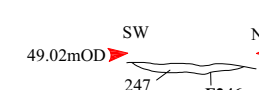
Section 160



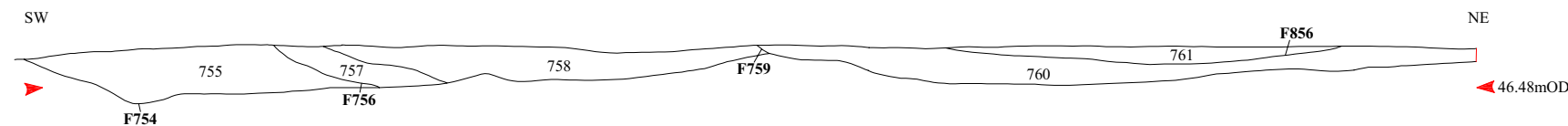
Section 113



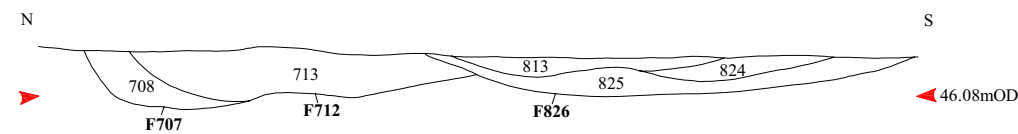
Section 114



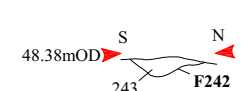
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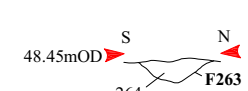
Section 356



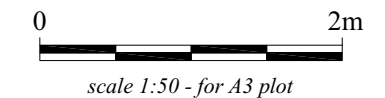
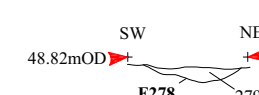
Section 117





Section 120



Section 130



- 
 limit of excavation
- 
 location of sections

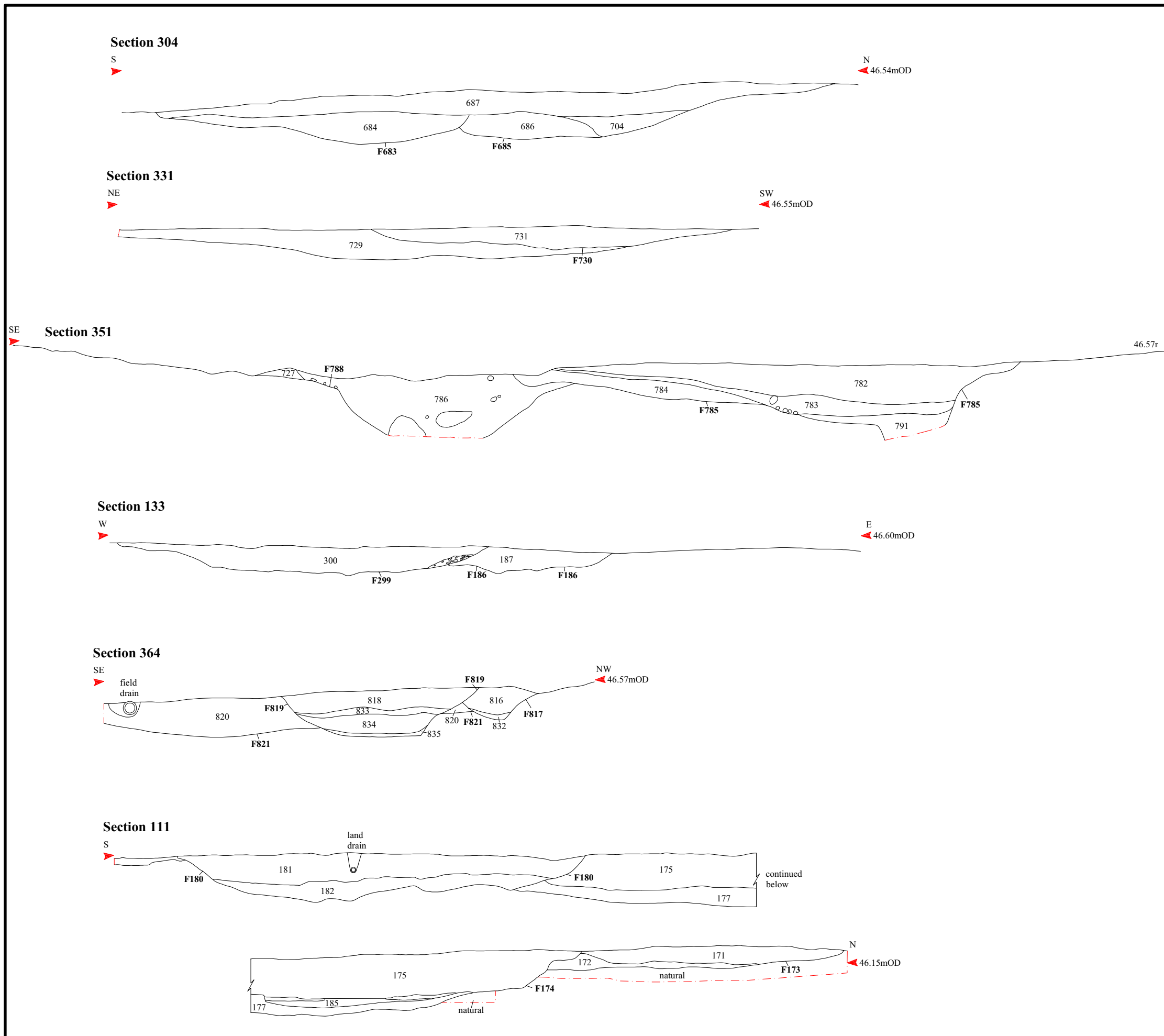
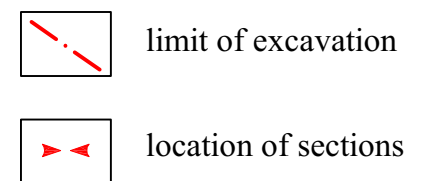
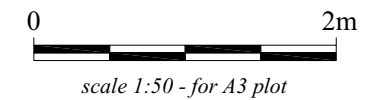
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 North Yorkshire**

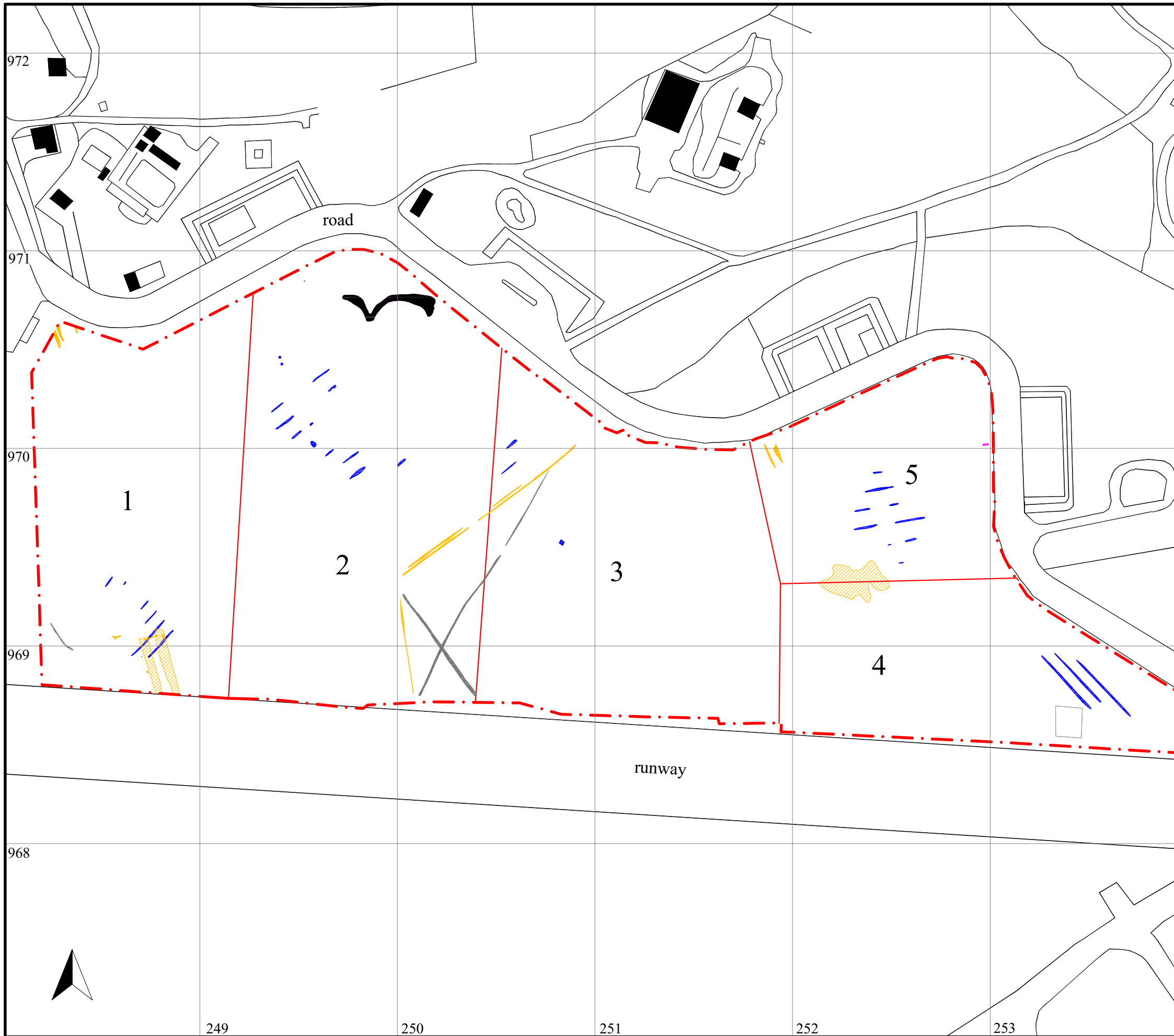
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Figure 23

*Sections of Phase 3 features
 (Iron Age/Roman)*

on behalf of
Gallifordtry Construction Ltd
for
**Debut Management Services
 Defence Estates**





Archaeological Services
University of Durham

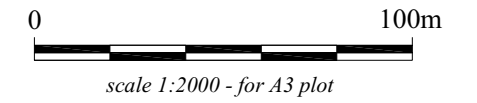
**Marne Barracks, Catterick,
North Yorkshire**







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Figure 24

*Plan of Phase 4-7 features
(early medieval to modern)*

on behalf of
Gallifordtry Construction Ltd
for
**Debut Management Services
Defence Estates**



-  limit of excavation
-  location of sections
-  Phase 7 features (modern)
-  Phase 6 features (post-medieval)
-  Phase 5 features (medieval)
-  Phase 4 features (early medieval)

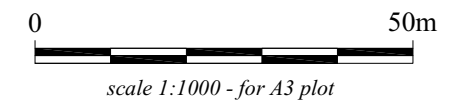
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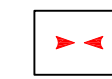
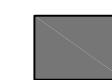
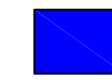
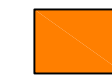

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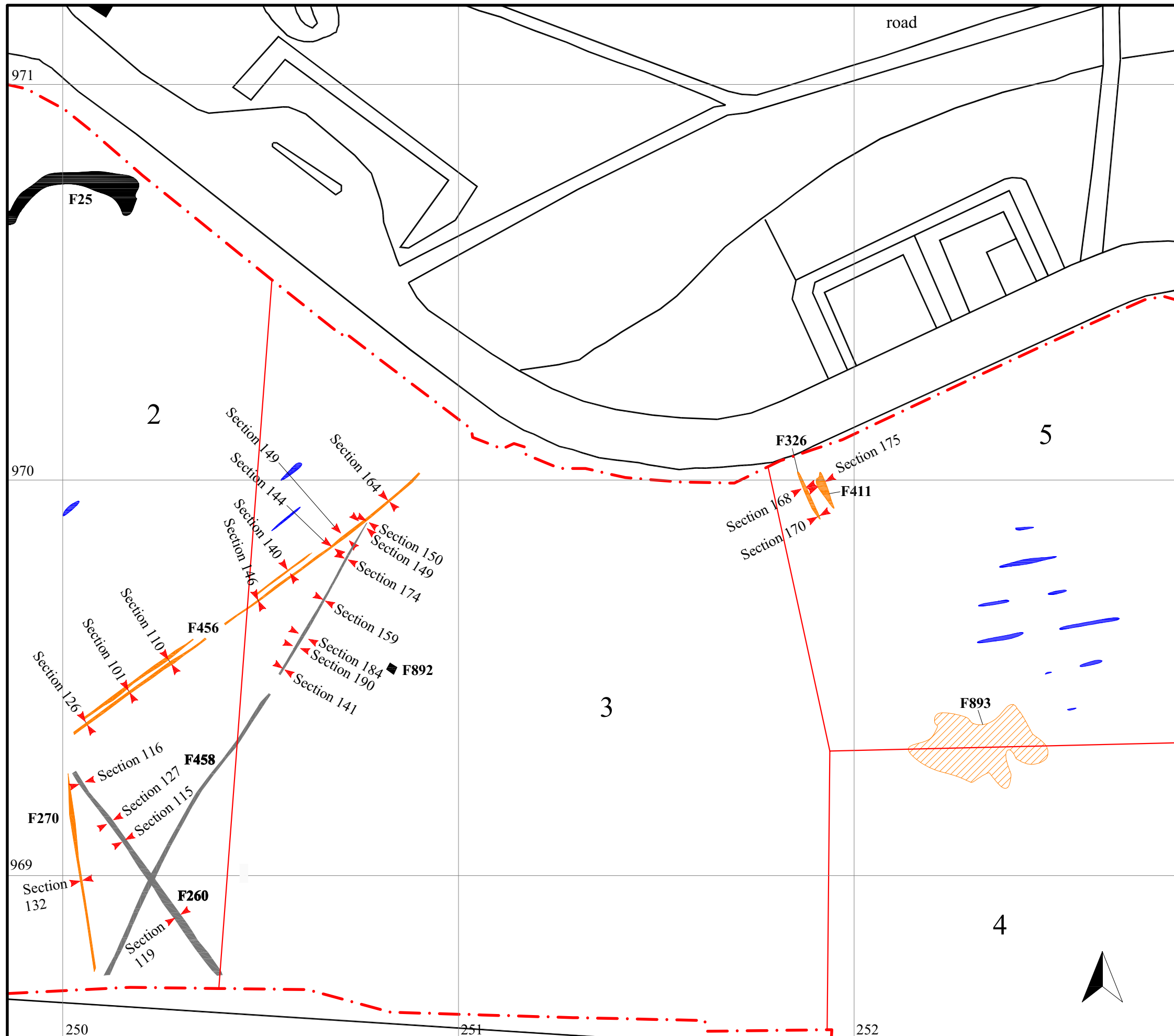
Figure 26

*Plan of Phase 4-7 features to the east
 of the site (early medieval to modern)*

on behalf of
Gallifordry Construction Ltd
for
**Debut Management Services
 Defence Estates**



-  limit of excavation
-  location of sections
-  Phase 4 features (early medieval)
-  Phase 5 features (medieval)
-  Phase 6 features (post-medieval)
-  Phase 7 features (modern)



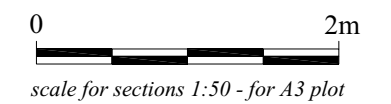
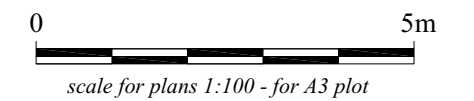
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
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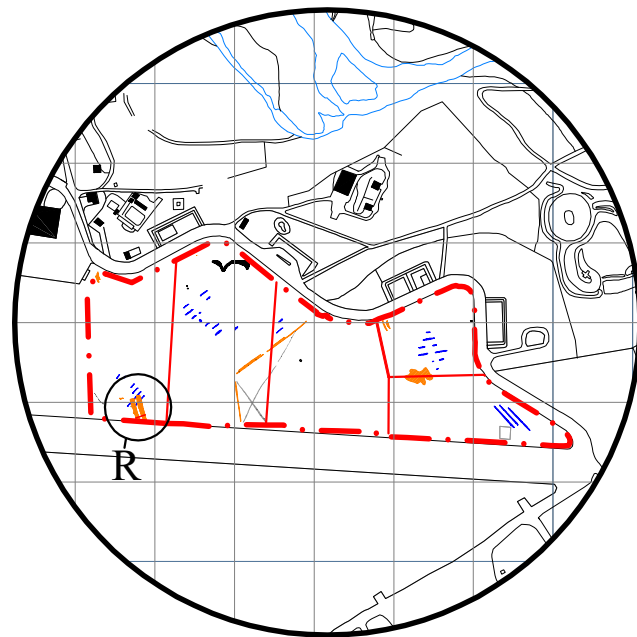
Figure 27

*Plans and sections of Phase 6 features
in Area R (post-medieval)*

on behalf of
Gallifordtry Construction Ltd
for
**Debut Management Services
Defence Estates**



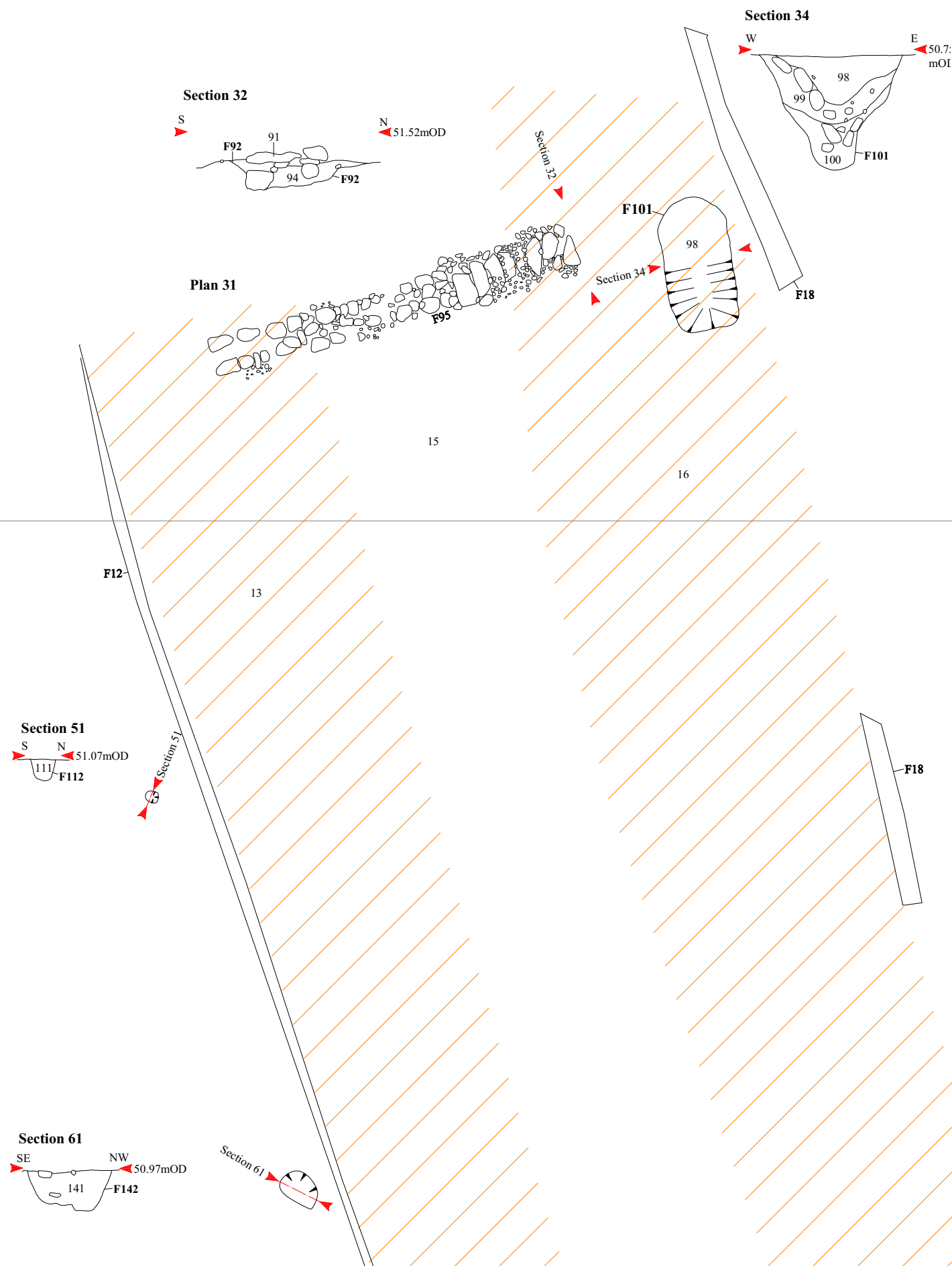
-  limit of excavation
-  location of sections
-  surface of Oran Road



Insert showing location of features in Area R

969

R



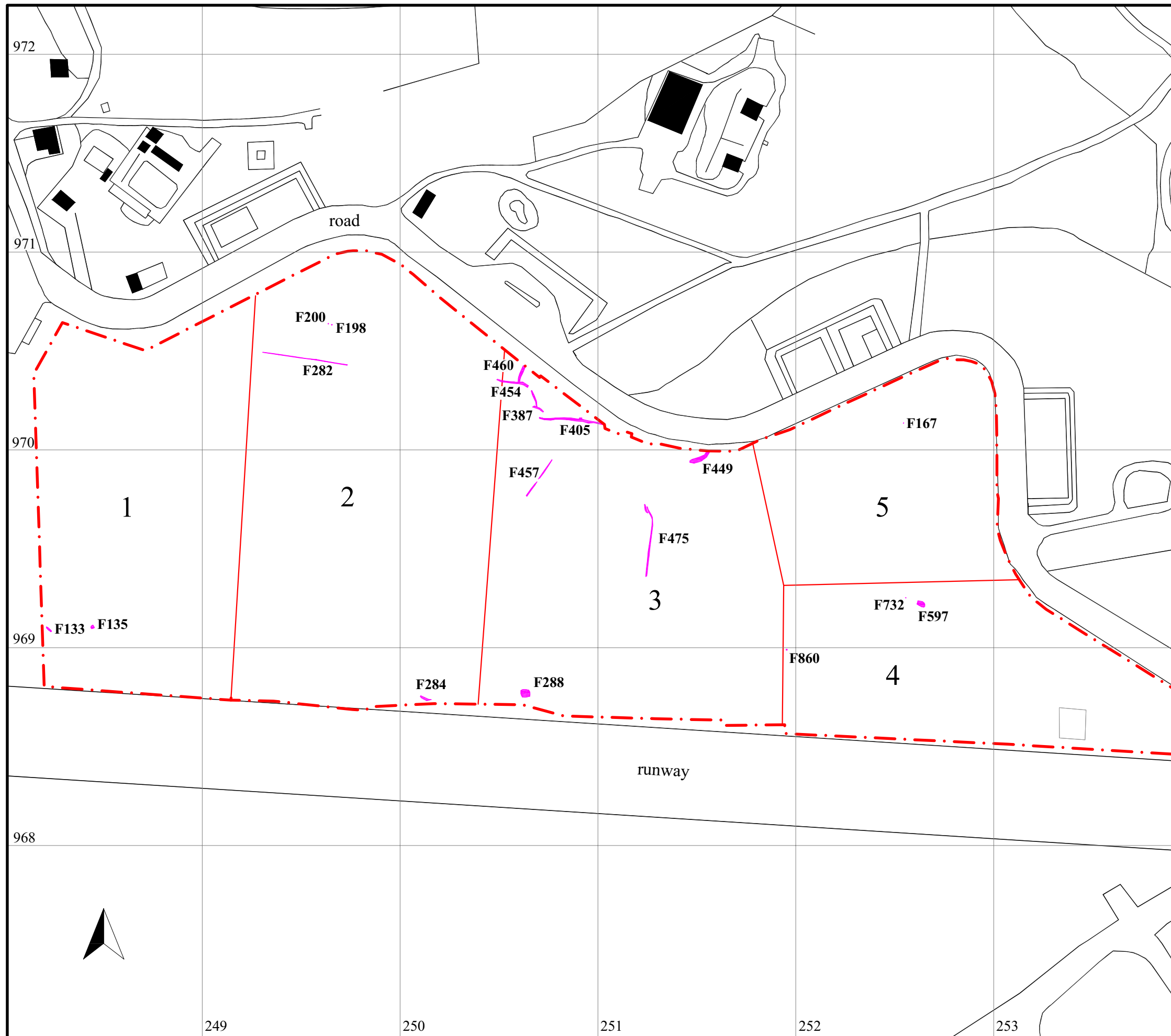
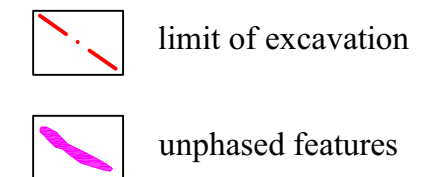
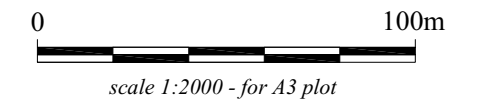
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Figure 29

Plan of unphased features

on behalf of
Gallifordtry Construction Ltd
for
**Debut Management Services
Defence Estates**





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Figure 30

*Plan and sections of unphased features
in the south-west of the site*




on behalf of
Gallifordtry Construction Ltd
for
**Debut Management Services
Defence Estates**

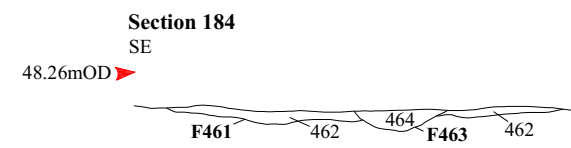
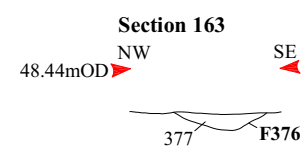
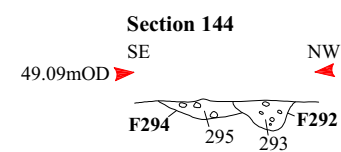
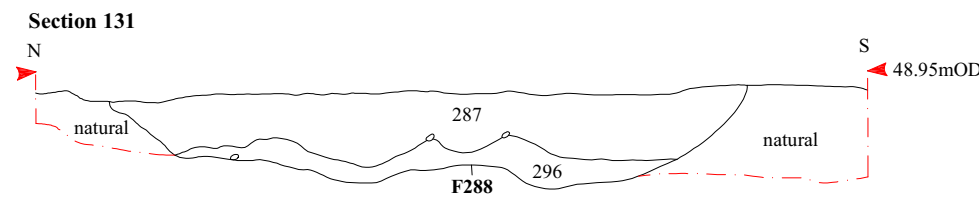
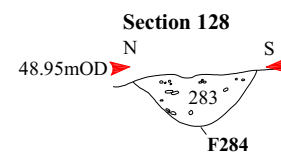
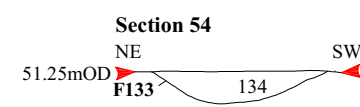
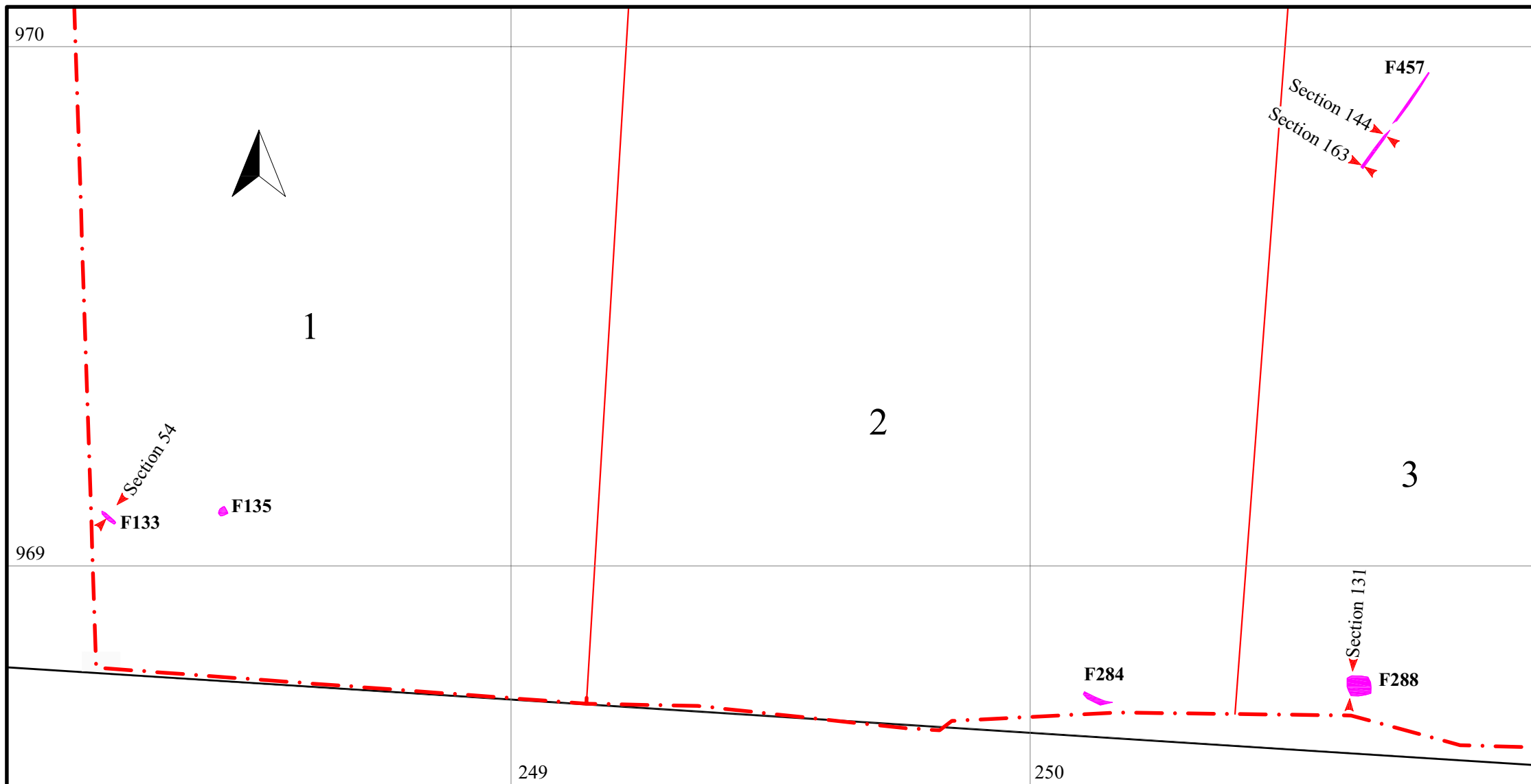


scale of plan 1:1000 - for A3 plot



scale of sections 1:50 - for A3 plot

-  limit of excavation
-  unphased features
-  location of sections



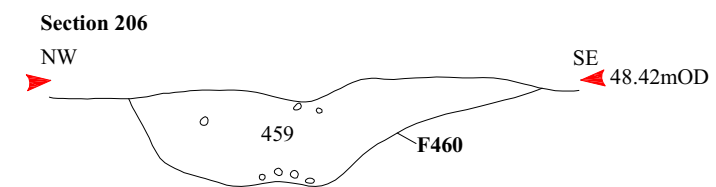
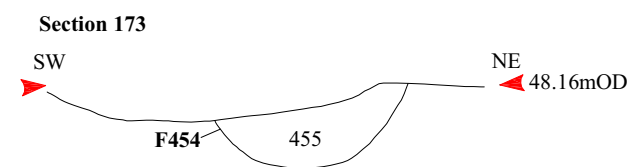
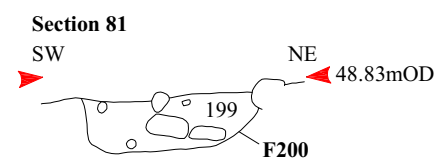
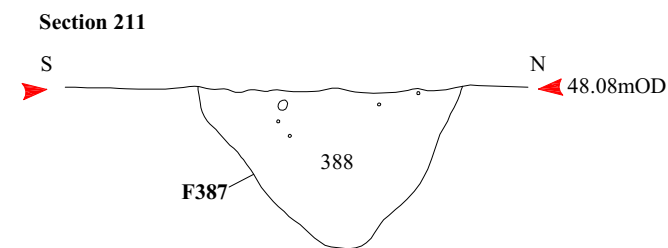
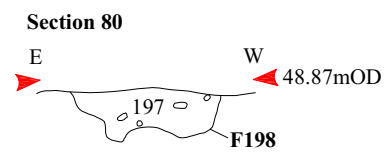
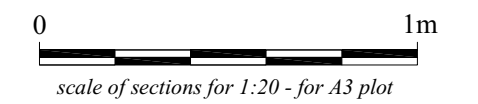
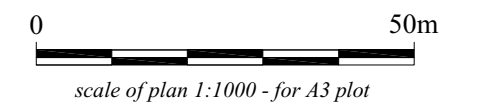
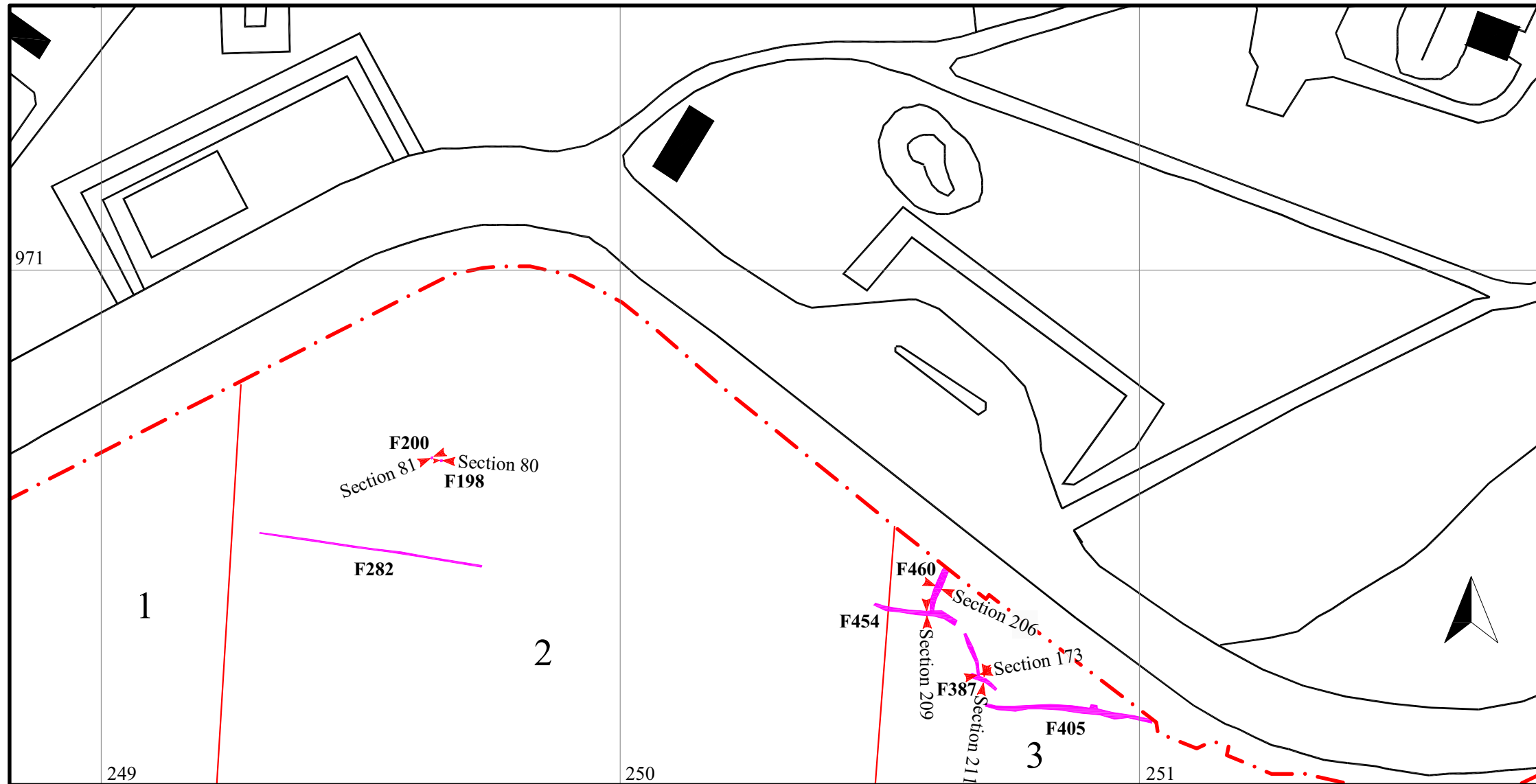
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Figure 31

*Plan and sections of unphased features
 in the north of the site*

on behalf of
Gallifordtry Construction Ltd
for
**Debut Management Services
 Defence Estates**



-  limit of excavation
-  unphased features
-  location of sections

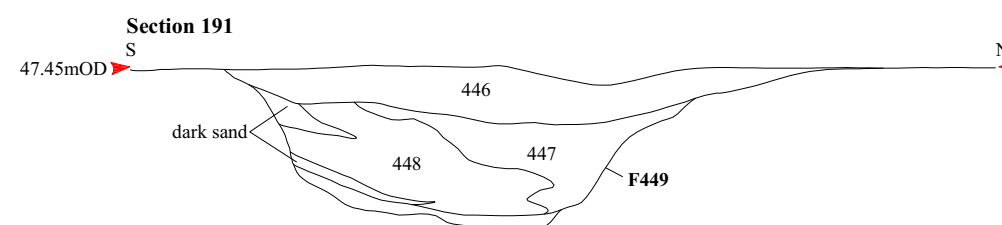
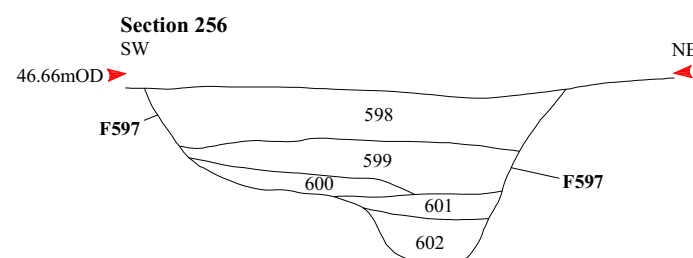
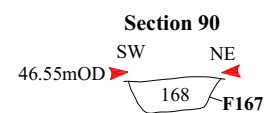
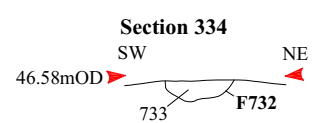
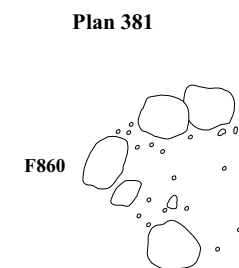
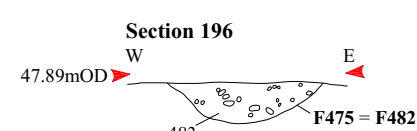
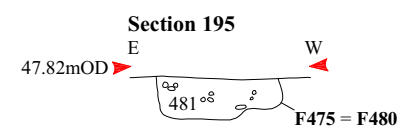
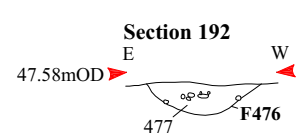
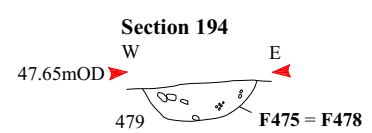
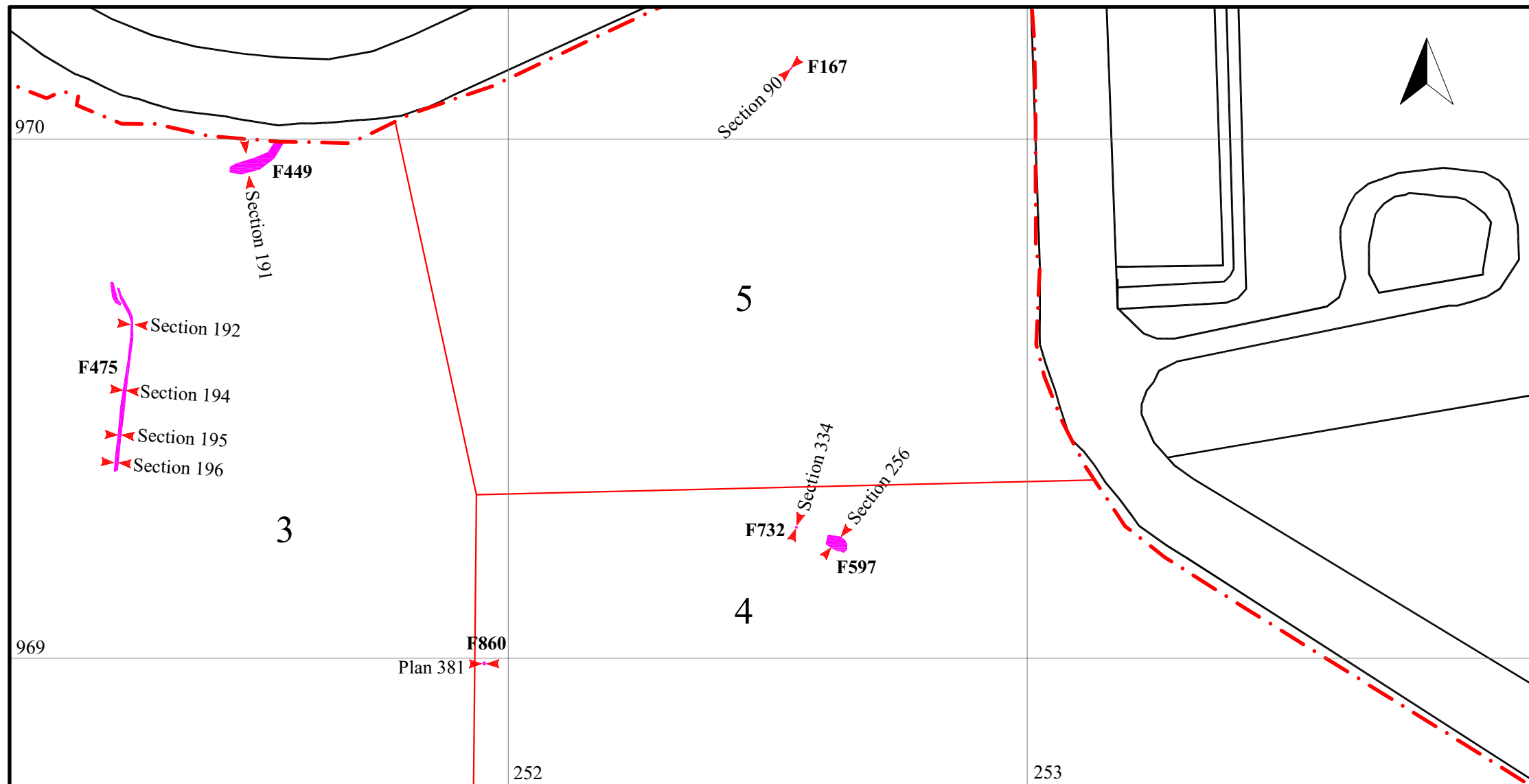
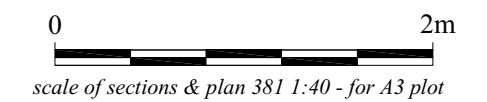
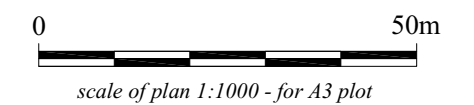
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Figure 32

Plan and sections of unphased features
in the north-east of the site

on behalf of
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for
**Debut Management Services
Defence Estates**



-  limit of excavation
-  unphased features
-  location of sections

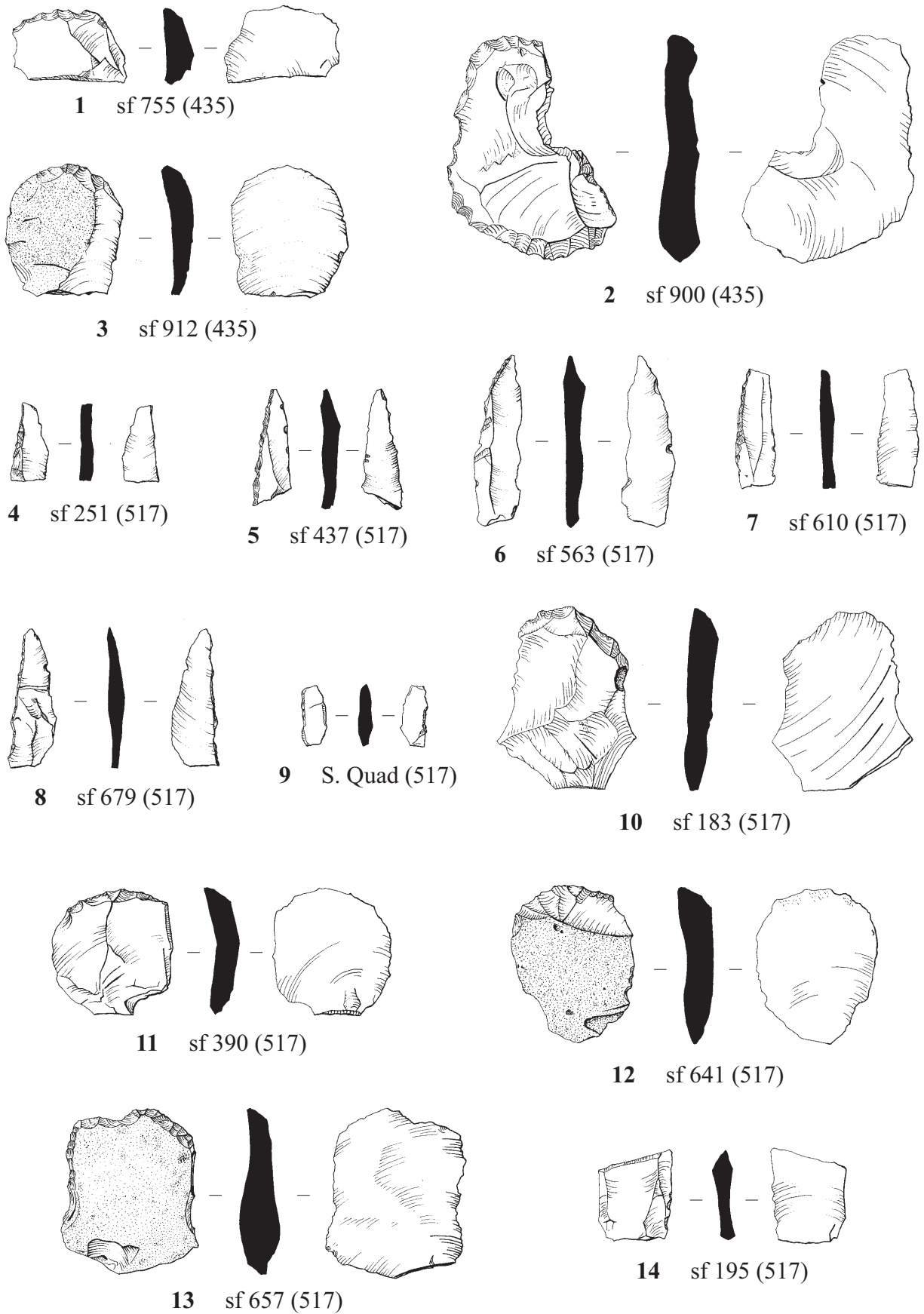
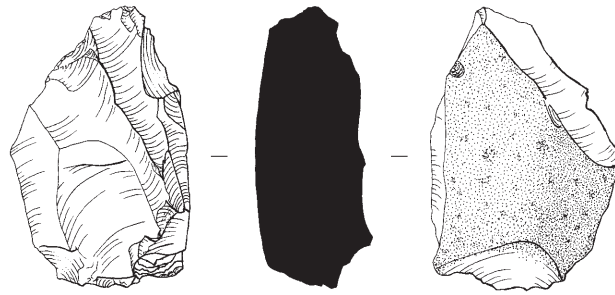
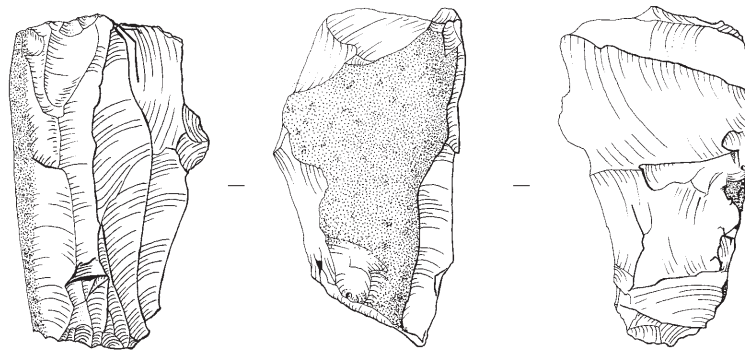


Figure 33: *Illustrated flints (scale 1:1)*

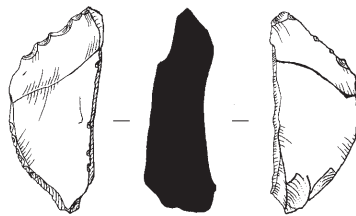




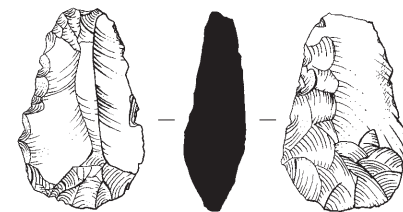
15 sf 73 (u/s)



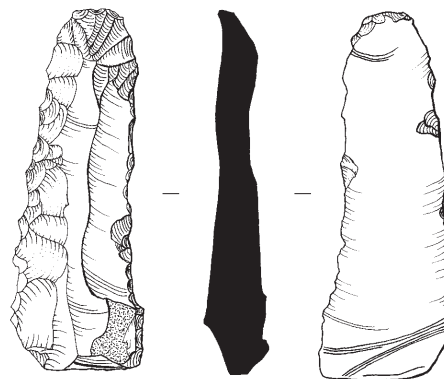
16 sf 126 (u/s)



17 sf 77 (u/s)



18 sf 2 (104)



19 sf 4 (3)



Figure 34: Illustrated flints (scale 1:1)

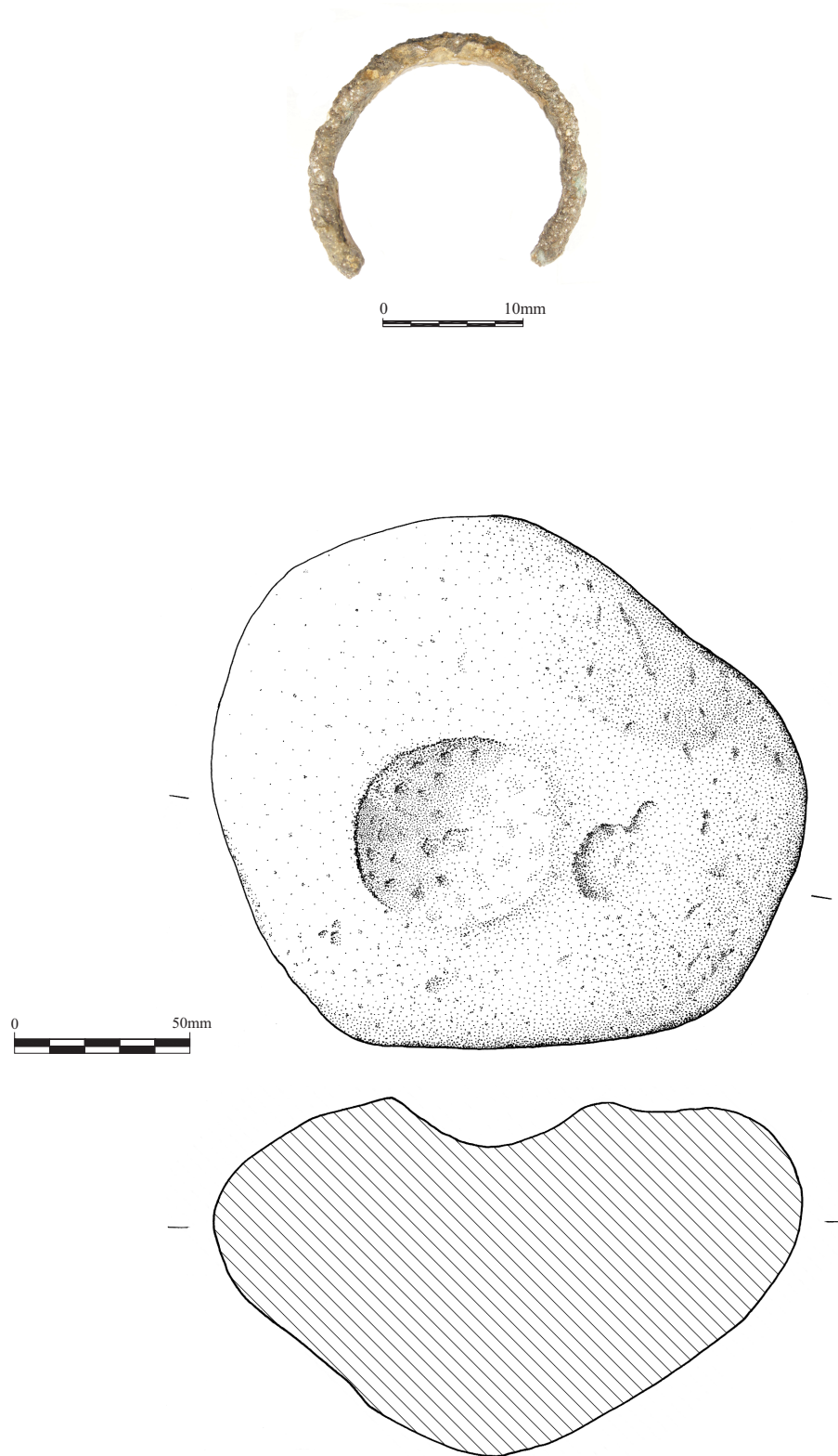


Figure 35: copper alloy ring, SF8 (scale 1:2) and cup-marked stone, from context [599] (scale 2:1)

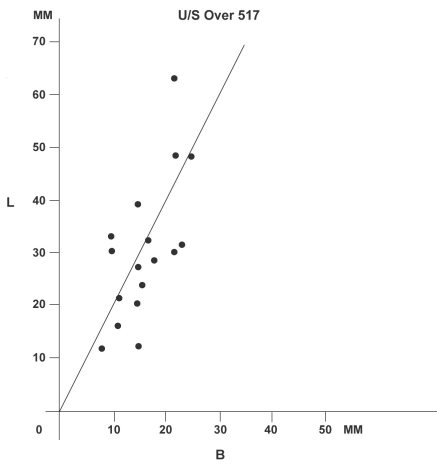
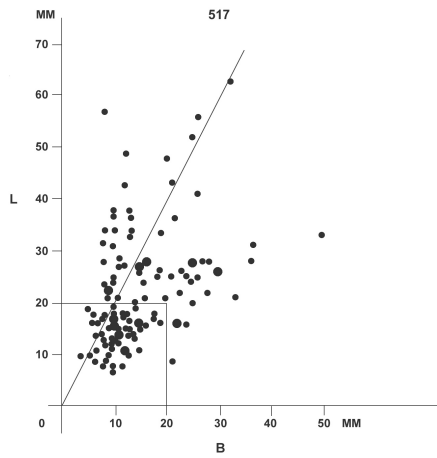
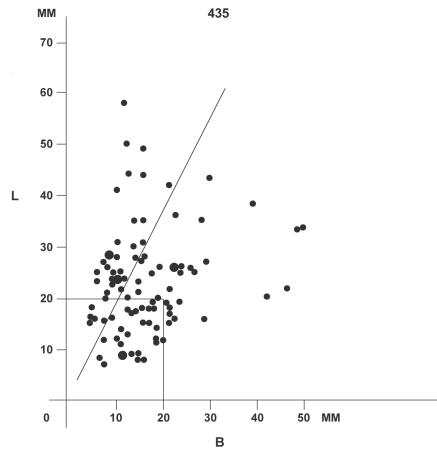


Figure 36: Flint scattergrams



Figure 37
Aerial view of the site
© English Heritage



Figure 38
Aerial view showing
palaeo-channels
© English Heritage



Figure 39
Palaeo-channel [26]
with scarp slope to west
(left)



Figure 40

Aerial view of the
palisaded enclosure

© English Heritage



Figure 41

Digitally enhanced
photo showing
construction slots, NW
edge of inner palisade

© English Heritage



Figure 42
Western edge of inner
palisade showing
carbonised posts



Figure 43
Detail of carbonised
posts



Figure 44
Half section through
slots F634 and F635



Figure 45
Construction slots
on eastern side of
outer palisade in
optimum visibility

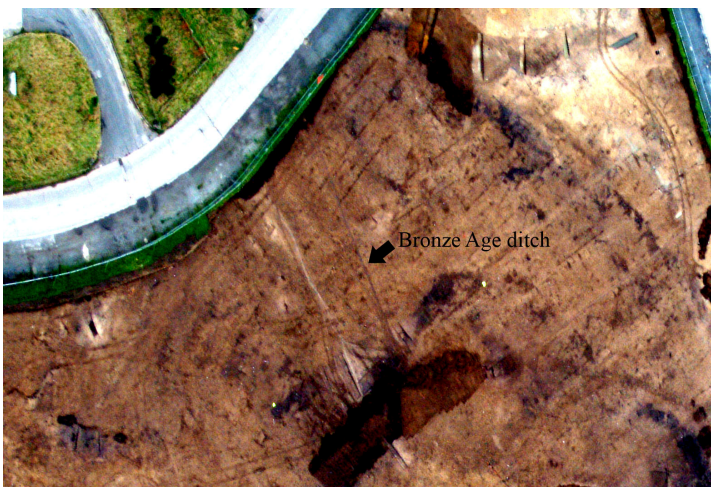


Figure 46
Digitally enhanced
photo showing
Bronze Age gully
identified during
the evaluation
© English
Heritage



Figure 47
Early medieval
gullies in area 2 in
optimum
conditions



Figure 48
Oran Road culvert

Appendix 1: Context data

Summary list of contexts. The • symbols in the columns at the right indicate the presence of finds of the following types: P pottery, B bone, M metals, F flint, S slag, O other materials.

No	Description	P	B	M	F	S	O
1	Natural sand deposit						
2	'Cut' for 1						
3	Natural gravel						
4	'Cut' for 5						
5	Natural sand deposit						
6	Lower fill of F7						
F7	Pit at western end of F61						
8	Topsoil	•					
9	'Cut' for 10						
10	Natural sand deposit						
11	Lower soil deposit under F57	•					
12	Western kerb to F57						
13	Western sub-base to F57						
14	Western surface to F57						
15	Same as 11						
16	Eastern sub-base to F57						
17	Eastern surface to F57	•					
18	Eastern kerb to F57						
19	'Cut' for 20						
20	Natural sand deposit						
F21	Section through F61						
22	Fill of F21						
23	'Cut' for 24						
24	Natural sand deposit						
F25	Modern brick structure						
26	Levelling deposit from landscaping of airfield	•		•			
27	Palaeo-channel fill						
F28	Palaeo-channel						
29	Fill of F28						
30	'Cut' for 31						
31	Natural sand deposit						
F32	Section through F885						
33	Upper fill of F32	•					
34	Lower fill of F32	•					
35	Same as F759						
36	Same as 760						
37	Variation in natural gravel 3						
38	'Cut' for 39-41						
39	Natural sand deposit above 40						
40	Natural silt deposit above 41						
41	Natural clay deposit						
42	Upper silt fill of F43						

No	Description	P	B	M	F	S	O
F43	Tree root disturbance within ditch F318						
44	Fill of F45						
F45	Tree root disturbance within ditch F318						
46	Upper fill of F885						
F47	Section through F887						
48	Lower silt fill of F43						
49	'Cut' for 50						
50	Natural sand deposit						
51	'Cut' for 52						
52	Natural sand deposit						
F53	Gully under F57 at north end of site						
54	Fill of F53						
55	Western cut for F 57						
56	Eastern cut for F57						
F57	Feature number for Oran Road						
F58	Section through F61						
59	Fill of F58						
60	Natural sand deposit						
F61	Curving E-W ditch in N of area 1						
62	Western continuation of 67						
63	Road metalling for Oran Road						
64	Western continuation of 67						
65	Natural sand deposit						
66	Natural sand deposit						
67	Palaeo-channel fill in junction of 73 and 157						
68	Same as 11			•			
69	Upper fill of F7						
70	Fill of F47	•					
71	Fill of F72		•				
F72	SW-NE furrow in area 1						
73	Palaeo-channel fill						
74	'Cut' for 75						
75	Variation in natural gravel 3						
76	'Cut' for 77						
77	Variation in natural gravel 3						
78	Same as 27						
79	Same as 26						
80	Weathered surface layer to natural gravel 3						
81	Western continuation of 157						
82	Natural sand deposit						
F83	Gully under F57 at north end of site						
84	Fill of F83	•	•				
F85	Gully under F57 at north end of site						
86	Fill of F57						
87	'Cut' for 82						
88	Post-medieval plough soil in west of area 1		•				•
89	Fill of F90					•	

No	Description	P	B	M	F	S	O
F90	NW-SE furrow in area 1						
91	Stonework of culvert F95						
92	Cut for culvert F95						
93	Same as 16						
94	Fill of culvert F95						•
F95	Culvert running under road F57						
96	Fill of F97						
F97	Unphased NW-SE gully in SW corner of area 1						
98	Upper fill of F101						•
99	Middle fill of F101						
100	Lower fill of F101						
101	Soakaway associated with culvert F95						
F102	Gully under F57 at north end of site						
103	Fill of F102						
104	Unused						
105	'Cut' for 106						
106	Small area of palaeo-channel fill						
107	Stone pile in SW corner of area 1	•	•				•
108	Palaeo-channel fill at junction of 73 and 157						
F109	Posthole cut into 107						
110	Fill of F109						
111	Fill of F112						
F112	Posthole on western edge of F57						
113	Natural sand deposit under 52						
114	Natural sand deposit under 113						
F115	Cut of tree bole						
116	Upper fill of F115						
117	Lower fill of F115						
F118	Section through F887						
119	Lower fill of F118						
120	Upper fill of F118						
F121	Section through F885						
122	Fill of F121						
F123	Section through F886						
124	Fill of F123						
125	Fill of tree root						
126	'Cut' for 125						
F127	Section through F885						
128	Lower fill of F885						
129	Fill of F885 over 128						
130	Fill of F885 over 129						
131	Fill of F885 over 130						
132	Fill of F164						
F133	Gully cut parallel to F97						
134	Fill of F133						
F135	Pit cut						
136	Fill of F135						

No	Description	P	B	M	F	S	O
137	'Cut' for 138						
138	Small area of palaeo-channel fill						
139	Fill of F140						
F140	Cut of ridge and furrow						
141	Fill of F142			•			
142	Pit along western edge of F57						
143	Same as F139						
144	Same as F140						
145	Natural sand deposit						
146	Natural sand deposit under 145						
147	Natural clay deposit under 146						
148	Palaeo-channel fill						
149	'Cut' for 149						
F150	Modern concrete blocks						
151	Palaeo-channel fill under 138						
152	Eastern continuation of 157						
F153	Cut of disturbed furrow within ridge and furrow						
154	'Cut' for 155						
155	Western continuation of 148						
156	Fill of F153						
157	Palaeo-channel fill						
158	Eastern continuation of 157						
159	Eastern continuation of 157						
F160	Cut for Tree bole						
161	Fill of F160						
F162	Section through F886						
163	Fill of F886						
F164	Section through F887						
F165	Slit trench						
166	Fill of F165						
F167	Posthole cutting ditch fill 131						
168	Fill of F167						
169	Natural silt deposit						
170	Natural sand deposit under 169						
171	Upper fill of F173						
172	Lower fill of F173						
F173	Cut for E-W ditch cutting N-S one in area 5						
F174	Re-cut to F173						
175	Upper fill of F174						
176	Same as F174						
177	Lower fill of F174						
178	Same as 175						
179	Same as 177						
F180	Re-cut to F174						
181	Upper fill of F180						
182	Lower fill of F180						
F183	Cut for land drain						

No	Description	P	B	M	F	S	O
184	Fill of F183						
185	Gravel lens in 175						
F186	Cut for section through N-S ditch, areas 4+5						
187	Fill of F186	•					
188	Fill of F189						
F189	Palaeo-channel running round knapping platform						
190	Eastern continuation of 157						
191	Cut for 190						
F192	Cut of ridge and furrow						
193	Fill of F192						
194	Small area of palaeo-channel fill						
195	Small area of palaeo-channel fill						
196	Eastern continuation of 157						
197	Fill of F198						
F198	Pit in north of area 2						
199	Fill of F198						
F200	Pit in north of area 2						
201	Cut for 202						
202	Small area of palaeo-channel fill						
203	Cut of 204						
204	Eastern continuation of 157						
205	Natural sand deposit						
206	Natural sand deposit						
207	Natural sand deposit						
F208	Cut of ridge and furrow						
209	Fill of F208						
210	Cut for 212						
211	Same as 26						
212	Fill of large palaeo-channel at E end of 73						
213	'Cut' for 214						
214	Natural silt deposit						
215	Natural sand deposit						
216	Eastern continuation of 204						
217	Light brown clay under 216						
218	Cut for 216						
F219	Section through F456						
220	Fill of F219						
221	Eastern continuation of 148						
222	'Cut' for 221						
223	Natural sand deposit						
224	Fill of F233						
225	Fill of F226						
F226	Section through F263						
227	Cut for 228						
228	Palaeo-channel fill						
F229	Section through F263						
230	Fill of F229						

No	Description	P	B	M	F	S	O
F231	Section through F263						
232	Fill of F231						
F233	Post-medieval pit cut						
F234	Section through F456						
235	Fill of F234						
F236	Gully parallel to F456						
237	Fill of F236						
238	Same as 27						
239	'Cut' for 238						
F240	Section through F263						
241	Fill of F240						
F242	Section through F263						
243	Fill of F242						
F244	Section through F263						
245	Fill of F244						
F246	Section through F263						
247	Fill of F246						
248	Same as 238						
F249	Section through F260						
250	Lower fill of F249						
251	Middle fill of F249						
252	Upper fill of F249						
F253	Section through F456						
254	Fill of F253						
255	Area of coal and ash						
256	Small area of palaeo-channel fill						
257	Natural sand deposit						
258	Fill of F258						
F259	Section through F260						
F260	Unphased NW-SE gully in south of area 2						
F261	Section through F260						
262	Fill of F261						•
F263	Unphased E-W gully in centre of area 2						
264	Fill of F264						
F265	Cut for shallow depression in natural ground surface						
266	Fill of F265						
267	Cut for 267						
268	Eastward continuation of palaeo-channel 73						
269	Same as F270						
F270	Post-medieval field boundary ditch						
271	Fill of F270						
F272	Cut for shallow depression in natural ground surface						
273	Fill of F272						
274	Same as 267						
275	Same as 268						
276	Unused						
277	Lower palaeo-channel fill under 212						

No	Description	P	B	M	F	S	O
F278	Section through F263						
279	Fill of F278			•			
280	Fill of F281						
F281	Section through F260						
F282	E-W gully in north of area 2						
283	Fill of F284						
F284	Unphased NW-SE gully in south of area 2						
285	Natural silt deposit						
286	Natural silt deposit						
287	Upper fill of F288						
F288	Large pit in south of area 3						
289	Northern continuation of 465						
F290	Section through F458						
291	Fill of F290						
F292	Section through F456						
293	Fill of F292						
F294	Section through F457						
295	Fill of F394						
296	Lower fill of F288						
297	Fill of F298						
F298	Section through F270						
F299	Re-cut to F286						
300	Fill of F299						
F301	Cut for land drain						
302	Fill of F301						
303	Same as 189						
304	Same as 188						
305	Same as 189						
306	Same as 188						
F307	Section through F887						
308	Fill of F307						
F309	Section through F885						
310	Same as 26						
311	Silt patch in base of F309						
312	Gravel fill of F309						
313	Silt patch in base of F309						
314	Fill of F315						
F315	Northwesterly continuation of F189						
316	Fill of F317						
F317	Silt patch outside F189						
F318	Section through F885						
319	Lower fill of F885						
320	Fill of F321						
321	Section through F886						
322	Cut for 324						
323	Same as 26						
324	Fill of palaeo-channel						

No	Description	P	B	M	F	S	O
325	Fill of F326						
F326	Gully on west side of post-medieval track						
327	Palaeo-channel fill under 324						
328	Unused						
329	Small area of palaeo-channel fill						
330	Cut for 329						
331	Eastern continuation of 465						
332	Same as 334						
333	Supposed cut for 334 – not a real feature						
334	Spread of Roman pottery within 26	•					
335	Fill of F336						
F336	Section through F456						
337	Natural silt deposit						
338	Small area of palaeo-channel fill						
339	Natural sand deposit						
340	'Cut' for 339						
341	Fill of F342						
F342	Section through F456						
343	Natural silt deposit						
F344	Section through F458						
345	Fill of F458						
F346	Section through F458						
347	Fill of F346						
F348	Section through F456						
349	Fill of F348	•					
F350	Section through F457						
351	Fill of F350						
F352	Section through F458						
353	Fill of F352						
F354	Section through F456						
355	Fill of F354						
356	Cut for 357						
357	Section through 465						
358	Cut for 359						
359	Section through 465						
360	Small area of palaeo-channel fill						
361	Cut for 360						
362	Southern continuation of 465						
363	Small area of palaeo-channel fill						
364	Same as 368						
365	Natural sand deposit						
366	Fill of F367						
F367	Section through F458						
368	Natural sand deposit						
369	'Cut' for 368						
370	Small area of palaeo-channel fill						
371	Small area of palaeo-channel fill						

No	Description	P	B	M	F	S	O
372	Unused						
373	'Cut' for 374/5						
374	Gravel under 375						
375	Natural silt deposit						
F376	Section through F457						
377	Fill of F376						
F378	Section through F456						
379	Fill of F378						
F380	Section through F456						
381	Fill of F380						
382	Shallow hollow in natural ground surface						
383	Small area of palaeo-channel fill						
384	Cut for 383						
385	Shallow hollow in natural ground surface						
386	Shallow hollow in natural ground surface						
F387	E-W gully cut by gully F454						
388	Fill of F387						
389	Fill of F390	•					
F390	Section through F458						
391	Shallow hollow in natural ground surface						
392	Shallow hollow in natural ground surface						
393	Shallow hollow in natural ground surface						
394	Outer post in F875						
395	Small area of palaeo-channel fill along N baulk						
396	Natural silt deposit						
397	Gravelly silt under 396						
398	'Cut' for 396/7						
399	Small area of palaeo-channel fill along N baulk						
400	Fill of F401						
F401	Gully parallel to F456						
402	Fill of F402						
F403	Gully parallel to F456						
404	Shallow hollow in natural ground surface						
F405	E-W gully in north of area 3						
406	Same as F405						
407	'Cut' for 408						
408	Section through 465						
409	Same as 408						
410	Fill of F411						
F411	Gully on east side of post-medieval track						
412	Same as 410						
413	Same as 411						
414	Natural silt deposit						
415	'Cut' for 414						
416	Natural silt deposit						
417	'Cut' for 416						
418	Palaeo-channel fill						

No	Description	P	B	M	F	S	O
419	'Cut' for 418						
420	Same as 418						
421	Same as 419						
422	Unused						
423	Unused						
424	Cut for 425						
425	Tree bole						
426	Upper fill of F428						
427	Lower fill of F428						
F428	Post slot in outer palisade, disturbed by tree roots						
429	'Cut' for 430						
430	Natural silt deposit						
431	'Cut' for 432						
432	Natural silt deposit						
433	'Cut' for 434						
434	Natural silt deposit						
435	Knapping platform						
436	Fill of F437						
F437	Post slot in outer palisade						
438	Inner post in F437						
439	Outer post in F437						
440	Silt under knapping platform 435						
441	Unused						
442	Unused						
443	Unused						
444	Unused						
445	Natural silt deposit						
446	Upper fill of F449						
447	Silt lower fill of F449						
448	Gravel lower fill of F449						
F449	Curving ditch in NE of area 3						
450	Natural silt deposit						
451	Natural gravel deposit						
452	Natural sand deposit						
453	'Cut' for 450-2						
F454	Unphased curving gully in north of area 3						
455	Fill of F454						
F456	Post-medieval field boundary ditch in areas 2 and 3						
457	Unphased SW-NE gully in areas 2 and 3						
F458	Unphased SW-NE gully in areas 2 and 3						
459	Fill of F460						
F460	Unphased N-S gully in north of area 3						
461	Cut for 462						
462	Small area of palaeo-channel fill						
F463	Section through F458						
464	Fill of F463						
465	Palaeo-channel fill						

No	Description	P	B	M	F	S	O
466	Fill of F467						
F467	Cut of ridge and furrow						
468	Fill of F469						
F469	Cut of ridge and furrow						
F470	Section through F458						
471	Fill of F470						
472	Small area of palaeo-channel fill						
473	Natural silt deposit						
474	Fill of F893						
F475	Unphased N-S gully in area 3						
F476	Section through F475						
477	Fill of F476						
F478	Section through F475						
479	Fill of F478						
F480	Section through F475						
481	Fill of F480						
F482	Section through F475						
483	Fill of F482						
484	Fill of F484						
485	Inner post in F487						
486	Outer post in F487						
F487	Post slot in outer palisade						
488	Natural sand deposit						
489	Inner post in F494						
490	Post-pipe for 489						
491	Outer post in F494						
492	Post-pipe for 491						
493	Fill of F494						
F494	Post slot in inner palisade F541						
495	Inner post in F869						
496	Post-pipe for 495						
497	Same as 870						
498	Same as F869						
499	Outer post in F869						
500	Post-pipe for 499						
501	Same as 870						
502	Same as F869						
503	Outer post in F506						
504	Fill of F506						
505	Inner post in F506						
F506	Post slot in outer palisade						
F507	Post slot in outer palisade						
508	Inner post in F507						
509	Unused						
510	Leeched lower half of 508						
511	Outer post in F565						
512	Same as 565						

No	Description	P	B	M	F	S	O
513	Inner post in F634						
514	Outer post in F634						
515	Post pipe fill below 503						
516	Post pipe fill below 505						
517	Silt over knapping platform 435						
518	Inner post in F530						
519	Post-pipe for 518						
520	Post-pipe for 521						
521	Inner post in F594						
522	Post-pipe for 523						
523	Outer post in F594						
524	Outer post in F507						
525	Leeched lower half of 524						
526	Outer post in F530						
527	Post-pipe for 526						
528	Fill of F507						
529	Fill of F530						
F530	Post slot in inner palisade F541						
F531	Post slot in inner palisade F541						
532	Outer post in F531						
533	Same as 531						
534	Inner post in F531						
535	Fill of F536						
536	Post slot in inner palisade F541						
537	Inner post in F874						
538	Post-pipe for 537						
539	Outer post in F874						
540	Post-pipe for 539						
F541	Feature no. for inner palisade of Neolithic enclosure						
F542	Feature no. for outer palisade of Neolithic enclosure						
543	Unused						
544	Inner post in F574						
545	Unused						
546	Outer post in F574						
547	Unused						
548	Unused						
549	Unused						
F550	Post slot in inner palisade F541						
551	Same as 581						
552	Same as 581						
553	Fill of F550						
554	Same as 582						
555	Post-pipe for 394						
556	Inner post in F875						
557	Post-pipe for 556						
558	Inner post in F666						
559	Post-pipe for 558						

No	Description	P	B	M	F	S	O
560	Outer post in F666						
561	Post-pipe for 560						
562	Inner post in F565						
563	Same as 565						
564	Fill of F565						
F565	Post slot in inner palisade F541						
566	Inner post in F569						
567	Post-pipe for 566						
568	Fill of F569						
F569	Post slot in inner palisade F541						
F570	Post slot in outer palisade						
571	Fill of F570						•
572	Post-pipe for 573						
573	Inner post in F570						
F574	Post slot in outer palisade						
575	Fill of F574						
576	Outer post in F635						
577	Post-pipe for 578						
578	Outer post in F581						
579	Post-pipe for 580						
580	Inner post in F581						
F581	Post slot in inner palisade F541						
582	Fill of F581						
583	Same as 582						
584	Inner post in F874						
585	Post-pipe for 584						
586	Outer post in F874						
587	Post-pipe for 586						
588	Fill of F531						
589	Same as 588						
590	Palaeo-channel fill						
591	Cut for 590						
592	Inner post in F536						
593	Post-pipe for 592						
F594	Post slot in outer palisade						
595	Fill of F594						
596	Inner post in F615						
F597	Large pit cutting inner palisade F541						
598	Upper fill of F597						
599	Fill of F 597 below 598						•
600	Fill of F 597 below 599						
601	Fill of F 597 below 600						
602	Fill of F 597 below 601						
603	Outer post in F615						
F604	Post slot in outer palisade						
605	Fire-altered gravel in base of 606						
606	Inner post in F604						

No	Description	P	B	M	F	S	O
607	Fire-altered gravel in base of 608						
608	Outer post in F604						
609	Fill of F604						
610	Inner post in F878						
611	Post-pipe for 610						
612	Outer post in F878						
613	Post-pipe for 612						
614	Fill of F615						
615	Post slot in outer palisade						
616	Outer post in F536						
617	Post-pipe for 616						
618	Area of animal disturbance in post slot F536						
F619	Unexcavated post slot cut by F597						
620	Fill of F619						
F621	Unexcavated post slot cut by F597						
622	Fill of F621						
623	Same as 867						
624	Inner post in F867						
625	Post-pipe for 626						
626	Outer post in F868						
627	Stones within 632						
628	Post-pipe for 514						
629	Stones within 631/3						
630	Post-pipe for 576						
631	Upper fill of F634/F635						
632	Lower fill of F634						
633	Lower fill of F635						
634	Post slot in inner palisade F541						
F635	Post slot in inner palisade F541						
636	Post-pipe for 513						
637	Fill of F638						
F638	Posthole in centre of palisade						
639	Outer post in F867						
640	Post-pipe for 641						
641	Inner post in F868						
642	Same as 643						
643	Fill of F531						
644	Fill of F531						
645	Same as 644						
646	Same as 644						
647	Fill of F648						
F648	Cut for possible cremation between palisades						
649	Fill of F650						
F650	Posthole in centre of palisade						
651	Fill of F652						
F652	Posthole in centre of palisade						
653	Same as 867						

No	Description	P	B	M	F	S	O
654	Inner post in F670						
655	Post-pipe for 654						
656	Silt patch in hollow in natural ground surface						
657	Silt patch in hollow in natural ground surface						
658	Silt patch in hollow in natural ground surface						
659	Silt patch in hollow in natural ground surface						
660	Fill of F661						
F661	Posthole in centre of palisade						
662	Fill of F663						
F663	Posthole in centre of palisade						
664	Same as 673						
665	Same as 674						
F666	Post slot in inner palisade F541						
667	Fill of F666						
668	Fill of F867						
669	Upper fill of F670						
F670	Post slot in inner palisade F541						
671	Post-pipe for 672						
672	Inner post in F673						
F673	Post slot in inner palisade F541						
674	Fill of F541						
675	Fill of F676						
F676	Posthole in centre of palisade						
677	Fill of F678						
F678	Posthole in centre of palisade						
679	Lower fill of F670						
F680	Posthole in centre of palisade						
681	Fill of F680						
682	Clay-silt spread overlying E side of inner palisade						
683	Re-cut to F685						
684	Fill of F683						
F685	Cut for section through N-S ditch, areas 4+5						
686	Lower fill of F685						
687	Silt overlying F683/F685						
688	Inner post in F689						
F689	Post slot in outer palisade						
690	Outer post in F689						
691	Fill of F689						
692	Unused						
F693	Cut for gravel track						
694	Fill of F693						
695	Fill of F695						
F696	Posthole in centre of palisade						
697	Outer post in F705						
698	Inner post in F705						
699	Paleo-channel fill						
700	Same as 322						

No	Description	P	B	M	F	S	O
701	Same as 324						
702	Southern continuation of 718						
703	'Cut' for 702						
704	Silt lens at top of fill of F685						
F705	Post slot in inner palisade F541						
706	Upper fill of F705						
F707	Section through F885						
708	Fill of F707						
709	Inner post in F635						
710	Post-pipe for 709						
711	Same as 323						
F712	Section through F886						
713	Fill of F712						
714	Fill of F715						
F715	Pit outside eastern edge of palisade						
716	Fill of F717						
717	Pit outside eastern edge of palisade						
718	Palaeo-channel fill						
719	Palaeo-channel fill under 718						
720	Cut for 718						
721	Unused						
722	Unused						
723	Same as 633						
724	Same as 635						
725	Same as 632						
726	Same as 634						
F727	Post slot in inner palisade F541						
F728	Cut for section through N-S ditch, areas 4+5						
729	Fill of F728						
730	Re-cut to F728						
731	Fill of F730						
F732	Posthole on northern edge of area 4						
733	Fill of F732						
734	Lower fill of F705						
735	Natural silt deposit						
736	'Cut' for 735						
737	Natural silt deposit						
738	'Cut' for 737						
739	Fill of F740						
740	Shallow hollow in natural ground surface						
741	Fill of F742						
742	Shallow hollow in natural ground surface						
743	Fill of F744						
744	Shallow hollow in natural ground surface						
F745	Posthole in centre of palisade						
746	Upper fill of F745						
747	Lower fill of F745						

No	Description	P	B	M	F	S	O
748	Inner post in F872						
749	Fill of F872						
750	Same as F872						
751	Outer post in F872						
752	Same as 749						
753	Same as F872						
F754	Western continuation of either F885 or F886						
755	Fill of F754						
F756	Section through F887						
757	Lower fill of F 756						
758	Upper fill of F756						
F759	Fourth phase of E-W ditch system across area 5						
760	Fill of F759						
761	Fill of F859						
F762	Posthole in centre of palisade						
763	Upper fill of F762						
764	Lower fill of F762						
765	Inner post in F727 (lower half)						
766	Inner post in F727 (upper half)						
767	Same as 768						
768	Lower fill of F727						
769	Unused						
770	Upper fill of F727						
771	Outer post in F727 (lower half)						
772	Outer post in F727 (upper half)						
773	Same as 768						
774	Same as 770						
F775	Posthole in centre of palisade						
776	Fill of F775						
777	Fill of F873						
778	Outer post in F873						
779	Same as F873						
780	Inner post in F873						
781	Same as F873						
782	Upper silt fill of F785						
783	Gravel fill of F785						
784	Lower silt fill of F785						
F785	Re-cut to F788						
786	Fill of F788						
787	Silt lens in 786						
F788	Cut for section through N-S ditch, areas 4+5						
789	Natural sand deposit cut by F785/F788						
790	Natural gravel deposit under 789						
791	Lower silt fill of F785. Same as 784?						
792	Variation in 790						
793	Same as 790						
794	Fill of F795						

No	Description	P	B	M	F	S	O
795	Inner posthole in F879						
796	Fill of F797						
797	Outer posthole in F879						
798	Fill of 800						
799	Fill of 801						
800	Outer posthole in F880						
801	Inner posthole in F880						
802	Fill of 804						
803	Fill of 805						
804	Inner posthole in F881						
805	Outer posthole in F881						
806	Void						
807	Same as 765						
808	Outer posthole in F811						
809	Upper fill of F811						
810	Lower fill of F811						
F811	Post slot in inner palisade F541						
812	Inner posthole in F811						
813	Same as 809						
814	Same as 810						
815	Same as 811						
816	Fill of F817						
F817	Third ditch cut in area of F819/F821						
818	Upper silt fill of F819						
F819	Re-cut to F819						
820	Fill of F821						
F821	Cut for section through N-S ditch, areas 4+5						
822	Same as 770						
823	Upper fill of F826						
824	Middle fill of F826						
825	Lower fill of F826						
F826	Section through F887						
827	Fill of F828						
F828	Post slot in outer palisade						
829	Fill of F828						
830	Fill of F831						
F831	Post slot in outer palisade						
832	Lower gravel fill of F817						
833	Upper gravel fill in F819						
834	Lower silt fill in F819						
835	Lower gravel fill in F819						
836	Ceramic land drain						
F837	Cut for 836						
838	Fill of F837						
F839	Single post at northern entrance to outer palisade						
840	Fill of F839						
841	Clay lump within 840						

No	Description	P	B	M	F	S	O
F842	Post slot in inner palisade F541						
843	Fill of F842						
F844	Post slot in eastern entrance to outer palisade						
845	Outer post in F844						
846	Inner post in F844						
847	Stake in eastern entrance to palisade						
848	Stake in eastern entrance to palisade						
849	Fill of F844						
850	Post in F853						
851	Post pipe for 850						
852	Fill of F853						
F853	Post slot in eastern entrance to outer palisade						
854	Fill of F853						
F855	Post slot in outer palisade						
856	Fill of F858						
857	Outer post in F858						
F858	Post slot in inner palisade F541						
F859	Re-cut to F759						
860	Area of stonework in NE of area 4						•
861	Fill of F862						
F862	Post slot in outer palisade (same as 864)						
863	Fill of F864						
F864	Post slot in outer palisade (same as 862)						
865	Gravel lens within F43						
866	Same as 668						
F867	Post slot in outer palisade						
F868	Post slot in outer palisade						
F869	Post slot in outer palisade						
870	Fill of F869						
871	Upper silt fill of F309						
F872	Post slot in outer palisade						
F873	Post slot in outer palisade						
F874	Post slot in inner palisade F541						
F875	Post slot in inner palisade F541						
876	Same as F666						
F877	Post slot in inner palisade F541						
F878	Post slot in inner palisade F541						
F879	Post slot in inner palisade F541						
F880	Post slot in inner palisade F541						
F881	Post slot in inner palisade F541						
F882	Post slot in outer palisade						
883	Fill of F882						
884	Gravel lens between 138 and 151						
F885	First phase of E-W ditch system across area 5						
F886	Second phase of E-W ditch system across area 5						
F887	Third phase of E-W ditch system across area 5						
888	Fourth phase of E-W ditch system across area 5						

No	Description	P	B	M	F	S	O
889	Same as 734						
890	Cut for stake 847						
891	Cut for stake 848						
F892	Cut for circular structure (sentry box?)						
893	Clay-silt spread overlying N side of inner palisade						
894	Fill of F868						

Appendix 2

Table 1 Lithics data

Catalogue arranged by context and small find no. (where applicable). Finds in the west quadrant of the knapping platform were logged in 3 dimensions. Those in Context 435 were frequently in clusters [designated (A) to (S)]. Finds from the east quadrant were collected as bulk finds; the other two quadrants were unexcavated. Finds from these quadrants have been numbered sequentially. Unless otherwise stated all items are inner removals.

Context	SF no	Comments
U/S	31	Flake. Plain butt, pronounced bulb. 28 x 18 x 8mm.
U/S	32	Flake. Plain butt, diffuse bulb. 21 x 11 x 4mm.
U/S	33	Secondary flake, snapped transversely at bulbar end. Retains hard, fawn cortex on dorsal face, distal end.
U/S	34	Flake. Plain butt with pronounced small bulb faulted on left edge of distal end. 33 x 10 x 3mm.
U/S	35	Bulbar end of blade. Plain butt, diffuse bulb. Snapped transversely.
U/S	36	Bulbar end of blade/flake. Plain butt, diffuse bulb. Snapped transversely.
U/S	37	Blade segment, broken transversely at distal end and irregularly at bulbar.
U/S	38	Chip.
U/S	39	Blade segment, broken obliquely at distal end and transversely at bulbar.
U/S	40	Burnt chip.
U/S	41	Irregular chunk.
U/S	42	Very small blade segment broken transversely at both ends.
U/S	43	Bulbar end of blade. Plain butt, diffuse bulb. Broken transversely.
U/S	44	Flake. Plain butt, diffuse bulb. 31 x 23 x 3mm.
U/S	45	Chip.
U/S	46	Distal end of flake. Broken obliquely at bulbar end, hinge termination at distal.
U/S	47	Pot lid flake from thermal shattering. Burnt.
U/S	48	Blade. Plain butt, diffuse bulb. Slight notch on right edge at bulbar end? 39 x 15 x 6mm.
U/S	49	Flake, broken transversely at bulbar end.
U/S	50	Small section of blade segment, snapped obliquely at both ends.
U/S	51	Secondary flake, snapped transversely at both ends. Retains hard, fawn cortex on right edge, dorsal face.
U/S	54	Thick secondary flake. Plain butt, pronounced bulb. Hard, fawn cortex all down left edge of dorsal face. 48 x 22 x 8mm.
U/S	55	Distal end inner flake/blade, broken transversely.
U/S	56	Bladelet, bulbar end removed transversely.
U/S	57	Blade-like flake. Plain butt, small pronounced bulb. Slight hinge fracture at distal end. Clearly struck from core with opposed platforms: flake scars on dorsal surface show this. 63 x 22 x 5mm.

Context	SF no	Comments
U/S	60	Chip.
U/S	61	Chip.
U/S	62	Rounded, blue-grey quartz chunk. ?Natural.
U/S	63	Dorsal end of inner blade/flake, broken transversely.
U/S	64	Dorsal end of inner blade/flake, broken transversely.
U/S	65	Blade segment, broken transversely at both ends.
U/S	66	Distal end of inner flake, broken transversely.
U/S	67	Bulbar end of inner flake/blade. Plain butt, pronounced bulb. Broken transversely.
U/S	68	Middle segment of blade broken transversely at both ends.
U/S	69	Bladelet. Complete, but bulbar end removed obliquely.
U/S	70	Core trimming flake, struck to remove ridge of striking platform. Bulbar end snapped off transversely. 41 x 9 x 7mm.
U/S	71	Secondary flake, broken transversely at bulbar end. Retains hard, fawn cortex on dorsal face, left edge.
U/S	72	Very small central section of blade segment, broken transversely at both ends.
U/S	73	Core, with two opposed platforms at opposed angles. Very small – evidence for hinge fracturing and edge shattering on striking platform. Retains hard, fawn cortex on one face. Max. dimensions 40 x 25 x 17mm.
U/S	74	Irregular chip.
U/S	75	Flake, broken transversely at bulbar end.
U/S	76	Flake from blade core. Plain butt, pronounced bulb. 27 x 15 x 4mm.
U/S	77	?Utilised piece of rounded, grey-blue quartz chert. Chunk with ?retouch along one edge.
U/S	79	Banded cherty flake. Bulbar end removed irregularly.
U/S	81	Chip.
U/S	82	Chip.
U/S	83	Burnt chip.
U/S	84	Chip.
U/S	85	Bulbar end of small blade. Plain butt, pronounced bulb. Broken transversely.
U/S	86	Chip.
U/S	87	Chip.
U/S	88	Chip.
U/S	89	Chip.
U/S	90	Chip.
U/S	91	Small irregular chunk.
U/S	92	Chip.
U/S	93	Chip.
U/S	94	Burnt chip.
U/S	95	Flake. Hinge fracture at distal end, shattered irregularly at bulbar end.
U/S	96	Chip.
U/S	97	Chip.
U/S	98	Chip.

Context	SF no	Comments
U/S	99	Chip.
U/S	100	Chip.
U/S	101	Blade segment. Plain butt, diffuse bulb. Broken transversely at distal end.
U/S	102	Segment from blade/flake, shattered irregularly at both ends.
U/S	103	Chip.
U/S	104	Segment from blade/flake, broken transversely at bulbar end.
U/S	105	Distal end of flake, broken transversely at bulbar end.
U/S	106	Core trimming flake, struck to remove platform. Struck parallel to platform. Complete. Hinge fracture at distal end. 33 x 17 x 5mm.
U/S	107	Irregularly shattered piece. ?Chip.
U/S	108	Small piece of blade segment, broken transversely at both ends.
U/S	109	Chip.
U/S	110	Bulbar end of blade. Plain butt, diffuse bulb. Broken transversely at distal end.
U/S	111	Distal end of blade/flake, broken transversely at distal end.
U/S	112	Distal end of blade/flake, broken transversely at bulbar end.
U/S	113	Bulbar end of blade/flake. Plain butt, diffuse bulb. Broken irregularly at distal end.
U/S	14	Chip.
U/S	115	Irregular chip with ?pot lid spalling. Burnt.
U/S	116	Flake. Plain butt, pronounced bulb. Hinge fracture at distal end. 23 x 16 x 3mm.
U/S	117	Bulbar end of bladelet. Plain butt, diffuse bulb. Broken transversely at distal end.
U/S	118	Secondary bladelet. Plain butt, diffuse bulb. Distal end broken at tip transversely. Retains hard, fawn cortex on right edge, dorsal face.
U/S	119	Blade segment, broken transversely at both ends.
U/S	120	Flake, irregularly shattered.
U/S	121	Flake. Plain butt, diffuse bulb. Hinge termination at distal end. 12 x 15 x 2mm.
U/S	122	Chip.
U/S	123	Flake. Plain butt, pronounced bulb. 12 x 18 x 2mm.
U/S	124	Thin, irregular flake. Plain butt, pronounced bulb. 12 x 8 x 2mm.
U/S	125	Bulbar end of blade segment. Plain butt, diffuse bulb. Broken transversely at distal end.
U/S	126	Core retaining patch of hard, fawn cortex on one face. Flakes struck from two directions ?from a bigger core. One face has some very large flake removals in evidence. The opposed face clearly for blade removal. Overall max. dimensions 45 x 28 x 27mm.
U/S	127	Large secondary flake. Cortical butt, pronounced bulb. 48 x 25 x 11mm.
U/S	128	Blade. Plain butt, pronounced bulb. 30 x 10 x 3mm.
U/S	129	Blade/flake segment, irregularly shattered at both ends.
U/S	130	Bladelet. Plain, thin bulb. Broken transversely at distal tip.

Context	SF no	Comments
U/S	131	Chip.
U/S	132	Chip.
U/S	133	Irregular chip.
U/S	134	Chip.
U/S	136	Blade segment, broken transversely at both ends.
U/S	137	Distal end of flake, broken transversely at bulbar end.
U/S	138	Blade/flake segment, broken transversely at both ends.
U/S	139	Chunk.
U/S	140	Chip.
U/S	141	Blade segment, broken transversely at both ends.
U/S	144	Chip.
U/S	145	Flake, broken irregularly at both ends.
U/S	146	Bulbar end of blade/flake. Plain butt, pronounced bulb. Broken obliquely at distal end.
U/S	147	Chip.
U/S	148	Distal end of flake, broken transversely at bulbar end.
U/S	149	Chip.
U/S	150	Bladelet segment, broken obliquely at bulbar end.
U/S	151	?Primary flake. Cortical butt, diffuse bulb. Very quartzzy flint dorsal face. Hard, smooth grey cortex. 16 x 11 x 2mm.
U/S	152	Small, irregular chunk. Burnt, crackled and scaled.
U/S	153	Flake. Plain butt, pronounced bulb. 30 x 22 x 11mm.
U/S	154	Bladelet. Bulbar end removed transversely.
U/S	155	Distal end of flake. Snapped obliquely, with hinge fracture at distal termination.
U/S	156	Flake. Dihedral butt, pronounced bulb. Irregularly broken at distal end.
U/S	157	Very irregular flake. Plain butt, ?diffuse bulb. Hinge termination. 19 x 29 x 8mm.
U/S	158	Chip.
U/S	159	Flake. Plain butt, pronounced bulb. Very irregular. 20 x 15 x 5mm.
U/S	160	Chip.
U/S	161	Chip.
517	143	Burnt chip.
517	168	Chip
517	169	Bulbar end of small blade/flake. Plain butt, diffuse bulb. Broken transversely.
517	170	Chip.
517	171	Chip.
517	172	Flake. Plain butt, diffuse bulb. 15 x 11 x 2mm.
517	172a	Mid segment of bladelet, broken transversely at both ends.
517	173	Chip.
517	174	Mid section of blade segment, broken transversely at both ends.
517	175	Flake. Plain butt, pronounced bulb. 16 x 8 x 3mm.
517	176	Distal end of blade/flake, broken transversely.
517	177	Mid section of blade segment, broken transversely at both ends.
517	178	Chip.

Context	SF no	Comments
517	179	Chip.
517	180	Chip.
517	181	Core trimming flake, struck at angle to platform to remove part of the platform edge. Broken at bulbar end.
517	182	Chip.
517	183	Flake with ? hinge fracture at distal end. Scraper retouch around bulbar end. Bulb removed. 28 x 25 x 5mm.
517	184	Chip.
517	185	Chip.
517	186	Chip.
517	187	Heavy, thick flake with many cortical inclusions. Cortical butt, pronounced bulb. Snapped transversely at distal end.
517	188	Chip.
517	189	Flake. Plain butt, pronounced bulb. 20 x 14 x 4.
517	190	Chip.
517	191	Flake. Plain butt, diffuse bulb. Broken transversely at distal end.
517	192	Burnt chip, heavily spalled.
517	193	Chip.
517	194	Mid section of thick blade-like flake, broken transversely at both ends.
517	195	Mid section of blade segment, broken transversely at both ends. ? Slight denticulation on left edge.
517	196	Chip.
517	197	Chip.
517	198	Chip.
517	199	Chip.
517	200	Chip.
517	201	Burnt chip.
517	202	Chip.
517	203	Chip.
517	204	Flake. Plain butt, diffuse bulb. Broken transversely at distal end.
517	205	Chip.
517	206	Secondary flake. Plain butt, pronounced bulb. Hinge fracture at distal end. Retains hard, fawn cortex on right edge of dorsal face, at distal end.
517	207	Irregular flake. Plain butt, pronounced bulb. Hinge fracture at distal end. 11 x 10 x 4mm.
517	208	Bulbar end of blade/flake. Plain butt, diffuse bulb, broken obliquely.
517	209	Chip.
517	210	Blue-grey quartz chert flake. Broken obliquely at bulbar end.
517	211	Distal end of blade, broken transversely at bulbar end.
517	212	Irregular chip.
517	213	Blade. Plain butt, pronounced bulb. 43 x 21 x 4mm.
517	214	Flake. Plain butt, pronounced bulb. 36 x 22 x 6mm.
517	215	Bulbar end of secondary flake. Cortical butt, pronounced bulb, broken transversely.
517	216	Chip.

Context	SF no	Comments
517	217	Blade, bulbar end removed transversely.
517	218	Burnt chip.
517	219	Chip.
517	220	Flake. Plain butt, pronounced bulb. 17 x 10 x 3mm.
517	221	Chip.
517	222	Mid section of blade, broken transversely at both ends.
517	223	Chip.
517	224	Flake, broken transversely at bulbar end.
517	225	Bulbar end of blade/flake. Plain butt, diffuse bulb. Broken transversely.
517	226	Chip.
517	227	Grey-blue cherty blade segment, broken transversely at both ends.
517	228	Core trimming flake, struck at angle to remove edge of striking platform. Plain butt, diffuse bulb. 34 x 8 x 7mm.
517	229	Bladelet. Plain butt, diffuse bulb. Broken transversely at distal end.
517	230	Central section of blade segment, broken transversely at both ends.
517	231	Bulbar end of small bladelet. Plain butt, diffuse bulb, broken obliquely.
517	232	Distal end of flake, broken transversely.
517	233	Large flake. Plain butt, pronounced bulb. 31 x 37 x 5mm.
517	234	Mid section of small blade, broken transversely at both ends.
517	235	Heavily burnt and spalled irregular chip.
517	236	Chip.
517	237	Heavily burnt and spalled mid section of blade segment, broken transversely at both ends.
517	238	Burnt and spalled angular chunk.
517	239	Cortical irregular chip.
517	240	Chip.
517	241	Distal end of blade/flake, broken transversely.
517	242	Central section of blade segment, broken transversely at both ends.
517	243	Distal end of flake/blade, broken obliquely at bulbar end.
517	244	Distal end of flake/blade, broken transversely.
517	245	Blade. Plain butt, diffuse bulb. Broken transversely at distal end.
517	246	Blade. Dihedral butt, diffuse bulb. 49 x 12 x 6mm.
517	247	Distal end of secondary blade, broken transversely at bulbar end.
517	248	Blade-like flake, broken transversely at bulbar end.
517	249	Cortical chunk.
517	250	Core trimming flake, broken transversely at bulbar end. Struck to remove striking platform edge
517	251	Distal end of broken microlith. Steep retouch on right edge. ?From scalene triangle.
517	252	Flake. Plain butt, diffuse bulb. 16 x 6 x 4mm.
517	253	Fragment from core trimming flake.
517	255	Chip.

Context	SF no	Comments
517	256	Chip.
517	257	Blade/flake segment, irregularly broken at both ends. Burnt.
517	258	Flake. Plain butt, pronounced bulb. Hinge fracture at distal end. 20 x 25 x 6mm.
517	259	Flake. Plain butt, diffuse bulb. Cortexy inclusions in flake. 28 x 16 x 2mm.
517	260	Mid section blade segment, broken obliquely at both ends.
517	261	Chip.
517	262	Blade. Plain butt, diffuse bulb. Snapped transversely at distal end.
517	263	Flake. Dihedral butt, pronounced bulb. Irregularly shattered at distal end.
517	264	Chip.
517	265	Central section of blade segment, broken transversely at both ends.
517	266	Flake. Plain butt, diffuse bulb. Hinge fracture at distal end. 28 x 25 x 8mm.
517	267	Shattered flake.
517	268	Flake. Plain butt, diffuse bulb. 26 x 19 x 6mm.
517	269	Flake. Plain butt, diffuse bulb. Thick hinge fracture at distal end. 21 x 16 x 6mm.
517	271	Irregular chunk.
517	272	Flake. Plain butt, diffuse bulb. Broken transversely at distal end.
517	273	Chip.
517	274	Flake, broken irregularly at both ends.
517	275	Distal end of flake, broken transversely.
517	276a	Bulbar end of flake/blade. Plain butt, diffuse bulb. Broken transversely at distal end.
517	276b	Heavy flake with cortical butt. Diffuse bulb, heavily snapped transversely.
517	277	Chip
517	278	Bulbar end of blade. Plain butt, diffuse bulb. Broken transversely.
517	280	Flake, snapped transversely at bulbar end.
517	281	Mid section of blade segment, broken transversely at both ends.
517	282	Angular chip.
517	283	Flake. Plain butt, diffuse bulb. 16 x 10 x 2mm.
517	284	Chip.
517	285	Blade segment. Broken transversely at both ends.
517	286	Blade. Plain butt, diffuse bulb. Broken transversely at distal end.
517	287	Irregular chip.
517	288	Mid section blade segment, broken obliquely at both ends.
517	289	Flake, Plain butt, pronounced bulb. 18 x 12 x 4 mm.
517	290	Flake. Plain butt, diffuse bulb. Heavy hinge fracture at distal end. 28 x 36 x 9mm.
517	291	Bulbar end of blade. Plain butt, diffuse bulb.
517	292	Blade. Plain butt, diffuse bulb. Broken transversely at distal end.
517	293	Chip.

Context	SF no	Comments
517	294	Mid section blade segment, broken transversely at both ends.
517	295	Very small mid section of blade segment, broken transversely at both ends.
517	296	Chip.
517	297	Blade segment, broken transversely at bulbar end. Hinge fracture at distal end.
517	298	Flake. Plain butt, pronounced bulb. 17 x 8 x 3mm.
517	299	Chip.
517	300	Flake. Plain butt, pronounced bulb. Irregularly shattered at distal end.
517	301	Flake, broken obliquely at bulbar end.
517	302	Chip.
517	303	Blade. Plain butt, pronounced bulb. Broken transversely at distal end.
517	304	Chip.
517	305	Mid section of blade segment, broken transversely at both ends.
517	306	Distal end of flake, broke transversely.
517	307	Chip.
517	308	Flake. Plain butt, diffuse bulb. 18 x 10 x 5mm.
517	309	Irregular chip.
517	310	Cortical secondary blade-like flake, broken transversely at bulbar end.
517	311	Chip.
517	312	Chip.
517	313	Chip.
517	314	Mid section of blade segment, broken transversely at both ends.
517	315	Mid section of blade segment, irregularly shattered at both ends. Spalled and burnt.
517	316	Chip.
517	317	Blade segment, broken transversely at distal end and obliquely at bulbar end.
517	318	Primary flake. Cortical butt. Dorsal face retains hard, smooth, fawn cortex. 21 x 33 x 5mm.
517	319	Small bladelet, broken transversely at bulbar end.
517	320	Secondary flake. Plain butt, diffuse bulb. Broken transversely at distal end. Retains hard, pitted cortex on right edge of dorsal face.
517	321	Mid section blade segment. Broken transversely at both ends.
517	322	Chip.
517	323	Blade section. Plain butt, diffuse bulb. Broken transversely at distal end.
517	324	Small flake. Plain butt, diffuse bulb. 8 x 10 x 2mm.
517	325	Blade. Plain butt, pronounced bulb. 37 x 10 x 5mm.
517	326	Small flake. Plain butt, pronounced bulb. Hinge fracture at distal end. 7 x 10 x 3mm.
517	327	Distal end of blade/flake, broken transversely.
517	328	Mid section of large blade segment, broken transversely at bulbar end and obliquely at distal end.

Context	SF no	Comments
517	329	Distal end of blade/flake. Hinge fracture at distal end, broken transversely.
517	330	Blade segment, broken transversely at bulbar end.
517	331	Flake. Thin plain butt, diffuse bulb. Hinge fracture at distal end. 15 x 12 x 2mm.
517	332	Chip.
517	333	Bulbar end of blade segment. Plain butt, pronounced bulb. Broken transversely at distal end.
517	334	Primary flake. Cortical butt, pronounced bulb. Hard fawn cortex on all of dorsal face. 33 x 50 x 26mm.
517	335	Bulbar end of burnt flake. Plain butt, diffuse bulb. Irregularly spalled and shattered at distal end.
517	337	Blade segment. Broken transversely at both ends.
517	338	Flake. Cortical butt, pronounced bulb. Broken transversely at distal end.
517	339	Bladelet. Plain butt, diffuse bulb. 21 x 9 x 3mm.
517	340	Blade segment, broken transversely at both ends.
517	341	Core trimming flake, struck to remove one angle edge of striking platform. Plain butt, pronounced bulb. Broken transversely at both ends.
517	342	Middle section of blade segment, broken transversely at both ends.
517	343	Flake. Plain butt, diffuse bulb. 17 x 13 x 2mm.
517	344	Blade segment, broken transversely at both ends.
517	345	Blade. Small plain butt, diffuse bulb. Blade tip snapped transversely. 38 x 13 x 4mm.
517	346	Blade-like flake. Thin plain butt, diffuse bulb. Cortex inclusion at distal end on bulbar face. 29 x 11 x 4mm.
517	347	Blade. Cortical butt, diffuse bulb. Broken transversely at distal end. 52 x 19 x 7mm.
517	348	Small flake. Plain butt, diffuse bulb. Hinge fracture at distal end. 9 x 7 x 1mm.
517	349	Small flake. Plain butt, pronounced bulb. Hinge fracture at distal end. 52 x 25 x 10mm.
517	350	Distal end of flake, broken transversely.
517	351	Bulbar end of blade. Plain butt, diffuse bulb. Broken transversely.
517	352	Chip.
517	353	Irregular chip.
517	354	Chip.
517	355	Flake. Plain butt, diffuse bulb. Hinge fracture at distal end. 12 x 10 x 2mm.
517	356	Chip.
517	357	Bulbar end of blade. Plain butt, diffuse bulb. Broken transversely.
517	358	Flake. Plain butt, pronounced bulb. 16 x 15 x 4mm.
517	359	Irregular chip.
517	360	Blade segment, broken irregularly at bulbar end.

Context	SF no	Comments
517	361	Chip.
517	362	Chip.
517	363	Chip.
517	364	Blade. Dihedral butt, diffuse bulb. 37 x 13 x 6mm.
517	365	Inner blade. Broken transversely at bulbar end, hinge fracture at distal end.
517	366	Irregular chunk.
517	367	Small bladelet .?Cortical butt, diffuse bulb. Broken transversely at distal end.
517	368	Flake. Plain butt, diffuse bulb. 14 x 7 x 2mm.
517	369	Chip.
517	370	Blade segment, broken transversely at both ends.
517	371	Secondary blade segment, broken obliquely at both ends. Retains hard, fawn cortex on left edge.
517	372	Chip.
517	373	Central section of blade segment, broken transversely at both ends.
517	374	Chip.
517	375	Chip.
517	376	Flake. Plain butt, pronounced bulb. 24 x 16 x 3mm.
517	377	Flake. Plain butt, diffuse bulb. Hinge fracture at distal end. 15 x 13 x 3mm.
517	378	Chip.
517	379	Chip.
517	380	Distal end of blade, broken transversely.
517	381	Chip.
517	382	Chip.
517	383	Small blade segment, broken transversely at bulbar end.
517	384	Chip.
517	385	Blade. Bulbar and distal ends both removed transversely.
517	386	Flake. Plain butt, pronounced bulb. 11 x 12 x 3mm.
517	387	Flake. Plain butt, diffuse bulb. 16 x 10 x 2mm.
517	388	Chip.
517	390	Flake. Plain butt, diffuse bulb. Scraper retouch at distal end. Roughly circular. 23 x 20 x 4mm.
517	391	Blade segment, broken transversely at both ends.
517	392	Flake. Plain butt, pronounced bulb. 11 x 14 x 13mm.
517	393	Flake. Plain butt, diffuse bulb. 27 x 15 x 4mm.
517	394	Flake, obliquely broken at bulbar end.
517	395	Blade segment, broken transversely at both ends.
517	396	Chip.
517	397	Irregular blade. Plain butt, pronounced bulb. 19 x 10 x 4mm.
517	398	Blade. Plain butt, diffuse bulb. Broken transversely at distal end.
517	399	Secondary blade, broken transversely at bulbar end. Retains hard, pitted, fawn cortex on dorsal face.
517	400	Chip.
517	401	Secondary flake, broken transversely at bulbar end. Retains hard, pitted, fawn cortex on dorsal face, distal end.

Context	SF no	Comments
517	403	Chip.
517	404	Blade segment, broken transversely at bulbar end and obliquely at distal end.
517	405	Small bladelet. Plain butt, diffuse bulb. Broken transversely at distal end.
517	406	Bulbar end of flake. Plain butt, diffuse bulb. Broken irregularly at distal end.
517	407	Cortical flake. Plain butt, diffuse bulb. 16 x 24 x 5mm.
517	408	Chip.
517	409	Central section of blade segment, broken transversely at both ends.
517	410	Blade. Plain butt, diffuse bulb. Broken obliquely at distal end.
517	411	Chip.
517	412	Small bladelet. Plain butt, diffuse bulb. Broken transversely at distal end.
517	413	Chip.
517	414	Chip.
517	415	Bladelet. Plain butt, diffuse bulb. 17 x 8 x 2mm.
517	416	Chip.
517	417	Irregular chip.
517	418	Irregular flake. Plain butt, pronounced bulb. 11 x 11 x 6mm.
517	419	Inner bladelet. Plain butt, diffuse bulb. 21 x 11 x 3mm.
517	420	Chip.
517	421	Chip.
517	422	Blade. Thin, plain butt, diffuse bulb. 32 x 8 x 2mm.
517	423	Blade segment, broken transversely at both ends.
517	424	Irregular chip.
517	425	Bulbar end of blade. Plain butt, diffuse bulb. Broken transversely.
517	426	Flake. Plain butt, diffuse bulb. Hinge fracture at distal end. 11 x 10 x 1mm.
517	427	Blade, broken transversely at bulbar end. Hinge fracture at distal end.
517	428	Bladelet. Plain butt, diffuse bulb. Broken transversely at distal end.
517	429	Blade. Plain butt, diffuse bulb. 28 x 8 x 4mm.
517	430	Central section of small blade segment, broken transversely at both ends.
517	431	Blade segment, broken transversely at both ends.
517	432a	Blade segment. Plain butt, diffuse bulb. Broken transversely at distal end.
517	432b	Small blade segment, broken transversely at both ends.
517	433	Flake. Plain butt, diffuse bulb. 10 x 6 x 2mm.
517	434	Chip.
517	435	Blade segment, broken transversely at bulbar end and irregularly at distal end.
517	436	Central section of blade segment, broken transversely at both ends.

Context	SF no	Comments
517	437	Microlith. Retouched on right edge, broken obliquely at bulbar end. ?From scalene triangle.
517	438	Bulbar end of flake. Plain butt, diffuse bulb. Broken transversely at distal end.
517	439	Blade. Plain butt, diffuse bulb. 43 x 12 x 5mm.
517	440	Flake, broken irregularly at bulbar end.
517	441	Chip.
517	442	Small flake. Plain butt, diffuse bulb. 8 x 8 x 2mm.
517	443	Small bladelet, broken transversely at bulbar end.
517	444	Bladelet, broken transversely at bulbar end
517	445	Blade segment. Plain butt, diffuse bulb. Broken transversely at bulbar end
517	446	Irregular chip. Burnt.
517	447	Chip.
517	448	Blade segment, broken transversely at both ends.
517	449	Flake. Plain butt, diffuse bulb. Hinge fracture at distal end. 16 x 22 x 3mm.
517	450	Chip.
517	451	Distal end of flake, broken transversely at bulbar end.
517	452	Irregular flake. Plain butt, diffuse bulb. Irregularly shattered at distal end.
517	453	Distal end of blade, broken transversely.
517	454	Irregular flake fragment. Burnt and spalled.
517	455	Irregular chip.
517	456	Blade segment, broken transversely at both ends.
517	457	Chip
517	458	Chip
517	459	Distal end of flake, broken obliquely at bulbar end.
517	460	Blade segment, broken transversely at both ends.
517	461	Chip.
517	463	Bulbar end of blade. Plain butt, diffuse bulb. Broken transversely at distal end.
517	464	Irregularly fractured flake fragment. Chip.
517	465	Burnt chip.
517	466	Chip.
517	467	Bulbar end of blade, broken transversely.
517	468	Very elegant blade. Thin plain butt, diffuse bulb. 57 x 8 x 5mm.
517	469	Chip.
517	470	Small bladelet. Plain butt, diffuse bulb. 10 x 4 x 1mm.
517	471	Burnt chip.
517	472	Small flake. Plain butt, diffuse bulb. 12 x 10 x 3mm.
517	473	Flake. Plain butt, diffuse bulb. 17 x 6 x 2mm.
517	474	Irregular burnt fragment. Chip.
517	475	Flake. Plain butt, diffuse bulb. 17 x 12 x 4mm.
517	476	Chip.
517	478	Mid section of blade segment. Broken transversely at both ends.
517	479	Irregular burnt chip.

Context	SF no	Comments
517	480	Bladelet. Plain butt, diffuse bulb. 27 x 12 x 3mm.
517	481	Bulbar end of blade. Plain butt, diffuse bulb. Broken transversely.
517	482	Distal end of blade, broken transversely, Hinge fracture at distal end.
517	483	Bladelet, broken transversely at bulbar end.
517	484	Blade-like flake. Plain butt, diffuse bulb. 48 x 20 x 10mm.
517	485	Blade segment, broken transversely at bulbar end. Hinge fracture at distal end.
517	486	Irregular chunk, retaining hard, pitted fawn cortex.
517	487	Burnt chip.
517	488	Burnt chip.
517	489	Distal end of blade-like flake. Broken transversely at bulbar end.
517	490	Flake, broken irregularly at bulbar end. Hinge fracture at distal end.
517	491	Chip.
517	492	Irregular burnt chip.
517	493	Bulbar end of blade. Plain butt, diffuse bulb. Broken transversely at distal end.
517	494	Blade segment. Plain butt, diffuse bulb. Broken transversely at distal end.
517	495	Mid section of blade segment, broken transversely at both ends.
517	496	Irregularly shattered flake, broken at both ends.
517	497	Irregularly shattered core fragment.
517	498	Flake. Plain butt, diffuse bulb. 13 x 14 x 2mm.
517	499	Blade segment, broken transversely at both ends.
517	500	Irregular ?burnt chip.
517	501	Chip.
517	502	Flake. Plain butt, pronounced bulb. 27 x 11 x 4mm.
517	503	Blade, broken transversely at bulbar end.
517	504	Flake. Plain butt, diffuse bulb. Broken transversely at distal end.
517	505	Flake. Dihedral butt, pronounced bulb. Broken irregularly at distal end.
517	506	Mid section of blade segment, broken transversely at both ends.
517	507	Burnt chip.
517	508	Burnt chip.
517	509	Flake, broken transversely at bulbar end.
517	510	Chip.
517	511	Chip.
517	512	Flake. Plain butt, diffuse bulb. Hinge fracture at distal end. 12 x 9 x 2mm.
517	513	Chip.
517	514	Chip.
517	515	Chip.
517	516	Chip.
517	517	Chip.
517	518	Mid section of blade segment. Broken obliquely at bulbar end and transversely at distal end.
517	519	Burnt chip.

Context	SF no	Comments
517	520	Chunk.
517	521	Bladelet. Plain butt, diffuse bulb. Broken transversely at distal end. Burnt.
517	522	Mid section of small blade segment, broken transversely at both ends.
517	523	Flake. Broken transversely at bulbar end, hinge fracture at distal end.
517	524	Chip.
517	525	Flake. Thin, plain butt, diffuse bulb. 14 x 11 x 4mm.
517	526	Burnt chip.
517	527	Irregular chip.
517	528	Pot lid flake?
517	529	Secondary flake. Plain butt, pronounced bulb. Broken transversely at distal end.
517	530	Chip.
517	531	Small flake. Plain butt, diffuse bulb. 10 x 9 x 2mm.
517	532	Chip.
517	533	Chip.
517	534	Burnt chip.
517	535	Blade segment, broken obliquely at both ends.
517	536	Flake. Plain butt, diffuse bulb. 8 x 12 x 2mm.
517	537	Bulbar end of blade. Plain butt, diffuse bulb. Broken transversely.
517	538	Core fragment, retaining hard, fawn cortex on one face. Irregularly shattered.
517	539	Chip.
517	540	Burnt chip.
517	541	Chip.
517	542	Blade. Plain butt, diffuse bulb. Broken transversely at distal end.
517	543	Fragmentary flake. Irregularly broken at both ends. Burnt and spalled.
517	544	Blade segment, broken transversely at both ends.
517	545	Irregularly shattered fragment. Burnt and spalled.
517	546	Burnt chip.
517	547	Chip.
517	548	Secondary blade-like flake. Plain butt, pronounced bulb. Hard, fawn cortex patch on dorsal face, bulbar end. 27 x 15 x 4mm.
517	549	Blade segment. Broken transversely at bulbar end, slight hinge fracture at dorsal.
517	550	Bulbar end of blade. Plain butt, diffuse bulb. Broken transversely.
517	551	Blade. Plain butt, diffuse bulb. Broken transversely at distal end.
517	552	Thin blade segment. Broken transversely at both ends.
517	553	Chip.
517	554	Flake. Plain butt, diffuse bulb. Broken obliquely at distal end.
517	555	Flake. Plain butt, diffuse bulb. 13 x 10 x 3mm.
517	556	Chip.
517	557	Blade. Plain butt, diffuse bulb. Broken transversely at distal end.

Context	SF no	Comments
517	558	Flake. Plain butt, pronounced bulb. 16 x 22 x 6mm.
517	559	Blade. Plain butt, diffuse bulb. Hinge fracture at distal end. 34 x 10 x 5mm.
517	560	Flake, broken transversely at both ends.
517	561	Distal end of flake, broken transversely at bulbar end.
517	562	Blade segment, broken transversely at both ends.
517	563	Microolith. Obliquely blunted point on bladelet, with hinge fracture at distal end. Retouched on left edge. Right edge very sharp and fresh. 30 x 9 x 3mm.
517	564	Chip.
517	565	Irregular burnt flake.
517	566	Blade. Plain butt, diffuse bulb. Broken transversely at distal end.
517	567	Irregular flake, broken transversely at bulbar end.
517	569	Irregular flake. Spalled and burnt.
517	570	Flake, broken obliquely at bulbar end.
517	571	Chip.
517	572	Chip.
517	574	Small, mid section blade segment, broken transversely at both ends.
517	575	Irregular flake. Shattered, spalled and burnt.
517	576	Chip.
517	577	Irregular chip.
517	578	Irregular flake. Plain butt, diffuse bulb. ?Mis-hit plunging flake. 24 x 8 x 3mm.
517	579	Blade. Plain butt, diffuse bulb. Snapped transversely at distal end.
517	580	Flake. Plain butt, diffuse bulb. Hinge fracture at distal end. 26 x 23 x 5mm.
517	581	Chip.
517	582	Inner bladelet. Thin, plain butt, diffuse bulb. Broken irregularly at distal end.
517	583	Central section of blade segment. Broken transversely at both ends.
517	584	Middle section of blade segment. Broken obliquely at bulbar end and transversely at distal. Burnt.
517	585	Blade, broken transversely at bulbar end.
517	586	Flake. Thin, plain butt, diffuse bulb. Hinge fracture at distal end. 11 x 12 x 4mm.
517	587	Chip.
517	588	Blade. Plain butt, diffuse bulb. Broken transversely at distal end.
517	589	Secondary flake. Plain, thin butt, diffuse bulb. Hinge fracture at distal end. Hard, fawn cortex on dorsal face. 26 x 30 x 7mm.
517	590	Mid section of blade segment, broken transversely at both ends.
517	591	Primary flake. Broken transversely at both ends. Retains hard, fawn cortex on all of the dorsal face.
517	592	Blade, broken transversely at both ends.
517	593a	Chip.
517	593b	Chip.

Context	SF no	Comments
517	594	Flake, broken transversely at bulbar end.
517	595	Flake. Plain butt, diffuse bulb. 12 x 11 x 2mm.
517	596	Blade, broken transversely at both ends.
517	597	Heavy flake. Plain butt, diffuse bulb. 28 x 27 x 7mm.
517	498	Flake with ?cortical butt, pronounced bulb. Broken transversely at distal end.
517	599	Small flake. Plain butt, diffuse bulb. 11 x 7 x 2mm.
517	600	Blade segment, broken transversely at bulbar end.
517	601	Bulbar end of flake/blade. Thin, plain butt, diffuse bulb. Broken transversely at distal end.
517	602	Blade. Plain butt, diffuse bulb. Broken obliquely at distal end.
517	602a	Primary flake. Plain butt, pronounced bulb. Dorsal face retains hard, fawn cortex. 25 x 24 x 5mm.
517	603	Distal end of blade. Hinge fracture at distal end. Broken transversely at bulbar end.
517	604	Chip.
517	605	Irregular chip.
517	606	Flake. Plain butt, diffuse bulb. Broken transversely at distal end.
517	607	Flake. Thin, plain butt, diffuse bulb. Broken transversely at distal end.
517	608	Distal end of flake. Broken transversely at bulbar end.
517	609	Blade. Plain butt, diffuse bulb. 21 x 9 x 3mm.
517	610	Microlith. Broken transversely at both ends, retouched on left edge. ?Rod-like or broken triangle. 21 x 8 x 2mm.
517	611	Distal end of flake, broken irregularly at bulbar end.
517	612	Very thin mid section of blade segment, broken transversely at both ends.
517	613	Blade, dorsal end with marked hinge fracture, Broken transversely at bulbar end.
517	614	Secondary blade. Thin, cortical butt, diffuse bulb. Retains hard, fawn cortex on dorsal face, left edge. 33 x 13 x 3mm.
517	615	Irregular chip.
517	616	Flake. Thin, plain butt, diffuse bulb. 31 x 10 x 3mm.
517	617	Blade, broken transversely at bulbar end.
517	618	Chip.
517	619	Chip.
517	620	Flake. Plain butt, diffuse bulb. 14 x 8 x 3mm.
517	621	Flake. Plain butt, pronounced bulb. 16 x 15 x 3mm.
517	622	Flake. Plain butt, pronounced bulb. 15 x 9 x 3mm.
517	623	Flake. Plain butt, diffuse bulb. 17 x 18 x 2mm.
517	624	Irregular flake fragment. Burnt and spalled.
517	625	Chip.
517	626	Small flake. Plain butt, very diffuse bulb. Hinge fracture at distal end. 9 x 9 x 1mm.
517	627	Mid section of blade segment, broken transversely at both ends.
517	628	Blade. Plain butt, diffuse bulb. Broken transversely at distal end.
517	629	Mid section of small blade segment. Broken transversely at both ends.

Context	SF no	Comments
517	630	Irregular angular chunk. Very fresh, sharp edges.
517	631	Chip.
517	632	Flake. Thin, plain butt, diffuse bulb. 15 x 15 x 2mm.
517	633	Irregular shattered flake. Burnt and spalled.
517	634	Irregular bladelet. Plain butt, diffuse bulb. 18 x 6 x 2mm.
517	635	Chip.
517	636	Flake, broken transversely at bulbar end.
517	637	Burnt chip.
517	638	Flake, broken transversely at bulbar end. Hinge fracture at distal end.
517	639	Flake, irregularly shattered at bulbar end.
517	640	Flake, broken obliquely at bulbar end.
517	641	Scraper on secondary flake. Cortical but, diffuse bulb. Retouched around distal end. Dorsal face retains hard, fawn cortex. 28 x 22 x 6mm.
517	642	Flake, broken transversely at bulbar end.
517	643	Flake. Broken transversely at distal end, shattered irregularly at bulbar end. Burnt and spalled.
517	644	Chip.
517	645	Chip.
517	646	Blade. Plain butt, diffuse bulb. 38 x 10 x 6mm.
517	647	Chip.
517	648	Blade. Hinge fracture at distal end, broken transversely at bulbar end.
517	649	Chip.
517	650	Irregular chip.
517	651	Irregular chip.
517	652	Blade, broken transversely at bulbar end, hinge fracture at distal.
517	653	Flake. Plain butt, diffuse bulb. Broken transversely at distal end.
517	654	Distal end of blade, broken transversely at bulbar end.
517	655	Chip.
517	656	Irregular chip. Burnt and spalled.
517	657	End scraper on distal end of primary flake. Plain butt, pronounced bulb. Retouched at distal end and on right and left edges. 30 x 25 x 7mm.
517	658	Chip.
517	659	Flake. Plain butt, diffuse bulb. Hinge fracture at distal end. 13 x 8 x 1mm.
517	660	Irregular chip. Burnt and spalled.
517	661	Secondary flake. Cortical butt, pronounced bulb. Hinge fracture at distal end. 25 x 18 x 7mm.
517	662	Burnt chip.
517	663	Dark grey chert flake. Plain butt, diffuse bulb. 25 x 10 x 2mm.
517	665	Chip.
517	666	Huge flake. Plain butt, pronounced bulb. Slight hinge fracture at distal end. ?Utilised on left edge. 93 x 40 x 15mm.
517	667	Chip.
517	668	Chip.

Context	SF no	Comments
517	669	Chip.
517	670	Mid section of blade segment. Broken transversely at both ends.
517	671	Chip.
517	672	Chip.
517	673	Flake. Plain butt, diffuse bulb. 16 x 7 x 3mm.
517	674	Chip.
517	675	Flake, broken transversely at bulbar end.
517	676	Irregularly shattered flake. Burnt and spalled.
517	677	Blade, broken irregularly at bulbar end.
517	678	Heavy flake segment, broken transversely at both ends.
517	679	Microlith. Broken transversely at distal end. Retouched on left edge. ?Large scalene triangle. 25 x 8 x 3mm.
517	680	Bladelet. Plain butt, diffuse bulb. Snapped transversely at distal end.
517	681	Heavy flake. Plain butt, pronounced bulb. 28 x 28 x 12mm.
517	681a	Irregular flake fragment. Burnt, shattered and spalled.
517	682	Blade. Bulbar end removed transversely.
517	683	Flake. Plain butt, diffuse bulb. 14 x 11 x 2mm.
517	684	Bulbar end of flake, Plain butt, pronounced bulb. Broken transversely at distal end.
517	685	Chip.
517	686	Flake. Plain butt, pronounced bulb. 25 x 21 x 4mm.
517	687	Mid section of blade segment. Broken transversely at both ends.
517	688	Chip.
517	689	Mid section of blade segment. Broken transversely at both ends.
517	690	Heavy flake. Plain butt, pronounced bulb. Large hinge fracture at distal end. 56 x 26 x 9mm.
517	691	Flake. Plain butt, pronounced bulb. Hinge fracture at distal end. 24 x 25 x 6mm.
517	692	Blade. Plain butt, diffuse bulb. Broken obliquely at distal end.
517	693	Bulbar end of blade. Plain butt, diffuse bulb. Broken transversely at distal end.
517	694	Flake. Plain butt, diffuse bulb. Hinge fracture at distal end. 14 x 14 x 2mm.
517	695	Flake. Broken obliquely at bulbar end, hinge fracture at distal end.
517	696	Chip.
517	697	Bulbar end of blade. Plain butt, pronounced bulb. Broken obliquely at distal end.
517	698	Mid section of blade segment, broken transversely at both ends.
517	699	Mid section of blade segment, broken transversely at both ends.
517	700	Chip. Burnt and spalled.
517	701	Distal end of blade, broken transversely.
517	702	Bulbar end of blade. Plain butt, diffuse bulb. Broken transversely.
517	703	Flake. Plain butt, diffuse bulb. 17 x 10 x 2.
517	704	Chip.
517	705	Blade segment, broken transversely at both ends.

Context	SF no	Comments
517	706	Blade segment, broken transversely at bulbar end and obliquely at distal.
517	707	Blade segment, broken transversely at both ends.
517	708	Mid section of blade segment, broken transversely at bulbar end and obliquely at distal
517	709	Chip.
517	710	Chip.
517	711	Core trimming flake, struck to remove a corner of striking platform. Previous blade removals clearly seen on one face. Broken obliquely at bulbar end.
517	712	Bulbar end of blade. Plain butt, diffuse bulb. Broken transversely.
517	713	Flake. Plain butt, diffuse bulb. 18 x 18 x 7.
517	714	Flake. Plain butt, diffuse bulb. 18 x 12 x 2.
517	715	Bulbar end of blade/flake. Plain butt, diffuse bulb. Broken transversely.
517	716	Bulbar end of blade/flake. Plain butt, diffuse bulb. Broken obliquely.
517	717	Small flake, broken transversely at bulbar end.
517	718	Flake. Cortical butt, pronounced bulb. 22 x 23 x 4mm.
517	719	Mid section of blade segment, broken transversely at both ends.
517	720	Chip.
517	721	Core trimming flake, struck to striking platform to remove core tablet. Cortical butt, pronounced bulb. Previous flake removals from core visible across distal end.
517	722	Chip.
517	723	Chip.
517	724	Chip.
517	725	Flake. Broken irregularly at bulbar end and transversely at distal.
517	726	Large, thick angular flake. Cortical butt and pronounced bulb. 26 x 30 x 12mm.
517	727	Secondary flake, broken obliquely at bulbar end. Hard, fawn cortex on right edge of dorsal face.
517	728	Chip.
517	729	Chip.
517	730	Chip.
517	731	Chip.
517	732	Distal end of blade/flake. Burnt and spalled.
517	733	Flake. Plain butt, diffuse bulb. Hinge fracture at distal end. 12 x 10 x 2mm.
517	734	Chip.
517	735	Blade. Plain butt, diffuse bulb. Broken transversely at distal end. ?Large bulbar end removal.
517	736	Chip.
517	737	Blade segment, broken transversely at bulbar end and obliquely at distal. Burnt and spalled.
517	738	Middle section of blade segment, broken transversely at both ends.

Context	SF no	Comments
517	739	Chip.
517	740	Flake. Plain butt, diffuse bulb. Thick hinge fracture at distal end. 9 x 21 x 4mm.
517	741	Cortical flake. Cortical butt, diffuse bulb. 13 x 13 x 2mm.
517	742	Chip.
517	743	Chip.
517	744	Blade. Plain butt, diffuse bulb. Broken transversely at distal end.
517	745	Chip.
517	746	Chip.
517	747	Flake. Cortical inclusions on butt, diffuse bulb. 28 x 16 x 5mm.
517	748	Chip.
517	749	Irregular, angular chip.
517S1	-	Bulbar end of blade. Plain butt, diffuse bulb. Broken transversely at distal end.
517S2	-	Possible microlith fragment. Broken at both ends. ?Retouch on left edge.
517S3	-	Flake. Plain butt, pronounced bulb. 38 x 13 x 4mm.
517S4	-	Bladelet. Plain butt, diffuse bulb. 19 x 5 x 2mm.
517S5	-	Flake, broken transversely at bulbar end.
517S6	-	Flake. Plain butt, pronounced bulb. Broken obliquely at distal end.
517E1	-	Secondary flake, broken transversely at both ends. Retains hard, fawn cortex on right edge of dorsal face.
517E2	-	Core. Flakes removed from at least three directions. Max. dimensions 50 x 47 x 24mm.
517E3	-	Heavy chert flake. Irregularly shattered.
517E4	-	Heavy secondary flake. Plain butt, pronounced bulb. Cherty cortex on right edge dorsal face. 63 x 32 x 17mm.
517E 5	-	Flake. Plain butt, diffuse bulb. Broken obliquely at distal end.
517E6	-	Blade, broken irregularly at bulbar end and transversely at distal end.
517E7	-	Blade, broken transversely at both ends.
517E8	-	Mid section of blade segment, broken transversely at both ends.
517E9	-	Blade. Plain butt, diffuse bulb. Broken transversely at distal end.
517E10	-	Blade. Broken transversely at bulbar end, slight hinge fracture at distal end.
517E11	-	Blade. Plain butt, diffuse bulb. 34 x 13 x 6mm.
517E12	-	Flake. Plain butt, pronounced bulb. 25 x 26 x 6mm.
517E13	-	Flake. Broken transversely at bulbar end and irregularly at distal end.
517E14	-	Blade. Plain butt, diffuse bulb. Broken transversely at distal end.
517E15	-	Bulbar end of flake. Plain butt, diffuse bulb. Broken transversely.
517E16	-	Bladelet. Plain butt, diffuse bulb. 23 x 9 x 4mm.
517E17	-	Flake. Plain butt, pronounced bulb. Hinge fracture at distal end. 41 x 26 x 5mm.
517E18	-	Bulbar end of flake. Plain butt, diffuse bulb.
517E19	-	Blade. Plain butt, diffuse bulb. Broken transversely at distal end.
517E20	-	Distal end of flake/blade, broken transversely.

Context	SF no	Comments
517E21	-	Distal end of flake, broken transversely.
517E22	-	Blade. Plain butt, diffuse bulb. 29 x 9 x 2mm.
517E23	-	Middle section of blade segment, broken transversely at both ends.
517E24	-	Blade-like flake. Plain butt, diffuse bulb. 26 x 15 x 4mm.
517E25	-	Flake, distal end broken transversely and broken obliquely at bulbar end.
517E26	-	Mid section of flake segment, broken transversely at both ends.
517E27	-	Bulbar end of blade. Plain butt, diffuse bulb. Broken transversely at distal end.
517E28	-	Flake, broken transversely at bulbar end.
517E29	-	Bulbar end of blade. Plain butt, diffuse bulb. Irregularly broken at distal end.
517E30	-	Flake. Plain butt, diffuse bulb. ?From core trimming. 27 x 25 x 7mm.
517E31	-	Flake. Plain butt, diffuse bulb. 34 x 19 x 5mm.
517E32	-	Mid section of blade segment, broken transversely at both ends.
517E33	-	Flake. Plain butt, diffuse bulb. 19 x 14 x 3mm.
517E34	-	Flake. Plain butt, diffuse bulb. 22 x 28 x 4mm.
517E35	-	Bulbar end of flake. Plain butt, diffuse bulb. Broken transversely.
517E36	-	Blade. Plain butt, diffuse bulb. 22 x 9 x 4mm.
517E37	-	Core fragment. Burnt, spalled and irregularly shattered.
517E38	-	Mid section of blade segment, broken transversely at both ends.
517E39	-	Flake. Plain butt, diffuse bulb. Slight hinge fracture at distal end. 21 x 20 x 3mm.
517E40	-	Flake, broken irregularly at both ends.
517E41	-	Flake. Plain butt, pronounced bulb. 24 x 10 x 5mm.
517E42	-	Blade, broken transversely at bulbar end.
517E43	-	Flake. Plain butt, diffuse bulb. 16 x 19 x 2mm.
517E44	-	Mid section of bladelet segment, broken transversely at both ends.
517E45	-	Bulbar end of flake/blade. Plain butt, diffuse bulb. Broken transversely.
517E46	-	Flake. Plain butt, pronounced bulb. Broken transversely at distal end.
517E47	-	Small chunk.
517E48	-	Core trimming flake, struck to remove edge of platform. Bulbar end broken transversely.
517E49	-	Dark grey chert flake. Plain butt, diffuse bulb. Broken transversely at distal end.
517E	-	7 ?Natural blue-grey, quartz fragments, 6 burnt chips, 19 chips, 1 chert chunk.
435(A)	750	Blade segment, broken transversely at both ends
435(A)	751	Irregular flake. Plain butt, diffuse bulb. 26 x 22 x 6mm.
435(A)	752	Chip.
435(A)	753	Blade-like flake. Plain butt, diffuse bulb. 25 x 17 x 4mm.
435(A)	754	Chip.
435(A)	755	Distal end of blade-like flake. Retains ?scraper retouch around

Context	SF no	Comments
		distal end. Broken obliquely.
435(A)	756	Small bladelet. Plain butt, diffuse bulb. 15 x 5 x 1m.
435(A)	757	Irregular flake, irregularly shattered at bulbar end.
435(A)	758	Chip.
435(A)	759	Blade segment, broken transversely at both ends.
435(A)	760	Flake. Plain butt, diffuse bulb. Broken irregularly at distal end.
435(A)	761	Secondary flake. Cortical butt, pronounced bulb. Slight hinge fracturing at distal end. Retains patch of hard, fawn cortex on left edge dorsal face. 36 x 22 x 5mm.
435(A)	762	Flake. Plain butt, pronounced bulb. 36 x 22 x 5mm.
435(A)	763	Flake. Plain butt, pronounced bulb. Broken obliquely at distal end.
435(A)	764	Blade. Snapped transversely to remove bulbar end.
435(A)	765	Blade segment. Plain butt, diffuse bulb. Snapped transversely at distal end.
435(A)	766	Chip.
435(A)	767	Blade-like flake. Plain butt, diffuse bulb. Broken transversely at distal end.
435(A)	768	Irregular flake. Plain butt, diffuse bulb. 17 x 13 x 3mm.
435(A)	769	Blade. Plain butt, diffuse bulb. Broken transversely at distal end.
435(A)	770	Irregular chip.
435(A)	771	Chip with hard, fawn cortex on one face.
435(A)	772	Flake. Dihedral butt, pronounced bulb. Irregularly broken at distal end.
435(A)	773	Chip.
435(A)	774	Flake. Irregularly shattered at both ends.
435(A)	775	Bulbar end of thin blade/blade-like flake. Plain butt, diffused bulb. Broken transversely at distal end.
435(A)	776	Chip.
435(A)	777	Flake. Plain butt, pronounced bulb. Broken obliquely at distal end.
435(A)	778	Secondary flake. Broken at bulbar end. Hard fawn cortex on dorsal face.
435(B)	779	Flake. Plain butt, pronounced. 14 x 13 x 3mm.
435(B)	780	Distal end flake, broken transversely.
435(B)	781	Bulbar end of bladelet, broken transversely.
435(A)	782	Very small blade segment. Broken transversely at bulbar end.
435(A)	783	Bulbar end of small bladelet. Plain butt, diffuse bulb. Broken transversely at distal end.
435(A)	784	Irregularly shattered flake.
435(A)	785	Flake. Cortical butt, pronounced bulb. Hinge fracture at distal end. 12 x 18 x 4mm.
435(A)	787	Flake. Plain butt, diffuse bulb. Hinge fracture at distal end. 28 x 15 x 3mm.
435(A)	788	Distal end of small bladelet, broken transversely at bulbar end.
435(A)	788a	Blade. Plain butt, diffuse bulb. Broken transversely at distal end.
435(A)	789a	Chip.
435(A)	789b	Chunk.

Context	SF no	Comments
435(A)	790	? Core trimming flake. Struck from base of core to remove platform, but broken transversely at bulbar end.
435(A)	791	Flake. Plain butt, diffuse bulb. 24 x 11 x 3.
435(A)	792	Flake. Plain butt, diffuse bulb. 19 x 21 x 3mm.
435(A)	793	Light grey flake. Plain butt, pronounced bulb. 9 x 11 x 2mm.
435(A)	794	Light grey flake. Plain butt, pronounced bulb. 27 x 7 x 3 mm.
435(A)	795	Light grey/off-white flake. Plain butt, diffuse flake scars. 25 x 22 x 24mm.
435(A)	796	Light grey/off-white blade segment, broken acutely at bulbar and transversely at distal.
435(A)	797	Light grey/off-white blade-like flake, broken transversely at distal. Plain butt, diffuse bulb. 25 x 10 x 2 mm.
435(A)	798	Light grey/off-white flake, plain butt, pronounced bulb, hinge fracture at distal. 15 x 16 x 4mm.
435(A)	799	Thin flake. Plain butt, diffuse bulb. Irregularly broken at distal end.
435(A)	800	Light grey/off-white secondary blade-like flake. Cortical butt, diffuse bulb broken transversely at distal. Retains fawn pebble cortex, rough and pitted on dorsal face. 44 x 15 x 6mm.
435(A)	801	Distal end of flake, broken transversely ?from small blade-like flake.
435(A)	802	Light grey/off-white irregular chip.
435(A)	803	Irregular flake. Plain butt, pronounced bulb. 9 x 11 x 3mm.
435(A)	804	Irregular chip.
435(A)	805	Flake. Small hinge fracture broken transversely at bulbar end.
435(A)	806	Blade segment – flake broken transversely bulbar and distal.
435(A)	807	Irregular flake. Plain butt, pronounced bulb. 12 x 8 x 2 mm.
435(A)	808	Irregular chip.
435(A)	809	Blade segment, broken transversely bulbar and distal.
435(A)	810	Small blade segment, broken transversely at both ends.
435(A)	811	Chip.
435(A)	812	Secondary flake. Plain butt, diffuse bulb retains fawn pebble cortex on right edge dorsal face. 14 x 18 x 3mm.
435(A)	813	Flake. Broken transversely at distal.
435(A)	814	Chip.
435(A)	815	Bladelet, broken transversely at distal end. Diffuse bulb.
435(A)	816	Light grey/off-white bladelet. Broken transversely at bulbar end.
435	817	Chunk.
435	818	Chunk.
435	819	Distal end of flake, broken transversely.
435	820	Secondary blade-like flake. Broken transversely at bulbar end. Retains hard, pitted cortex on distal end.
435	821	Chip.
435	822	Flake. Cortical butt, diffuse bulb. 30 x 13 x 7.
435(A)	823	Flake, broken transversely bulbar.
435(A)	824	Flake. Diffuse bulb, plain butt, irregularly broken distal.
435(A)	825	Blade-like flake. Broken acutely at bulbar end.

Context	SF no	Comments
435(A)	826	Bladelet, broken transversely bulbar end.
435(A)	827	Chip.
435(C)	828	Off-white flake, with irregular flaking scars from at least 3 directions. Plain butt, small bulb. 42 x 20 x 5mm.
435(C)	829	Flake, hinge fracture at distal, irregularly broken at bulbar.
435(C)	830	Distal end of flake, broken transversely at bulbar end. With 11 blade scars on dorsal face.
435(C)	831	Blade-like flake, broken transversely at bulbar end. With eleven scars on dorsal face.
435	832	Distal end of flake, broken obliquely at bulbar end.
435	833	Chip.
435	834	Thick flake, triangular section. ?Crude retouch on left edge dorsal flake. 18 x 5 x 4.
435	835	Flake. Plain butt, pronounced bulb. 11 x 18 x 2mm.
435	836	Chip.
435	837	Flake. Plain butt, pronounced bulb. 35 x 15 x 6mm.
435(K)	838	Flake, broken transversely at bulbar end.
435(K)	839	Chip.
435(K)	840	Complete, dark grey flint bladelet. Plain bulb, diffuse butt. 23 x 6 x 2mm.
435(K)	841	Chip.
435(K)	842	Chip.
435	843	Secondary flake. Plain butt, pronounced bulb. Retains hard, fawn cortex on distal end of dorsal face. Hinge fracture distal end. 19 x 17 x 5mm.
435	844	Plain butt, pronounced bulb. Hinge fracture at distal end. 23 x 11 x 4mm.
435(M)	845	Blade. Plain butt, diffuse bulb. Tip snapped transversely at distal end.
435(M)	846	Chip.
435(M)	847	Irregular flake. Plain butt, diffuse bulb. Shattered irregularly at distal end.
435(M)	848	Bulbar end of blade/flake. Plain butt, pronounced bulb. Broken at angle at distal end.
435(M)	849	Chip.
435(M)	850	Squat flake. Plain butt, diffuse bulb. 8 x 14 x 3mm.
435(M)	851	Bulbar end of flake. Plain butt, diffuse bulb. Broken transversely.
435	852	Bulbar end of blade. Plain butt, pronounced bulb. Broken transversely at distal end.
435(D)	853	Flake with blade scars on dorsal. Plain butt, pronounced bulb. Chipped on left edge. 26 x 18 x 4mm.
435(D)	854	Flake. Plain butt, diffuse bulb, broken transversely at distal end.
435(D)	855	Flake, broken irregularly on all edges and sides.
435(D)	856	Thick, squat flake. Plain butt, pronounced bulb. 18 x 20 x 8mm.
435(D)	857	Blade segment, broken transversely at distal end and irregular at bulbar.
435(D)	858	Chip.
435(F)	859	Flake. Plain butt, pronounced bulb. Slight hinge fracture at distal

Context	SF no	Comments
		end. 13 x 12 x 2mm
435(F)	860	Secondary flake, butt pronounced. Bulb retains hard fawn cortex on right edge distal end, dorsal face. 27 x 27 x 7mm
435(E)	861	Flake. Plain butt, pronounced bulb. 15 x 15 x 3mm.
435(E)	862	Chip.
435	863	Pot lid flake. ? Natural spalling.
435	864	Distal end of blade/flake. Plain butt, pronounced bulb. Broken transversely at distal end.
435	865	Blade ?removed from striking platform of a core. Plain butt, diffuse bulb. Left edge exhibits flake removals struck from blade scar surface ?from multi-faceted core. 58 x 11 x 5mm.
435(G)	866	Flake. Plain butt, pronounced bulb. Hinge fracture at distal end. 18 x 12 x 3mm.
435(G)	867	Flake. Plain butt, diffuse bulb. Broken irregularly at distal end.
435(G)	868	Flake. Broken irregularly, ridges bashed.
435(G)	869	Flake, irregularly broken.
435(G)	870	Flake. Plain butt, pronounced bulb. Broken irregularly at distal end.
435(G)	871	Blade segment. Broken transversely at bulbar end and acutely at distal.
435(G)	872	Blade-like flake. Plain butt, diffuse bulb. Broken transversely at distal end.
435(G)	873	Bulbar end of bladelet. Broken transversely at distal end.
435(G)	874	Irregular chip.
435(H)	875	Blade. Plain butt, pronounced bulb. Broken transversely at distal end.
435(H)	876	Irregular chip.
435(H)	877	Blade, broken transversely at bulbar end.
435	878	Blade-like flake. Plain butt, diffused bulb. Broken transversely at distal end.
435(J)	879	Blade-like flake. Plain butt, diffuse bulb. Broken irregularly at distal end.
435(J)	880	Distal end of flake, broken transversely.
435(J)	881	Bladelet. Broken transversely at bulbar end, hinge fracture at distal.
435(K)	882	Blade/flake. Very long and thin. Plain butt, diffuse bulb. 41 x 10 x 4mm.
435(K)	883	Bladelet. Plain butt, diffuse bulb. 26 x 8 x 2mm.
435(K)	884	Chip.
435(K)	885	Chip with fawn cortex on dorsal face.
435(K)	886	Flake. Plain butt, diffuse bulb. Broken irregularly at distal end.
435(K)	887	?Core trimming flake. Struck to remove edge of a cortical striking platform. Fawn cortex. ?Broken at both ends?
435(K)	888	Blade segment, broken transversely at both ends.
435(K)	889	Bladelet. Plain butt, diffuse bulb. Broken transversely at distal end.
435	890	Flake, broken obliquely at bulbar end.
435	891	Blade-like flake, broken transversely at bulbar end.

Context	SF no	Comments
435	892	Flake. Plain butt, diffuse bulb. 25 x 11 x 3.
435	893	Secondary blade segment. Broken transversely at both ends. Retains hard, fawn cortex on distal end of dorsal face.
435	894	Chip.
435	895	Flake. Plain butt, pronounced bulb. 21 x 14 x 5.
435	896	Irregular chip.
435	897	Flake. Plain butt, diffuse bulb. From core trimming struck at angle to remove striking platform edge. 24 x 9 x 7mm.
435	898	Flake, broken transversely at bulbar end.
435	899	Bulbar end of blade. Plain, thin butt, diffuse bulb. Broken obliquely at distal end.
435	900	Burnt scraper. Spalled and fractured but still retaining diffuse bulb retouched around bulbar end and right edge. Also retouched around distal end. Left edge irregularly shattered and spalled from burning.
435	901	Small blade segment, broken transversely at both ends.
435	902	Blue-grey chert chunk.
435	903	Distal end of flake. Hinge fracture at distal end, obliquely shattered at bulbar.
435	904	Distal end of blade with hinge fracture at distal end. Broken transversely at bulbar end.
435	905	Secondary flake. Plain butt, pronounced bulb. Broken obliquely at distal end. Retains patch of hard, fawn cortex on dorsal face of bulbar end.
435	906	Chip.
435	907	Flake. Plain butt, pronounced bulb. Hinge fracture at distal end. 16 x 9 x 3mm.
435	908	?Primary flake. Cortical butt, pronounced bulb. Hard, fawn cortex on striking platform and dorsal face. Broken transversely at distal end.
435(I)	909	Flake, broken irregularly.
435(I)	910	Blade. Plain butt, pronounced bulb. Thermal damage – spalls removed on both faces. 25 x 9 x 2mm.
435(I)	911	Blade, broken transversely at distal end and irregularly at bulbar.
435	912	Scraper on distal end of secondary flake. Retains patch of hard, fawn cortex on dorsal face. Broken transversely at bulbar end. 24 x 20 x 4mm.
435	913	Flake. Plain butt, pronounced bulb. Broken transversely at distal end.
435	914	Secondary flake, broken transversely at bulbar end. Retains hard, fawn cortex on right edge of dorsal face.
435	915	Blade-like flake segment. Plain butt, pronounced bulb. Broken transversely about mid section. Conjoins with 916.
435	916	Distal end of blade-like flake. Broken transversely about mid section. Conjoins with 915. Overall dimensions 50 x 17 x 4mm.
435	917	Blade segment, broken transversely at both ends.
435	918	Chip.
435	919	Bulbar end of blade. Plain butt, diffused bulb. Broken

Context	SF no	Comments
		transversely at distal end.
435(N)	920	Chip.
435(N)	921	Blade-like flake, broken transversely at bulbar end and at distal end.
435(N)	922	Large secondary blade, very fresh. Plain butt, diffuse bulb. Slightly chipped and broken at distal end. Retains soft, fawn cortex on left side distal face. 44 x 12 x 5mm.
435(P)	923	Blade-like flake. Plain butt, pronounced bulb. 49 x 15 x 5mm.
435(P)	924	Flake. Plain butt, diffuse bulb. Broken transversely at distal end.
435(P)	925	Blade-like flake, broken transversely at bulbar end.
435	925a	Chip.
435(P)	926	Bladelet, snapped obliquely at bulbar end.
435(P)	927	Distal end of flake, broken obliquely at bulbar end.
435(P)	928	Distal end of flake, snapped transversely. Large hinge fracture.
435(P)	929	Short, squat flake. Plain butt, diffuse bulb. 9 x 13 x 2mm.
435	930	Blade segment, broken transversely at both ends.
435	931	Flake. Plain butt, diffuse bulb. 18 x 15 x 3mm.
435(Q)	932	Chip
435(Q)	933	Chip
435	934	Bladelet, snapped transversely at bulbar end.
435	935	Irregularly shattered flake fragment.
435	936	Chip.
435	937	Flake, broken transversely at both ends.
435(S)	938	Flake. Plain butt, diffuse bulb. Hinge fracture at dorsal end. 20 x 12 x 4 mm.
435	939	Irregularly shattered flake. Burnt.
435	940	Blade segment, broken transversely at both ends.
435	941	Blade. Plain butt, diffuse bulb. Broken transversely at distal end.
435	942	Blade segment, broken transversely at both ends.
435	943	Irregular chip, retaining hard, fawn cortex on one face.
435	944	Chip.
435	945	Chip.
435	946	Flake. Plain butt, diffuse bulb. Broken transversely at distal end.
435	947	Blade segment, broken transversely at both ends.
435	948	Chip.
435	949	Grey, cherty flake. Plain butt, pronounced bulb. 43 x 28 x 8mm.
435	950	Blade segment, broken transversely at both ends.
435	951	Cortical chip retaining hard, fawn cortex.
435	953	Secondary core trimming flake struck to remove angle of striking platform. Cortical butt, diffuse bulb. Broken transversely at distal end. Left edge exhibits flake scars from core striking.
435	954	Chip.
435	955	Flake. Plain butt, pronounced bulb. Broken transversely at distal end.
435	956	Flake. Plain butt, pronounced bulb. Broken irregularly on left edge and at distal end.
435	957	Bulbar end of blade/flake. Facetted butt, pronounced bulb. Broken transversely at distal end.

Context	SF no	Comments
435	958	Flake, broken obliquely at bulbar end.
435	959	Flake. Plain butt, pronounced bulb. 18 x 16 x 2mm.
435	960	Flake. Cortical butt, diffuse bulb. 16 x 8 x 5mm.
435(S)	961	Irregular chunk.
435(S)	962	Irregular flake, broken transversely at bulbar end.
435	963	Irregularly shattered secondary flake fragment. Retains patch of hard, fawn cortex on dorsal face. Burnt.
435	964	Irregularly shattered flake. Burnt.
435	965	Chip.
435	966	Bladelet, broken obliquely at bulbar end.
435	967	Burnt chip.
435	968	Chip.
435	969	Chip.
435	970	Blue cherty flake. Facetted butt, diffuse bulb. 25 x 15 x 4mm.
435(S)	971	Flake. Dihedral butt, pronounced bulb. 18 x 17 x 3mm.
435(S)	972	Very thin chip.
435(S)	973	Very thin chip.
435(S)	974	Flake. Plain butt, pronounced bulb. 8 x 15 x 2mm.
435(S)	975	Blade-like flake. Plain butt, diffuse bulb. Broken transversely at distal end.
435(S)	976	Bladelet. Plain butt, diffuse bulb. 25 x 6 x 2mm.
435(S)	977	Distal end of flake, broken transversely.
435(S)	978	Flake segment, irregularly broken at both ends.
435(S)	979	Flake/bladelet segment, broken obliquely at bulbar end and transversely at distal.
435(S)	980	Very small flake, pronounced bulb. 11 x 11 x 2mm.
435(S)	981	Bladelet, broken transversely at distal end.
435(S)	982	Irregular flake. Thin plain butt, diffuse bulb. 21 x 8 x 1mm.
435(S)	983	Flake. Plain butt, diffuse bulb, hinge fracture at distal end. 12 x 19 x 2mm.
435	985a	Bladelet. Plain butt, diffuse bulb. Broken obliquely at distal end.
435	985b	Distal end of bladelet, broken transversely at bulbar end. These two pieces are non-conjoining
435(R)	987	Distal end of flake. Plain butt, pronounced bulb. Broken transversely.
435(R)	988	Very small bladelet, broken transversely at distal end. Plain butt, diffuse bulb.
435(R)	989	
435(R)	990	Inner chip.
435(R)	991	Inner chip.
435(R)	992	Secondary flake. ?Cortical butt, pronounced bulb. Snapped obliquely at distal end.
435	993	Flake. Conical butt, pronounced bulb. Broken transversely at distal end.
435(L)	994	Blade segment, broken transversely at bulbar and obtusely at distal.
435(L)	995	Shattered chunk.
435(L)	996	Blade, broken transversely at bulbar end. 39 x 8 x 2mm.

Context	SF no	Comments
435(L)	997	Heavy secondary flake. Plain butt, pronounced bulb, hard fawn cortex on distal end, right edge. 20 x 39 x 9mm.
435(L)	998	Secondary flake, broken acutely at bulbar end and at distal end. Small patch hard fawn cortex on dorsal face, left edge.
435(L)	999	Flake, broken transversely at both ends.
435(L)	1000	Blade on secondary removal, broken transversely at distal. Plain butt, pronounced bulb, hard fawn cortex on right edge, dorsal face.
435(L)	1001	Blade-like flake. Plain butt, diffuse bulb broken transversely at distal end.
435(L)	1002	Blade-like flake. Plain butt, diffuse bulb broken transversely at distal end.
435(L)	1003	Flake. Plain butt, pronounced bulb. 17 x 13 x 3mm.
435(L)	1004	Flake, broken irregularly at bulbar end.
435(L)	1005	Bulbar end of broken flake
435(L)	1006	Flake from core trimming. Struck at acute angle to striking platform. Broken transversely at both ends.
435(L)	1007	Flake, broken transversely at bulbar end.
435(L)	1008	Flake, irregularly shattered at both ends. Thermal damage.
435(L)	1009	Flake/blade segment, broken transversely at bulbar end and at angle at distal.
435(L)	1010	Bulbar end of bladelet. Plain butt, diffuse bulb. Broken transversely at distal end.
435(L)	1011	Flake. Plain butt, diffuse bulb. 20 x 8 x 4mm.
435(L)	1012	Bulbar end of blade, snapped transversely at distal end. Plain butt, diffuse bulb.
435(L)	1013	Flake. Hinge fracture at distal end. Plain butt, pronounced bulb. 20 x 18 x 5mm.
435(L)	1014	Distal end of very thin, fine bladelet, snapped transversely.
435(L)	1015	Blade segment, broken transversely at both ends.
435(L)	1016	Irregular chip.
435(L)	1017	Blade segment, broken transversely at distal end and at angle at bulbar.
435(L)	1018	Flake. Plain butt diffuse bulb. 16 x 6 x 3.
435(L)	1019	Bulbar end of bladelet, broken transversely at distal end.
435(L)	1020	Irregularly snapped blade segment.
435(L)	1021	Chip.
435(L)	1022	Very small flake. Plain butt, pronounced bulb. 8 x 7 x 1mm.
435(L)	1023	Flake, irregularly broken at bulbar end.
435(L)	1024	Chip.
435(L)	1025	Chip.
435(L)	1026	Bladelet, broken transversely at bulbar end. Hinge fracture at distal.
435(L)	1027	Irregularly shattered chip.
435(L)	1028	Chip.
435(L)	1029	Irregular chip. ?Burnt?
435(O)	1030	Large secondary flake. Plain butt, diffuse bulb. Retains fawn, pitted cortex over most of dorsal face. 38 x 36 x 15mm.

Context	SF no	Comments
435(O)	1031	Flake, plain butt, diffuse bulb. Hinge fracture at distal end. Thermal spall removed on bulbar face. 31 x 15 x 4mm.
435(O)	1032	Bladelet. Plain butt, diffuse bulb. Broken transversely at long axis.
435(O)	1033	Irregular chip. ? Thermal spalling.
435(O)	1034	? Irregular chunk with some surface crackling. ? Thermal?
435(O)	1035	Thin blade-like flake. Plain butt, pronounced bulb. 50 x 12 x 7mm.
435(O)	1036	Flake. Plain butt, pronounced bulb. 25 x 25 x 5mm.
435(O)	1037	Blade-like flake, bulbar end removed transversely. Broken, but elegant. 36 x 8 x 5mm.
435(O)	1038	Blade-like flake, broken transversely at bulbar end and at angle at distal.
435(O)	1039	Blade – bulb of percussion removed transversely. Broken, but almost complete. 43 x 12 x 5mm.
435(O)	1040	Irregularly fractured chip.
435(O)	1041	Flake. Plain butt, diffuse bulb tip removed transversely at distal end.
435(O)	1042	Irregular, shattered flake with some crackling. ? Burnt ?
435(O)	10043	Small blade segment, broken transversely at bulbar end and at angle at distal.
435(O)	10044	Bladelet, broken transversely at bulbar end.
435(O)	10045	Flake. Plain butt, pronounced bulb, broken transversely at distal end.
435(O)	1046	Irregular chip. Burnt.
435(O)	1047	Blade-like flake, broken transversely at both ends.
435(O)	1048	Distal end of flake, broken transversely to remove bulbar end.
435(O)	1049	Blade-like flake, bulbar end removed transversely.
435(O)	1050	Chip.
435(O)	1051	Flake. Plain butt, diffuse bulb. 23 x 11 x 3mm.
435(O)	1052	Distal end, flake broken transversely. Shattered around edges.
435(O)	1053	Bladelet. Plain butt, diffuse bulb. 28 x 8 x 2mm.
435(O)	1054	Irregular flake, broken at bulbar end. Burnt.
435(O)	1055	Flake. Plain butt, diffuse bulb. 16 x 21 x 4mm.
435(O)	1055a	Chip
435(O)	1056	Heavily calcined chip, irregularly shattered.
435(O)	1057	Heavy flake. Broad plain butt, pronounced bulb. 34 x 46 x 13mm.
435(O)	1058	Smoothed and founded fawn/grey flint pebble. Unworked.
435(O)	1059	Flake, broken transversely at bulbar end.
435(O)	1060	Dorsal end of bladelet, broken transversely.
435(O)	1061	Flake. Plain butt, diffuse bulb. 7 x 8 x 2mm.
435	1062	Flake. Broken transversely at bulbar end.
435	1063	Heavy irregular flake ?struck to remove cortical inclusion in core. Plain butt, pronounced bulb. 33 x 45 x 8mm.
435	1064	Distal end of bladelet/flake, broken transversely.
435	1065	Chip.
435	1066	Cherty chunk.

Context	SF no	Comments
435	1067	Flake, shattered and burnt.
435	1068	Flake, shattered and burnt.
435	1069	Bladelet, broken transversely at bulbar end.
435	1070	Bladelet, broken irregularly at bulbar end.
435(L)	1073	Blade-like flake, bulb removed irregularly.
435(L)	1074	Blade-like flake. Plain butt, diffuse bulb. 35 x 13 x 3mm.
435(L)	1075	Grey, cherty flint blade segment. Broken at angle at bulbar end, irregularly fractured at distal end. 11 scars on dorsal face.
435(L)	1076	Flake. Plain butt, pronounced bulb. Hinge fracture at distal end. 9 x 14 x 3mm.
435(L)	1077	Irregular chip.
435(L)	1078	Grey, cherty flint blade. Plain butt, diffuse bulb. Slight hinge fracture at distal end. 31 x 10 x 4mm.
435(L)	1079	Distal end of bladelet. Broken irregularly at bulbar end, hinge fracture at distal.
435(L)	1080	Chip.
435(L)	1081	Very fine bladelet. Plain butt, diffuse bulb. 16 x 5 x 2mm.
435(L)	1082	Small blade segment broken at an angle at both ends.
435(L)	1083	Delicate blade. Plain butt, diffuse bulb. Broken transversely at distal end.
435(L)	1084	Irregular chip.
435(L)	1085	Bulbar end of small bladelet, snapped transversely. Plain butt, diffuse bulb.
435(L)	1086	Irregular flake ?from core trimming to remove edge of striking platform. Large spall on bulbar face has removed bulb of percussion. Broken. 18 x 47 x 9mm.
435(L)	1087	Cherty chip.
435(L)	1088	Grey, cherty bladelet. Plain butt, diffuse bulb. Snapped transversely at distal end.
435(L)	1089	Blade segment, irregularly shattered at both ends.
435(L)	1090	Primary flake. Cortical butt, diffuse butt retains soft fawn/grey pitted cortex on dorsal face. 19 x 22 4mm.
435(L)	1091	Flake. Plain butt, diffuse bulb. Hinge fracture at distal end. 17 x 20 x 5mm.
435(L)	1092	Mottled grey, irregular blade segment. Broken transversely at both ends.
435(L)	1093	Bladelet, broken transversely at bulbar end and at angle at distal.
435(L)	1094	Blade. Plan butt, diffuse bulb. Broken transversely at distal end.
435(L)	1095	Bulbar end of blade. Plain butt, diffuse bulb. Broken irregularly at distal end. Burnt. Spalled on both faces.
435(L)	1096	Flake. Plain butt, diffuse bulb. 12 x 10 x 2mm.
435(L)	1097	Flake. Plain butt, diffuse bulb. 16 x 27 x 7mm.
435(L)	1098	Flake. Plain butt, pronounced bulb. Hinge fracture at distal end. 22 x 20 x 5mm.
435(L)	1099	Blade-like flake. Plain butt, diffuse bulb. Hinge fracture at distal end. 23 x 14 x 4mm.
435(L)	1100	Blade-like flake, irregularly broken at bulbar end.
435(L)	1101	Bladelet, broken at angle at distal end and irregularly at bulbar

Context	SF no	Comments
		end.
435(L)	1102	Chip.
435(L)	1103	Blade-like flake, broken at angle at bulbar end. ?burnt.
435(L)	1104	Blade segment, broken transversely at both ends.
435E1	-	Flake. Hinge fracture at distal end, broken transversely at bulbar.
435E2	-	Flake. Hinge fracture at distal end, broken transversely at bulbar.
435E3	-	Secondary flake retaining patch of hard, fawn pebble cortex on dorsal face, distal end. Plain butt, diffuse bulb. 15 x 20 x 3mm.
435E4	-	Blade-like flake. Plain butt, pronounced bulb. Broken transversely at distal end.
435E5	-	Blade segment. Plain butt, pronounced bulb. Broken transversely at distal end.
435E6	-	Blade. Plain butt, diffuse bulb. Hinge fracture at distal end. 28 x 8 x 3mm.
435E7	-	Flake, broken irregularly at both ends.
435E8	-	Blade segment, broken transversely at bulbar end and obliquely at distal.
435E9	-	Bulbar end of blade. Plain butt, diffuse bulb. Broken transversely at distal end.
435E10	-	Blade segment. Plain butt, diffuse bulb. Broken transversely at distal end.
435E11	-	Flake. ?Banded, cherty flint. Plain butt, diffuse bulb. Broken transversely at distal end.
435E12	-	Blade segment. Broken transversely at bulbar and irregularly at distal end.
435E13	-	Blade segment, broken transversely at both ends.
435E14	-	Irregularly broken flake segment.
435E15	-	Blade segment. Thin plain butt and diffuse bulb. Broken Transversely at distal end.
435E16	-	Blade-like flake. Plain butt, diffuse bulb. Hinge fracture distal end. 28 x 14 x 4mm.
435E17	-	Flake. Plain butt, diffuse bulb. 22 x 12 x 4mm.
435E18	-	Blade segment, broken transversely at distal end and irregularly at bulbar. Burnt.
435E19	-	Chip.
435E20	-	Blade-like flake, broken transversely at distal and irregularly at bulbar end.
435E21	-	Chip.
435E22	-	Core trimming tablet. Struck to remove cortical striking platform. Plain butt, diffuse bulb. 26 x 21 x 10mm.
435E23	-	Irregular flake. Plain butt, pronounced bulb. 26 x 24 x 9mm.
435E24	-	Irregular flake. Cortical butt, pronounced bulb. 35 x 26 x 7mm.
435E25	-	Blade-like flake, broken transversely at bulbar end.
435E26	-	Chip. ?Burnt.
435E27	-	Chip.
435E28	-	Irregularly shattered flake. Burnt.
435E29	-	Irregular, thin flake. Broken at bulbar end.
435E30	-	Chip.

Context	SF no	Comments
435E31	-	Bladelet. Plain butt, diffuse bulb. Broken transversely at tip of distal end.
435E32	-	Chip.
435E33	-	Irregular flake. Cortical butt, pronounced bulb. 15 x 15 x 6mm.
435E34	-	Thick, blade-like flake. Broken transversely at bulbar end.
435E35	-	Chip.
435E36	-	Irregular secondary flake. Plain butt, diffuse bulb. Evidence of hinge fracturing at distal end. Retains hard patch of fawn cortex on left edge dorsal face. 22 x 43 x 10mm.
435E37	-	Flake. Plain butt, diffuse bulb. Broken transversely at distal end.
435E38	-	Heavy flake. Thick plain butt, pronounced bulb. Broken transversely at distal end.
Lithics from other contexts		
3	4	Grey-brown flint flake/blade. Plain butt, diffuse bulb. Hinge termination at distal end. Retains very small patch hard, grey, pitted cortex on dorsal face at distal end. Retouched down both edges. 49 x 18 x 7mm.
104	2	End scraper in proper dark grey flint on flake. Retouched around bulbar end. Bulbar face shows ?evidence of plough damage. ?Denticulated on right edge. Hinge fracture at distal end.
172	5	Brown, translucent flint blade, broken transversely at bulbar end. Slight fawn cortex inclusion at distal end. Very fresh and unabraded.
184	21	Blade. Plain butt, diffuse bulb. Hinge fracture at distal end. Grey cherty flake from platform. 31 x 10 x 2mm.
189	22	Cherty flake. Plain butt, diffuse bulb. 34 x 19 x 8mm.
189	23	Cherty blade. Plain butt, diverse bulb. 32 x 8 x 4mm.
266	7	Grey mottled flint flake. Plain butt, pronounced bulb. Hinge fracture at distal end. 24 x 3 x 6mm.
312	23	Secondary flake of dark grey, mottled flint. Cortical butt, pronounced bulb. Retains hard, fawn pebble cortex along distal end, dorsal face. 24 x 37 x 7mm.
436	1071	Grey flint flake, broken transversely at bulbar end.
436	1072	Grey flint flake. Plain butt, diffuse bulb. ?Broken transversely at distal end.
436	-	Angular, rounded, cherty chunk.
521	164	Rounded and smoothed chert flake. Plain butt, diffuse bulb. ?Residual from knapping platform. 46 x 22 x 7mm.
706	-	Chert blade segment, broken transversely at both ends.
716	-	Cherty chip.

Table 2: Plant remains from MBC04

Sample	1	2	14	18	19	26	33	34	45	47	48	49	50	52	56	57	58	59	60	62	64	66	67	68
Context	22	6	96	71	89	141	197	199	243	264	251	185	279	283	287	245	258	262	281	334	335	189	345	308
Volume processed (ml)	5000	5000	5000	10000	5000	5000	5000	5000	5000	5000	4000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000
Flot volume (ml)	50	40	4	6	3	2	2	5	3	2	20	1	30	2	50	40	2	1	2	1	5	1	2	1
Volume assessed (ml)	50	40	4	6	3	2	2	5	3	2	20	1	30	2	50	40	2	1	2	1	5	1	2	1
Flot matrix (relative abundance)																								
Bone (unburnt)				1														1						
Bone (calcined)				1	1	1		1	1	1	1	1	1		1			1						
Charcoal	1			1	1	1		1	1	1	1	1	1		1			1						
Coal	1			1	1	1		1	1	1	1	1	1		1			1						
Flint																								
Insect fragments																								
Modern roots	2		1		1		1	1																
Molluscs						3																		
Charred remains (total counts)																								
(a) <i>Chenopodium album</i> (Fat-hen)																								
(a) <i>Raphanus raphanistrum</i> pod (Wild radish)																								
(c) <i>Avena</i> sp (Oats)			2	4					2	1	29	1										1		1
(c) Cerealia indeterminate				20																				
(c) <i>Hordeum</i> sp (Barley undifferentiated)			1	23							52	1												
(c) <i>Hordeum</i> sp (Hulled barley)				5																				
(c) <i>Hordeum</i> sp rachis internode (Barley)																								
(c) <i>Triticum</i> sp (Wheat)											1					2								
(c) <i>Triticum</i> cf. <i>aestivum</i> (cf. Bread wheat)				2																				
(c) <i>Triticum</i> sp (Wheat) glume base																								
(c) <i>Triticum dicoccum</i> (Emmer) glume base																								
(c) <i>Triticum spelta</i> (Spelt) glume base																								
(g) <i>Arrhenatherum elatius</i> (Onion couch)																								
(t) <i>Plantago lanceolata</i> (Ribwort plantain)																								
(t) <i>Corylus avellana</i> (Hazelnut)											8						1							
(x) <i>Galium aparine</i> (Cleavers)																								
(x) Poaceae (Grass)											3													
(x) <i>Rumex</i> sp (Dock)																								
Waterlogged remains (relative abundance)																								
(a) <i>Chenopodium album</i> (Fat-hen)				1		1		1			1				1					1				
(a) <i>Fumaria</i> sp (Fumitory)																								
(t) <i>Polygonum aviculare</i> (Knotgrass)																								
(t) <i>Trifolium</i> sp (Clover)																								
(t) <i>Sambucus nigra</i> (Elder)																							1	

(a: arable weed; c: cultivated plant; g:grassland; r: ruderal; t: trees/shrubs; x: wide niche) Relative abundance is based on a scale from 1 (lowest) to 5 (highest).

Table 2: continued

Sample	69	70	76	80	81	84	85	86	87	88	89	90	91	92	93	94	95	96	97	99	100	101	103	104	
Context	313	311	389	400	402	351	349	291	446	447	484	459	455	388	489	491	505	503	508	511	477	497	532	534	
Volume processed (ml)	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	4000	4000	2500	
Flot volume (ml)	10	1	2	2	1	30	4	1	1	1	10	5	3	1	5	50	5	3	50	100	2	3	10	10	
Volume assessed (ml)	10	1	2	2	1	30	4	1	1	1	10	5	3	1	5	50	5	3	50	100	2	3	10	10	
Flot matrix (relative abundance)																									
Bone (unburnt)																									
Bone (calcined)																									
Charcoal	1				1										1	2	1	1	2	3		1	1	1	
Coal				1	1					1		1	1												
Flint														1											
Insect fragments		1																							
Modern roots				1	1			1				1	1	1				1							
Molluscs																									
Charred remains (total counts)																									
(a) <i>Chenopodium album</i> (Fat-hen)																									
(a) <i>Raphanus raphanistrum</i> pod (Wild radish)																									
(c) <i>Avena</i> sp (Oats)										1															
(c) Cerealia indeterminate																									
(c) <i>Hordeum</i> sp (Barley undifferentiated)																									
(c) <i>Hordeum</i> sp (Hulled barley)																									
(c) <i>Hordeum</i> sp rachis internode (Barley)																									
(c) <i>Triticum</i> sp (Wheat)																									
(c) <i>Triticum</i> cf. <i>aestivum</i> (cf. Bread wheat)																									
(c) <i>Triticum</i> sp (Wheat) glume base																									
(c) <i>Triticum dicoccum</i> (Emmer) glume base																									
(c) <i>Triticum spelta</i> (Spelt) glume base																									
(g) <i>Arrhenatherum elatius</i> (Onion couch)																									
(t) <i>Plantago lanceolata</i> (Ribwort plantain)																									
(t) <i>Corylus avellana</i> (Hazelnut)																									
(x) <i>Galium aparine</i> (Cleavers)																									
(x) Poaceae (Grass)																									
(x) <i>Rumex</i> sp (Dock)																									
Waterlogged remains (relative abundance)																									
(a) <i>Chenopodium album</i> (Fat-hen)			1		1										1	1	1	2		1		1		1	
(a) <i>Fumaria</i> sp (Fumitory)																									
(t) <i>Polygonum aviculare</i> (Knotgrass)																									
(t) <i>Trifolium</i> sp (Clover)																									
(t) <i>Sambucus nigra</i> (Elder)																									

(a: arable weed; c: cultivated plant; g: grassland; r: ruderal; t: trees/shrubs; x: wide niche) Relative abundance is based on a scale from 1 (lowest) to 5 (highest).

Table 2: continued

Sample	105	106	107	108	109	110	114	115	116	117	118	119	120	121	123	124	125	127	129	130	131	132	133	134	
Context	537	539	518	526	562	573	513	514	576	596	584	586	566	603	578	582	580	553	535	592	616	521	624	610	
Volume processed (ml)	5000	4000	5000	2000	5000	5000	2500	5000	5000	5000	5000	5000	5000	5000	2500	5000	500	4500	5000	5000	5000	5000	5000	5000	
Flot volume (ml)	90	30	2	2	40	40	40	200	150	30	100	50	50	1	80	2	3	2	1	150	100	10	50	150	
Volume assessed (ml)	90	30	2	2	40	40	40	200	150	30	100	50	50	1	80	2	3	2	1	150	100	10	50	150	
Flot matrix (relative abundance)																									
Bone (unburnt)																									
Bone (calcined)																									
Charcoal	3	1	1	1	2	2	2	4	3	2	2	1	2	1	3	1	1	1	1	4	3	1	1	4	
Coal																									
Flint												1													
Insect fragments																									
Modern roots																									
Molluscs																									
Charred remains (total counts)																									
(a) <i>Chenopodium album</i> (Fat-hen)																									
(a) <i>Raphanus raphanistrum</i> pod (Wild radish)																									
(c) <i>Avena</i> sp (Oats)																									
(c) Cerealia indeterminate																									
(c) <i>Hordeum</i> sp (Barley undifferentiated)																									
(c) <i>Hordeum</i> sp (Hulled barley)																									
(c) <i>Hordeum</i> sp rachis internode (Barley)																									
(c) <i>Triticum</i> sp (Wheat)																									
(c) <i>Triticum</i> cf. <i>aestivum</i> (cf. Bread wheat)																									
(c) <i>Triticum</i> sp (Wheat) glume base																									
(c) <i>Triticum dicoccum</i> (Emmer) glume base																									
(c) <i>Triticum spelta</i> (Spelt) glume base																									
(g) <i>Arrhenatherum elatius</i> (Onion couch)																									
(t) <i>Plantago lanceolata</i> (Ribwort plantain)																									
(t) <i>Corylus avellana</i> (Hazelnut)																									
(x) <i>Galium aparine</i> (Cleavers)																									
(x) Poaceae (Grass)																									
(x) <i>Rumex</i> sp (Dock)																									
Waterlogged remains (relative abundance)																									
(a) <i>Chenopodium album</i> (Fat-hen)	1																								
(a) <i>Fumaria</i> sp (Fumitory)																									
(t) <i>Polygonum aviculare</i> (Knotgrass)																									
(t) <i>Trifolium</i> sp (Clover)																									
(t) <i>Sambucus nigra</i> (Elder)																									

(a: arable weed; c: cultivated plant; g: grassland; r: ruderal; t: trees/shrubs; x: wide niche) Relative abundance is based on a scale from 1 (lowest) to 5 (highest).

Table 2: continued

Sample	138	139	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162
Context	523	626	571	573	639	606	608	605	607	609	648	641	648	633	686	672	674	558	560	594	556	667	654	544
Volume processed (ml)	5000	5000	5000	5000	5000	2000	4000	5000	5000	5000	5000	5000	5000	5000	5000	2000	5000	2500	1500	3500	1500	5000	5000	5000
Flot volume (ml)	50	40	20	3	2	50	150	20	10	1	1	100	1	3	15	50	2	50	100	300	50	5	20	40
Volume assessed (ml)	50	40	20	3	2	50	150	20	10	1	1	100	1	3	15	50	2	50	100	300	50	5	20	40
Flot matrix (relative abundance)																								
Bone (unburnt)																								
Bone (calcined)													1											
Charcoal	2	2	1	1	1	2	3	1	1	1	1	3			1	2		3	4	5	2	1	1	2
Coal																								
Flint																								
Insect fragments																								
Modern roots																								
Molluscs																	1							
Charred remains (total counts)																								
(a) <i>Chenopodium album</i> (Fat-hen)																								
(a) <i>Raphanus raphanistrum</i> pod (Wild radish)																								
(c) <i>Avena</i> sp (Oats)																								
(c) Cerealia indeterminate																								
(c) <i>Hordeum</i> sp (Barley undifferentiated)																								
(c) <i>Hordeum</i> sp (Hulled barley)																								
(c) <i>Hordeum</i> sp rachis internode (Barley)																								
(c) <i>Triticum</i> sp (Wheat)																								
(c) <i>Triticum</i> cf. <i>aestivum</i> (cf. Bread wheat)																								
(c) <i>Triticum</i> sp (Wheat) glume base																								
(c) <i>Triticum dicoccum</i> (Emmer) glume base																								
(c) <i>Triticum spelta</i> (Spelt) glume base																								
(g) <i>Arrhenatherum elatius</i> (Onion couch)																								
(t) <i>Plantago lanceolata</i> (Ribwort plantain)																								
(t) <i>Corylus avellana</i> (Hazelnut)																								
(x) <i>Galium aparine</i> (Cleavers)																								
(x) Poaceae (Grass)																								
(x) <i>Rumex</i> sp (Dock)																								
Waterlogged remains (relative abundance)																								
(a) <i>Chenopodium album</i> (Fat-hen)	1	1	1					1			1					1							1	
(a) <i>Fumaria</i> sp (Fumitory)																								
(t) <i>Polygonum aviculare</i> (Knotgrass)																								
(t) <i>Trifolium</i> sp (Clover)																								
(t) <i>Sambucus nigra</i> (Elder)																								

(a: arable weed; c: cultivated plant; g:grassland; r: ruderal; t: trees/shrubs; x: wide niche) Relative abundance is based on a scale from 1 (lowest) to 5 (highest).

Table 2: continued

Sample	163	164	166	168	169	171	172	173	175	176	177	178	180	181	182	183	184	185	186	188	192	193	194	195
Context	697	698	706	517	435	709	684	704	714	716	729	731	698	734	691	688	690	438	436	746	748	751	763	757
Volume processed (ml)	5000	5000	5000	5000	5000	5000	5000	20500	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000
Flot volume (ml)	15	20	1	10	1	100	2	7	40	1	2	2	1	1	50	6	3	40	10	50	50	70	20	1
Volume assessed (ml)	15	20	1	10	1	100	2	7	40	1	2	2	1	1	50	6	3	40	10	50	50	70	20	1
Flot matrix (relative abundance)																								
Bone (unburnt)									1															
Bone (calcined)							1				1													
Charcoal	2	1			3		1		1		1		1	1	1	2	1	1	1	1	2	3	1	1
Coal		1						1				1												
Flint				1																				
Insect fragments																								
Modern roots				1										1	1	2	1	2	1	2	3			1
Molluscs																								
Charred remains (total counts)																								
(a) <i>Chenopodium album</i> (Fat-hen)								1																
(a) <i>Raphanus raphanistrum</i> pod (Wild radish)																								
(c) <i>Avena</i> sp (Oats)								3																
(c) Cerealia indeterminate																								
(c) <i>Hordeum</i> sp (Barley undifferentiated)																								
(c) <i>Hordeum</i> sp (Hulled barley)																								
(c) <i>Hordeum</i> sp rachis internode (Barley)																								
(c) <i>Triticum</i> sp (Wheat)																								
(c) <i>Triticum</i> cf. <i>aestivum</i> (cf. Bread wheat)																								
(c) <i>Triticum</i> sp (Wheat) glume base																								
(c) <i>Triticum dicoccum</i> (Emmer) glume base																								
(c) <i>Triticum spelta</i> (Spelt) glume base																								
(g) <i>Arrhenatherum elatius</i> (Onion couch)																								
(t) <i>Plantago lanceolata</i> (Ribwort plantain)																								
(t) <i>Corylus avellana</i> (Hazelnut)				1																				
(x) <i>Galium aparine</i> (Cleavers)																								
(x) Poaceae (Grass)																								
(x) <i>Rumex</i> sp (Dock)								5																
Waterlogged remains (relative abundance)																								
(a) <i>Chenopodium album</i> (Fat-hen)						1		1	1		1								1		1			
(a) <i>Fumaria</i> sp (Fumitory)																								
(t) <i>Polygonum aviculare</i> (Knotgrass)																								
(t) <i>Trifolium</i> sp (Clover)																								
(t) <i>Sambucus nigra</i> (Elder)																								

(a: arable weed; c: cultivated plant; g: grassland; r: ruderal; t: trees/shrubs; x: wide niche) Relative abundance is based on a scale from 1 (lowest) to 5 (highest).

Table 2: continued

Sample	196	197	198	199	200	201	202	203	204	205	206	208	211	212	213	214	215	216	217	218	219	221	222	223	224	225	226
Context	778	120	777	132	129	765	806	784	786	764	747	827	771	772	774	883	843	845	846	847	848	830	854	840	861	863	857
Volume processed (ml)	5000	5000	5000	26500	23000	5000	5000	5000	5000	4000	5000	5000	5000	5000	5000	5000	5000	1000	2500	1500	1000	5000	5000	5000	5000	5000	5000
Flot volume (ml)	100	2	1	20	14	2	10	1	1	10	1	1	50	10	1	5	1	2	1	2	10	25	2	1	3	50	
Volume assessed (ml)	100	2	1	20	14	2	10	1	1	10	1	1	50	10	1	5	1	2	1	2	10	25	2	1	3	50	
Flot matrix (relative abundance)																											
Bone (unburnt)					1																						
Bone (calcined)																1											
Charcoal	2		1		1	1	1		1	1			2	2		1		1	1	1	2		1			1	2
Coal												1															
Flint																											
Insect fragments											1																
Modern roots											1																
Molluscs																											
Charred remains (total counts)																											
(a) <i>Chenopodium album</i> (Fat-hen)																											
(a) <i>Raphanus raphanistrum</i> pod (Wild radish)				1																							
(c) <i>Avena</i> sp (Oats)				5	2																						
(c) Cerealia indeterminate				2																							
(c) <i>Hordeum</i> sp (Barley undifferentiated)					1																						
(c) <i>Hordeum</i> sp (Hulled barley)																											
(c) <i>Hordeum</i> sp rachis intermode (Barley)																											
(c) <i>Triticum</i> sp (Wheat)																											
(c) <i>Triticum</i> cf. <i>aestivum</i> (cf. Bread wheat)																											
(c) <i>Triticum</i> sp (Wheat) glume base																											
(c) <i>Triticum dicoccum</i> (Emmer) glume base																											
(c) <i>Triticum spelta</i> (Spelt) glume base																											
(g) <i>Arrhenatherum elatius</i> (Onion couch)																											
(r) <i>Plantago lanceolata</i> (Ribwort plantain)																											
(t) <i>Corylus avellana</i> (Hazelnut)																											
(x) <i>Galium aparine</i> (Cleavers)																											
(x) Poaceae (Grass)																											
(x) <i>Rumex</i> sp (Dock)																											
Waterlogged remains (relative abundance)																											
(a) <i>Chenopodium album</i> (Fat-hen)			1																								
(a) <i>Fumaria</i> sp (Fumitory)																											
(r) <i>Polygonum aviculare</i> (Knotgrass)																											
(r) <i>Trifolium</i> sp (Clover)																											
(t) <i>Sambucus nigra</i> (Elder)																											1

(a: arable weed; c: cultivated plant; g:grassland; r: ruderal; t: trees/shrubs; x: wide niche) Relative abundance is based on a scale from 1 (lowest) to 5 (highest).

Table 3. Result of pollen assessment

Context	26		
	Top	Middle	Base
Microscopic charcoal (relative abundance)	3	3	3
Pollen (relative abundance)			
Poaceae sp (Grass)	-	1	-
Unidentified	1	1	1
Fungal spores	1	1	1

Relative abundance is based on a scale from 1 (lowest) to 5 (highest).

Appendix 3: Radiocarbon dating

Summary

Twenty-six radiocarbon dates were obtained on materials recovered from the site at Marne Barracks. Twenty-one samples relate to the double palisade enclosure, and five to other features. The samples from the palisade enclosure have been subject to a Bayesian statistical analysis using OxCal. The radiocarbon dates are consistent with the hypothesis that the two palisades were constructed contemporaneously and over a short time period, though uncertainties of radiocarbon measurement and sample provenance mean that a period of up to about three centuries of construction cannot be ruled out.

Samples and methods

All the dates from the double palisade enclosure were obtained on charcoal recovered from postholes in the palisade. Some samples were collected *in situ* from the charcoal at the outer edge of the posthole, whilst others were recovered from flotation of environmental samples. All those that were identifiable were from oak and none was roundwood. The dates from other features were obtained from short-lived samples of grain and hazelnut shells.

Oak samples carry a risk of an old-wood effect, whereby the date of growth of the wood in heartwood samples may pre-date their context by up to several centuries. To avoid this problem it is necessary to sample sapwood or bark, or failing that as close as possible to the outside of the tree. Those samples from the outer edge of the charcoal found in the postholes have minimised this risk, but not removed it, whilst for those recovered by floatation there is less assurance of the date being close in time to the felling of the tree and thus to the construction of the palisade.

The approach adopted here for the analysis of the dates is within the Bayesian paradigm (Buck, Litton, and Cavanagh 1996). Bayes Theorem provides a logical framework for the modification of current beliefs in the light of new evidence. In a Bayesian analysis of a group of radiocarbon dates this allows the incorporation of stratigraphic and sample reliability information into a mathematical model, and also allows the estimation of confidence limits on events which have not been directly dated. In practice the calculations for such a model are not suitable for algebraic methods and are conducted in a probabilistic manner on a computer. Using a method known as Markov Chain Monte Carlo, the computer randomly generates a large number of possible scenarios which take account of the radiocarbon dates, the calibration curve and the stratigraphic information, thus deriving probability distributions for the events of interest which take account of all available information. In addition to providing confidence limits on the dates of events, the random sampling process allows confidence limits for the difference between two dates or the duration of a phase to be generated. All estimates of calibrated and modelled dates were made using OxCal 3.10 (Bronk Ramsey 2001, 1995) and the IntCal04 International Calibration Curve (Reimer *et al.* 2004). OxCal's default settings were altered to work at one year resolution with linear interpolation of the calibration curve and no rounding. Following the convention of Cleal *et al.* (1995, 6) calibrated radiocarbon dates derived from a model are given in italics, whilst dates derived from simple calibration of a single date are given in normal type. All results have been rounded outwards to the nearest decade. The OxCal code used is given below.

In the analysis of the Marne Barracks dates, several different mathematical models have been applied and compared, to allow for the varying levels of reliability of the samples. In each model a group of samples has been assumed to come from a coherent period in time with a start and end date that can be estimated from the radiocarbon dates. Models 1, 2 and 5 assume that this can be applied to all the dates from both palisades simultaneously, whilst models 3, 4 and 6 treat the dates from each of the palisades separately and examine their order of construction. In models 1 and 3 the floatation samples are included, but as there is a distinct possibility that they are from inner parts of the trees used for the posts, they are treated as simply giving *termini post qua* for their contexts. In models 2, 4, 5 and 6 these samples are omitted. The status of the sample from context [394], which appears to be earlier than the other *in situ* samples is also investigated by omitting it from the calculation and computing the probability of it belonging to the group of dates in models 2 and 4, but including it in models 5 and 6.

There were five pairs of samples from each of the inner and outer posts of a slot. These have been compared using the test of Ward and Wilson (1978).

Results

Table 1 shows all the dates with their calibrated ranges after calibration without any modelling. The sample from context [850] proved not to be of archaeological origin.

Table 2 shows the comparison of the paired samples from the inner and outer posts of individual slots. The only pair to show a significant difference ($p < 0.05$) is that of contexts [592] and [616]. It is notable that this pair is the only pair consisting of floatation derived charcoal, and thus less securely associated with the construction. The similarity of all the other pairs of dates confirms that each pair of posts is likely to have been inserted at the same time.

Table 3 shows the modelled results for the beginnings, ends and durations of phases under the various models. This clearly shows that removal of the samples obtained by floatation and of the sample from context [394] has a pronounced effect on the results. In models 2 and 4, which calculate the probability of the context [394] sample fitting within the model, the probabilities are not low enough to definitively exclude this date, even though visual examination of the OxCal plots (Figures 1-2) suggests that it is earlier than the other dates from *in situ* charcoal. When it is included in models 1, 2, 5 and 6, OxCal reports perfectly satisfactory agreement indices, which indicate that it fits within those models. However it is the inclusion or exclusion of this one date which makes the biggest difference to the results. Without it, the duration of the overall construction or of the inner palisade construction shifted to a shorter timespan, more consistent with archaeological expectations. Similarly the start of construction for the inner palisade or of the whole structure is shifted to earlier dates. It remains possible that the old wood affect has increased the age of this sample.

In all the models examined the order of the end dates of the construction of the inner and outer palisades cannot be reliably determined, with just 24-38% chance that the inner palisade construction finished before the outer one. Given the risks of small old-wood effects in any of the samples, and that 50% chance is to be expected if they are identical, the order cannot be resolved. The order of the start of construction of the

Table 1: Radiocarbon dates and calibrated ranges without mathematical modelling.

Context	Type	Material	Lab number	Radiocarbon date	Calibrated range (95.4%)	Period
Non palisade samples						
96	Gully	charred grain	Beta-211676	1240±40 BP	670-890 AD	Anglo-Saxon
245	Gully	charred grain	Beta-211677	2030±40 BP	170BC-60 AD	Iron Age
251	Gully	charred grain	Beta-211678	1210±40 BP	690-900AD	Anglo-Saxon
262	Gully	charred hazelnut	Beta-211679	650±50 BP	1270-1410 AD	Medieval
517	Floor	charred hazelnut	Beta-211681	4750±40 BP	3640-3490BC 3440-3380 BC	Early Neolithic
Inner palisade samples						
394	Outer post	<i>in-situ</i> charcoal	Beta-197192	4030±40BP	2840-2810BC 2670-2460BC	
511	Outer post	floatation charcoal	Beta-211680	3960±40BP	2580-2340BC	
532	Outer post	<i>in-situ</i> charcoal	Beta-211682	3780±40BP	2350-2120BC 2100-2040BC	
534	Inner post	<i>in-situ</i> charcoal	Beta-211683	3810±50BP	2460-2130BC 2080-2060BC	
560	Inner post	floatation charcoal	Beta-211684	3730±50BP	2290-2010BC 2000-1970BC	
566	Inner post	floatation charcoal	Beta-211685	3840±50BP	2470-2190BC 2180-2140BC	
576	Outer post	<i>in-situ</i> charcoal	Beta-211687	3900±40BP	2480-2270BC 2250-2220BC	
578	Outer post	floatation charcoal	Beta-211688	3910±40BP	2490-2280BC 2250-2230BC	
592	Inner post	floatation charcoal	Beta-211689	3750±40BP	2290-2030BC	
610	Inner post	<i>in-situ</i> charcoal	Beta-211693	3780±40BP	2350-2120BC 2100-2040BC	
616	Outer post	floatation charcoal	Beta-211694	3870±40BP	2470-2270BC 2260-2200BC	
697	Outer post	<i>in-situ</i> charcoal	Beta-211695	3890±40BP	2480-2270BC 2260-2200BC	
698	Inner post	<i>in-situ</i> charcoal	Beta-211696	3950±40BP	2580-2300BC	
709	Inner post	<i>in-situ</i> charcoal	Beta-211697	3910±40BP	2490-2280BC 2250-2230BC	
Outer palisade samples						
573	Inner post	<i>in-situ</i> charcoal	Beta-211686	3910±40BP	2490-2280BC 2250-2230BC	
596	Inner post	<i>in-situ</i> charcoal	Beta-211690	3890±40BP	2480-2270BC 2260-2200BC	
603	Outer post	<i>in-situ</i> charcoal	Beta-211691	3850±40BP	2470-2200BC	
608	Outer post	floatation charcoal	Beta-211692	3750±40BP	2290-2030BC	
751	Outer post	<i>in-situ</i> charcoal	Beta-211699	3810±40BP	2460-2370BC 2360-2130BC	
778	Outer post	<i>in-situ</i> charcoal	Beta-211700	3830±40BP	2460-2190BC 2170-2140BC	
850		<i>in-situ</i> charcoal	Beta-211701	>46000	–	

two palisades is better resolved, but relies on the date from context [394] to give the higher probabilities that the inner palisade construction started before the outer one.

Table 2: Statistical comparisons of paired dates from inner and outer posts of individual slots

Inner post	Outer post	test statistic	p-value
592	616	4.5	0.03
532	534	0.2	0.7
709	576	0.03	0.9
698	697	1.1	0.3
596	603	0.5	0.5

Table 3: Start dates, end dates and duration of construction phases under different models (all models assume 95% confidence limits)

Model	Parameter	Using all dates	Using all <i>in-situ</i> samples	Using <i>in-situ</i> samples (excluding context 394)
Single phase for all posts	start of construction	2660-2460BC	2640-2450BC	2530-2310BC
	end of construction	2240-2040BC	2290-2070BC	2340-2100BC
	duration of construction	210-430 years	170-410 years	10-300 years
	probability of context 394 date fitting model			4.5%
Separate phases for inner and outer palisades	start of inner palisade construction	2770-2470BC	2780-2460BC	2640-2310BC
	end of inner palisade construction	2260-1980BC	2300-1960BC	2340-2000BC
	duration of inner palisade construction	210-460 years	180-460 years	20-360 years
	start of outer palisade construction	2710-2290BC	2640-2280BC	2620-2280BC
	end of outer palisade construction	2320-1930BC	2410-2030BC	2410-2030BC
	duration of outer palisade construction	20-290 years	0-240	0-240 years
	probability of context 394 date fitting model			17.4%
	probability of start of inner palisade preceding start of outer palisade construction	85.1%	90.2%	64.0%
	probability of end of inner palisade preceding end of outer palisade construction	37.8%	24.0%	30.6%

Figure 1: Calibration results from Model 1: all dates included in one construction phase. A probability distribution is shown for each date, in outline when calibrated independently and in solid black as modelled.

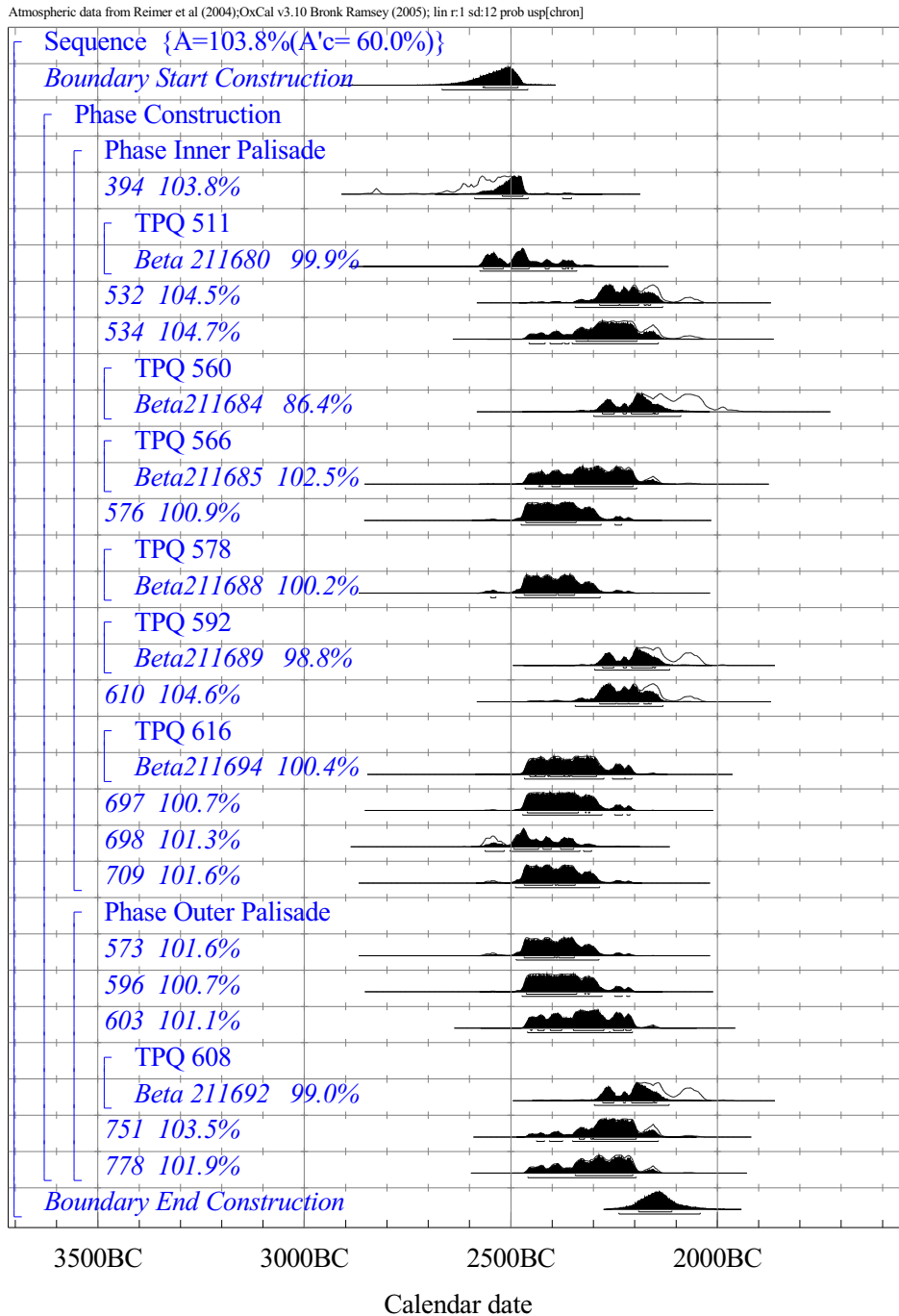
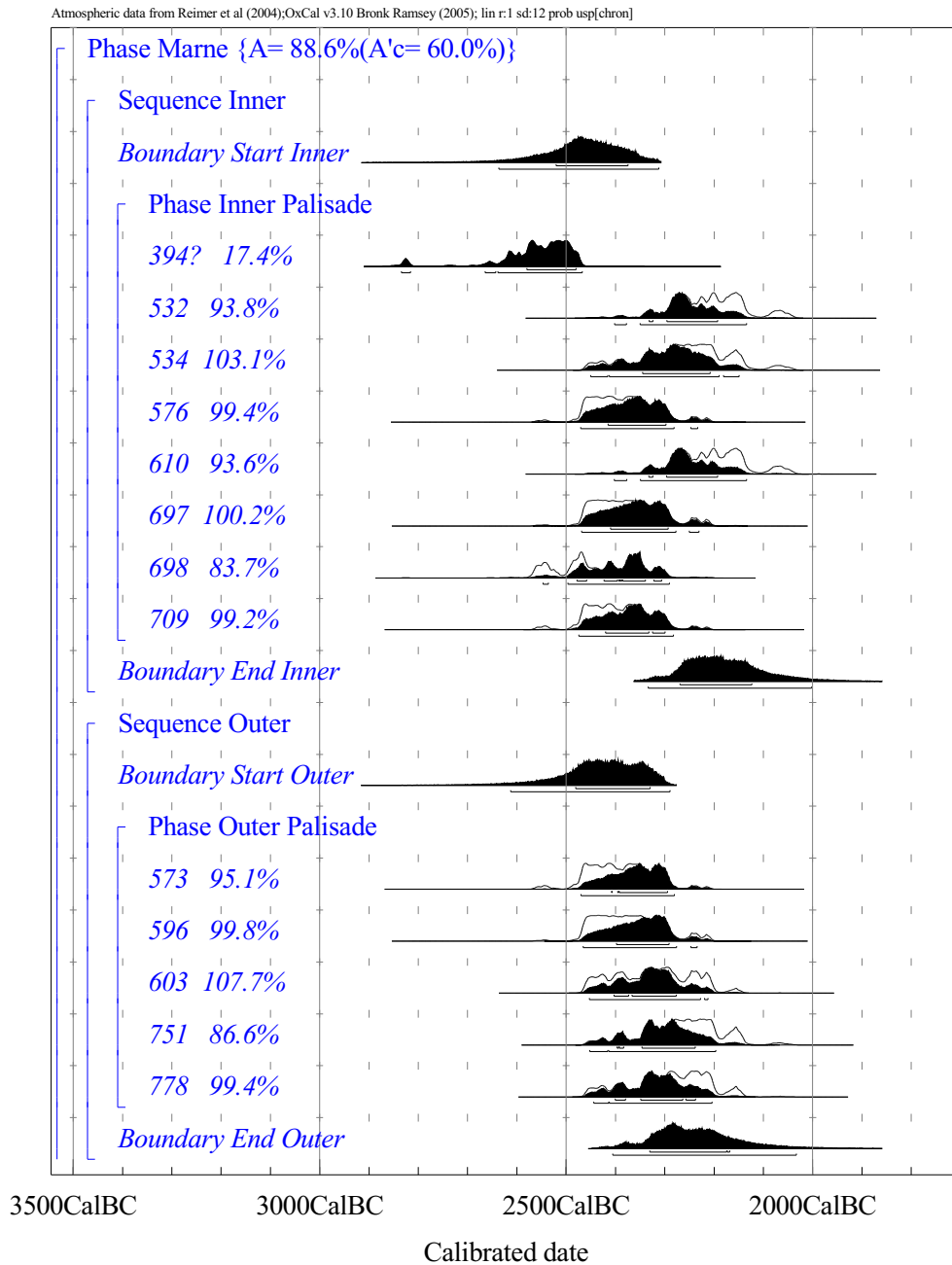


Figure 2: Calibration results from Model 4: using only *in situ* charcoal dates excluding context [394] and with separate construction phases for inner and outer palisades.



Conclusion

The palisades at Marne Barracks were constructed and used over a period of less than 460 years and possibly in a time as short as a few decades. Although the set of radiocarbon dates is coherent and shows little spread it is difficult to conclusively resolve questions about such short timespans when there are always residual doubts about the possibility of an old-wood effect. The radiocarbon dates are perhaps best

interpreted in the light of a strong archaeological hypothesis of a short timespan for construction, and excluding all dates from flotation material and that from context [394]. In this case the construction can be said to have taken place over a period of 10-300 years, starting in the period 2530-2310BC and finishing sometime in the period 2340-2100BC.

OxCal code

Model 1

```
Plot
{
  Sequence
  {
    Boundary "Start Construction";
    Phase "Construction"
    {
      Phase "Inner Palisade"
      {
        R_Date "394" 4030 40;
        TPQ "511"
        {
          R_Date "Beta 211680" 3960 40;
        };
        R_Date "532" 3780 40;
        R_Date "534" 3810 50;
        TPQ "560"
        {
          R_Date "Beta211684" 3730 50;
        };
        TPQ "566"
        {
          R_Date "Beta211685" 3840 50;
        };
        R_Date "576" 3900 40;
        TPQ "578"
        {
          R_Date "Beta211688" 3910 40;
        };
        TPQ "592"
        {
          R_Date "Beta211689" 3750 40;
        };
        R_Date "610" 3780 40;
        TPQ "616"
        {
          R_Date "Beta211694" 3870 40;
        };
        R_Date "697" 3890 40;
        R_Date "698" 3950 40;
        R_Date "709" 3910 40;
      };
    }
    Phase "Outer Palisade"
    {
      R_Date "573" 3910 40;
      R_Date "596" 3890 40;
      R_Date "603" 3850 40;
      TPQ "608"
      {
        R_Date "Beta 211692" 3750 40;
      }
    }
  }
}
```

```
};  
  R_Date "751" 3810 40;  
  R_Date "778" 3830 40;  
};  
Span "Length Construction";  
};  
Boundary "End Construction";  
};  
};
```

Model 2

```
Plot  
{  
  Sequence  
  {  
    Boundary "Start Construction";  
    Phase "Construction"  
    {  
      Phase "Inner Palisade"  
      {  
        R_Date "394" 4030 40?  
        R_Date "532" 3780 40;  
        R_Date "534" 3810 50;  
        R_Date "576" 3900 40;  
        R_Date "610" 3780 40;  
        R_Date "697" 3890 40;  
        R_Date "698" 3950 40;  
        R_Date "709" 3910 40;  
      };  
      Phase "Outer Palisade"  
      {  
        R_Date "573" 3910 40;  
        R_Date "596" 3890 40;  
        R_Date "603" 3850 40;  
        R_Date "751" 3810 40;  
        R_Date "778" 3830 40;  
      };  
      Span "Length of Construction";  
    };  
    Boundary "End Construction";  
  };  
};
```

Model 3

```
Plot  
{  
  Phase "Marne"  
  {  
    Sequence "Inner"  
    {  
      Boundary "Start Inner";  
      Phase "Inner Palisade"  
      {  
        R_Date "394" 4030 40;  
        TPQ "511"  
        {  
          R_Date "Beta 211680" 3960 40;  
        };  
        R_Date "532" 3780 40;  
        R_Date "534" 3810 50;  
      };  
    };  
  };  
};
```

```
TPQ "560"
{
  R_Date "Beta211684" 3730 50;
};
TPQ "566"
{
  R_Date "Beta211685" 3840 50;
};
R_Date "576" 3900 40;
TPQ "578"
{
  R_Date "Beta211688" 3910 40;
};
TPQ "592"
{
  R_Date "Beta211689" 3750 40;
};
R_Date "610" 3780 40;
TPQ "616"
{
  R_Date "Beta211694" 3870 40;
};
R_Date "697" 3890 40;
R_Date "698" 3950 40;
R_Date "709" 3910 40;
Span "Length Inner";
};
Boundary "End Inner";
};
Sequence "Outer"
{
  Boundary "Start Outer";
  Phase "Outer Palisade"
  {
    R_Date "573" 3910 40;
    R_Date "596" 3890 40;
    R_Date "603" 3850 40;
    TPQ "608"
    {
      R_Date "Beta 211692" 3750 40;
    };
    R_Date "751" 3810 40;
    R_Date "778" 3830 40;
    Span "Length Outer";
  };
  Boundary "End Outer";
};
Order "Starts"
{
  XReference "Start Inner";
  XReference "Start Outer";
};
Order "Ends"
{
  XReference "End Inner";
  XReference "End Outer";
};
};
};
```

Model 4

```
Plot
{
  Phase "Marne"
  {
    Sequence "Inner"
    {
      Boundary "Start Inner";
      Phase "Inner Palisade"
      {
        R_Date "394" 4030 40?
        R_Date "532" 3780 40;
        R_Date "534" 3810 50;
        R_Date "576" 3900 40;
        R_Date "610" 3780 40;
        R_Date "697" 3890 40;
        R_Date "698" 3950 40;
        R_Date "709" 3910 40;
        Span "Length Inner";
      };
      Boundary "End Inner";
    };
    Sequence "Outer"
    {
      Boundary "Start Outer";
      Phase "Outer Palisade"
      {
        R_Date "573" 3910 40;
        R_Date "596" 3890 40;
        R_Date "603" 3850 40;
        R_Date "751" 3810 40;
        R_Date "778" 3830 40;
        Span "Length Outer";
      };
      Boundary "End Outer";
    };
    Order "Starts"
    {
      XReference "Start Inner";
      XReference "Start Outer";
    };
    Order "Ends"
    {
      XReference "End Inner";
      XReference "End Outer";
    };
  };
};
```

Model 5

```
Plot
{
  Sequence
  {
    Boundary "Start Construction";
    Phase "Construction"
    {
      Phase "Inner Palisade"
      {
        R_Date "394" 4030 40;
      };
    };
  };
};
```



```
R_Date "532" 3780 40;
R_Date "534" 3810 50;
R_Date "576" 3900 40;
R_Date "610" 3780 40;
R_Date "697" 3890 40;
R_Date "698" 3950 40;
R_Date "709" 3910 40;
};
Phase "Outer Palisade"
{
  R_Date "573" 3910 40;
  R_Date "596" 3890 40;
  R_Date "603" 3850 40;
  R_Date "751" 3810 40;
  R_Date "778" 3830 40;
};
Span "Length of Construction";
};
Boundary "End Construction";
};
};
```

Model 6

```
Plot
{
  Phase "Marne"
  {
    Sequence "Inner"
    {
      Boundary "Start Inner";
      Phase "Inner Palisade"
      {
        R_Date "394" 4030 40;
        R_Date "532" 3780 40;
        R_Date "534" 3810 50;
        R_Date "576" 3900 40;
        R_Date "610" 3780 40;
        R_Date "697" 3890 40;
        R_Date "698" 3950 40;
        R_Date "709" 3910 40;
        Span "Length Inner";
      };
      Boundary "End Inner";
    };
    Sequence "Outer"
    {
      Boundary "Start Outer";
      Phase "Outer Palisade"
      {
        R_Date "573" 3910 40;
        R_Date "596" 3890 40;
        R_Date "603" 3850 40;
        R_Date "751" 3810 40;
        R_Date "778" 3830 40;
        Span "Length Outer";
      };
      Boundary "End Outer";
    };
    Order "Starts"
    {
```

```
XReference "Start Inner";
XReference "Start Outer";
};
Order "Ends"
{
  XReference "End Inner";
  XReference "End Outer";
};
};
};
```