Northamptonshire County Council

Northamptonshire Archaeology

Archaeological Geophysical Survey and Trial Trench Evaluation

Hardingstone Allotments, Northampton

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ARCHAEOLOGICAL GEOPHYSICAL SURVEY AND TRIAL TRENCH EVALUATION
HARDINGSTONE ALLOTMENTS, NORTHAMPTON

NOVEMBER 2005

ABSTRACT

Northamptonshire Archaeology conducted geophysical and trial trench surveys on 1.6 ha of land, formerly used as allotments, in Hardingstone, Northampton. The surveys recorded two irregular linear archaeological features which were shown to be Iron Age in date. They appear to be a continuation of ditches previously recorded in land to the east. The ditches contained pottery, animal bones, charred remains and a quernstone, suggesting a focus of settlement nearby. There were, however, no associated features discovered. There was also no indication that the Roman pottery kilns or early Saxon burials, previously recorded in the area, extended in to the application site. Other anomalies recorded in the geophysical survey proved to be non-archaeological.

1 INTRODUCTION

Northamptonshire Archaeology undertook archaeological investigations on behalf of Bloor Homes on approximately 1.6 ha of former allotment gardens (centre: NGR SP 763574, Fig 1). The land is under consideration for residential development. The work entailed detailed geophysical prospection, and sample trial trench evaluation.

The archaeological investigations were undertaken at the request of Northamptonshire County Council's Historic Environment Team (NCCHET) in order to inform the planning process. The work was conducted to a specification written by Northamptonshire Archaeology and approved by NCCHET (NA 2005).

2 ARCHAEOLOGICAL BACKGROUND

A desk-based assessment undertaken by Northamptonshire Archaeology (Chapman 2005) concluded that although there have been no recorded archaeological finds or features within the allotments themselves, excavations and spot finds made in the immediate vicinity suggest that the proposed development area may contain archaeology spanning the Iron Age to Saxon periods.

Iron Age

Iron Age ditches appearing as crop marks on aerial photographs were excavated prior to the construction of Hardingstone County Primary School which lies to the immediate north-east of the proposed development area (Woods 1969, 21-32). To the west, prior to the construction of Northampton Girls School, a series of inter-cutting ditches and gullies were observed and pottery

of Iron Age date recovered (SMR 4974/0/6). Further archaeological work on the same site revealed a single length of ditch (SMA 1988, 62) and pits, postholes and another possible ditch section (SMR 4974/0/9).

Romano-British

To the north-west of the proposed development area, seven Roman pottery kilns of probable 1st century date were discovered during the construction of housing on St Martin's Lane in 1965 (Jackson 1966, 8; SMR 4974/0/3). To the north-east of the site the remains of at least four more kilns were found along with ditches and gullies dating to the 1st century.

Anglo-Saxon

Three 7th-century pagan Saxon burials were excavated to the north-east of the site prior to the construction of the primary school (RCHME 1985, 290). Other burials and an iron-socketed spearhead have also been found in the area (RCHME 1985, 284; SMR 5016).

3 TOPOGRAPHY AND GEOLOGY

The proposed development site lies on the southern edge of the village of Hardingstone. The surrounding area largely comprises the residential suburbs of Hardingstone and Wootton. The geology is Upper Estuarine Series Clays and Limestones.

4 METHODS

Detailed Gradiometer Survey

All detailed magnetometer survey was undertaken using Bartington Grad601-2 fluxgate gradiometers. The Grad601-2 is constructed as a dual-sensor instrument with two vertical gradiometers separated on a yoke to enable two lines of survey to be recorded in tandem.

A total of 14 separate 30m x 30m grid-squares, totalling *c* 1.3ha, were surveyed in detail. Each grid square was traversed at rapid walking pace in zigzag traverses spaced at 1m intervals with data recorded every 0.25m along these.

The data was analysed using Geoplot 3.00s software. Low (negative) magnetism is shown as white and high (positive) magnetism as black in the resultant greyscale plots. To avoid the introduction of bias, minimal processing was carried out on the data. The 'Zero Mean Traverse' function was applied in order to bring the average level of each line of data into a balanced zero.

The processed data is presented here in the form of greyscale highlighting the magnetic anomalies (-5nT / +5nT scale, Fig 2) and interpretive plot (Fig 3) and are referred to directly in

the following Survey Results section.

Trial trench evaluation

A total of five trenches, each 30m long, including one of double width, were requested by NCCHET. Trenches 1 and 3 were targeted on linear anomalies found in the geophysical survey and, in addition, Trench 1 was designed to examine an anomaly identified as a possible kiln. The others were positioned to provide a reasonable coverage of the site within practical constraints which included bushes and demolished sheds. The trenches were located using a Leica GS50 GPS and the excavations were undertaken using standard methods as specified in the methods statement (NA 2005, section 3.18-3.34).

5 RESULTS

Detailed Geophysical Survey

A single *c* 1.3 ha area of the former allotments was surveyed in detail to the greatest precision available in the circumstances. The previous usage of the site had left the area heavily overgrown with dumps of material, such as demolished sheds, deposited sporadically. Such material produced localised noisy magnetic data. Survey was not completed where the ground was considered unsafe, such as over a demolished building in the south-east and where the height of undergrowth was too great, e.g. in the north. Magnetic disturbance was detected against the steel fencing bounding the site to the west and north-east. Very high readings indicating ferrous debris were located in the area.

The northern half of the survey area was characterised by east-west orientated striations in the data, suspected as indicating the former allotment cultivation strips. The two strongest of these linear anomalies were detected over plot boundary ditches 18m apart. Within this plot a negative linear anomaly was located, thought to reflect a plastic pipeline. In the north-east of the survey area two parallel curvilinear positive anomalies were detected. The anomalies were believed likely to represent buried ditches similar to the Iron Age examples discovered at Hardingstone County Primary School to the east. A highly magnetic discrete anomaly was surveyed between the two ditches. This anomaly was of a magnitude that could indicate a kiln deposit, a likely find considering those at the School, or alternatively deeply buried iron debris.

Trial Trenching

In each of the trenches, the local geology, an olive-brown to bluish-grey clay with dispersed patches of weathered limestone, was located *c* 0.25m below the ground surface. It was overlain by a dark brown clay loam topsoil. Archaeological features cut the natural clay in Trenches 1 and 3 only (Fig 4). The other trenches were devoid of features.

Trench 1

Close to the north-east end of the trench a steep-sided curvilinear ditch [103] ran from its western side and terminated just short of the opposing baulk (Figs 5 & 6, Section 1; Plate 1). It measured *c* 1.25m wide and *c* 0.80m deep. Its fill was a mid-grey charcoal-flecked clay loam (104) containing fragments of limestone, burned pebbles, animal bone, middle Iron Age pottery and a large fragment of rotary quern stone. This was sealed by a secondary fill, a light greyish-brown loamy clay (109).

Approximately 6m to the south-west was the terminus of another ditch [105] which projected *c* 1.5m from the eastern side of the trench (Figs 5 & 6, Section 2; Plate 2). It had been re-cut [110] on at least one occasion resulting in a steep sided profile with a step mid-way up its eastern side. It measured *c* 1.80m wide and *c* 0.75m deep. The primary fill of the ditch was a dark greyish-brown loamy clay flecked with charcoal (108). The secondary fill was a mid-greyish-brown loam (107), again flecked with charcoal and containing fragments of limestone and a small quantity of animal bone. It was evident that part of this fill had been removed by the re-cut [110] and the ditch subsequently filled with a dark greyish-brown clay loam (106). This contained charcoal, fragments of limestone, animal bone and a small quantity of Iron Age pottery sherds.

Also present within the trench were a number of sub-circular features whose loamy fills contained sherds of 19th-20th century pottery. These were most probably planting pits contemporary with the allotment. A small number of round and rectangular postholes found in close association were undoubtedly of similar provenance.

Trench 3

A curvilinear ditch [303] crossed the trench on an approximate north-south alignment close to its eastern end (Figs 5 & 6, Section 3, Plate 3). Its original profile appears to have been U-shaped, but a subsequent re-cut or weathering edge [308] produced a flared shoulder of gentle gradient. In its final form the ditch measured *c* 2m wide and *c* 0.85m deep. Its primary fill was a compact bluish-grey clay containing the occasional fragment of limestone and a small quantity of animal bone. Over this lay a dark greyish-brown clay loam containing flecks of charcoal, limestone fragments, mollusc shells, animal bone and Iron Age pottery. This was overlain by a mid-greyish-brown clay loam (304) containing similar materials with the addition of occasional burned pebbles. Over this and sealing the ditch was a 100-200mm thick layer of re-deposited natural clay (306).

6 THE FINDS

The Pottery by Paul Blinkhorn

The pottery assemblage comprised 70 sherds with a total weight of 2,279g. It was all of Iron Age date. Most of the assemblage came from a single context, (104), in Ditch [103] which comprised mainly several large sherds from the base of a large vessel. A few small sherds of Scored Ware were also present, indicating a date of the middle Iron Age, *c* 5th/4th to 1st century BC (Elsdon 1992; Knight 2002). A partial profile of a small vessel with an ovoid form occurred in the same feature, a shape which is typical of the middle Iron Age in the region.

The other contexts did not produce any chronologically diagnostic pottery, but the range of fabrics was basically the same as that from context (104), and there seems to be no reason to suspect that they are of anything other than the same broad date.

Generally, the sherds were large and in good condition, indicating that they have not been subject to any form of disturbance, and are likely to be primary deposits.

Fabric

The following fabric types, which are typical of the Iron Age pottery of the area (eg Jackson 1995, 41-2) were noted:

F1: Shell. Hand-built. Moderate to dense shell fragments up to 5mm, sherds have a sandy matrix, but few other visible inclusions. 19 sherds, 976g.

F2: Sparse fine shell. Hand-built. Very sparse to rare fine shell up to 1mm, sandy matrix, sparse rounded red ironstone up to 2mm. 46 sherds, 749g.

F3: Grog. Hand-built. Moderate to dense sub-rounded dark grey grog up to 2mm, sandy matrix. 3 sherds, 414g.

F4: Shell and ironstone. Hand-built. Moderate to shell up to 5mm, moderate sub-angular red ironstone up to 3mm. 2 sherds, 41g.

The pottery occurrence by fabric type is shown in Table 1.

Table 1: Pottery occurrence by number and weight (in g) of sherds per context by fabric type

	F1		**F2**		**F3**		**F4**		
Context	No	Wt	No	Wt	No	Wt	No	Wt	Date
104	15	910	31	652	1	337			MIA?
106	1	18	9	43	2	77	2	41	IA
304	3	48	4	43					IA
305			2	11					IA
Total	19	976	46	749	3	414	2	41	

Quern by Andy Chapman

A nearly complete bottom stone came from context 104, the fill of ditch [103]. It comprises a block of coarse grained sandstone, probably Spilsby Sandstone from the Lincolnshire Wolds, which at nearby Hunsbury Hill was the second most common type, after Millstone Grit, among the 124 stones analysed in detail (Ingle 1993/4, 28-29). The stone is up to 300mm in diameter by 115mm thick, although the grinding surface is 290mm in diameter The underside has been very roughly worked with broad facets forming tapering sides and it has a slightly domed surface, indicating that the stone would have been set into the ground to provide a stable base (see Watts 2002, figs 12 & 13). The upper, grinding surface is worn smooth through use and is slightly convex, but with a concavity near the outer edge where a slightly raised lip around a quarter of the circumference indicates that the upper stone had been of slightly smaller diameter, with the pivot not quite central on the bottom stone. Near the centre, the base of an iron pivot, 15mm in diameter, survives within the pivot hole. At a diameter of 300mm, it is most likely that the upper stone would have been of a beehive form.

Animal bones by Stephanie Vann

Method

The animal bone from was subjected to macroscopic examination and identifiable bone was noted and quantified by context. A summary of the results is presented in Table 2. Age was calculated where possible from bones where fusion was discernible, neonatal/juvenile bone and teeth. Bone fragments from sieved samples were included.

Results

Preservation of the animal bone at this site was moderate. Fragmentation was moderate and surface abrasion was low with bone exhibiting smooth hard surfaces. Fragmentation was largely the result of old breaks. Evidence for butchery was low with only one example, a cutmark on an ovicaprid scapula from context 106. There was evidence of canid gnawing on three bones and two burned bone fragments were noted. There was no evidence of pathology.

Table 2: Total number of bone fragments per species

Context	*Bos* Cattle	*Ovicaprid* Sheep/Goat	*Equus* Horse	*Sus* Pig	*Canid* Dog	Large Mammal	Small Mammal	*Aves* Birds	Unid.
104	20	12	1	7	0	40	6	1	41
106	11	4	0	4	0	12	2	0	133
107	1	3	0	1	0	0	0	0	5
304	0	1	0	0	1	0	0	0	16
307	5	0	0	0	0	13	0	0	6
TOTAL	37	20	1	12	1	65	8	1	201

The total number of fragments was 346, of which 145 (42%) were identifiable. The species present were cattle, sheep/goat, horse, pig and dog. Horse and dog were both represented by a single bone. No wild species were present. A single bird bone was recovered from context 104. This was a humerus from a bird comparable in size to a duck (*Anas* sp.) or domestic fowl (*Gallus* sp.).

Table 3: Ageing of Species by Tooth Wear (Grant 1982)

Context	Species	M4	P4	M1	M2	M3
104	Ovicaprid	-	g	g	h	-
104	Ovicaprid	g	-	e	-	-
104	Ovicaprid	g	-	b	-	-
104	Ovicaprid	-	g	g	f	-
104	Pig	-	-	e	b	-
106	Pig	-	-	-	-	erupting
106	Ovicaprid	-	-	-	-	g
107	Pig	-	-	e	b	-

Table 4: Definitions of dental eruption and attrition stages

Cattle and Sheep Mandibles		
abbrev.	***age***	***dental stage***
N	Neonatal	DP4 Unerupted or just in the process of eruption
J	Juvenile	DP4 in wear, M1 not in wear
I	Immature	M1 in wear, M2 not in wear
SA	Subadult	M2 in wear, M3 not in wear
SA1		M3 forming, to just erupting
SA2		M3 erupting
A	Adult	M3 in wear
A1		M3 up to minor dental exposure (stages a and b)
A2		M3 dentine exposure across central column (stages c and d)
A3		M3 dentine exposure on distal column (stages e to h)
E	Elderly	Dentine exposure to or beyond stage j
Pig Mandibles		
N	Neonatal	DP4 Unerupted or just in the process of eruption
J	Juvenile	DP4 in wear, M1 not in wear
I	Immature	M1 in wear, M2 not in wear
I1		M2 present in crypt
I2		M2 erupting
SA	Subadult	M2 in wear, M3 not in wear
SA1		M3 present in crypt
SA2		M3 erupting
A	Adult	M3 in wear
A1		M3 with enamel attrition only (stage a)
A2		M3 with minor dentine exposure (stages b to d)
A3		M3 dentine exposure merging on mesial cusps (stages e to h)
E	Elderly	Three main zones of dentine exposure across M3 merging (stage j)

Key: M4 = deciduous molar DP4 = deciduous premolar P4 = premolar M1 – M3 = permanent molars

These definitions are used in analysis of age at death, using mandibles with at least one recordable molar or 4th premolar. Adult stages are defined by reference to Tooth Wear Stage sensu Grant (1982; also Reitz and Wing, 1999: 163-5). After O'Connor (2003: Table 31)

Tooth wear was recorded for the few mandibles that were complete enough to permit it following Grant (1982) and the results are shown in Table 3. This is a widely used, published procedure that records the stage of tooth eruption and wear based on a series of defined stages, enabling an age to be assigned to individual animals and thus analysis of age at death patterns to be undertaken (Table 4).

Discussion

Whilst it is true that the small size of the assemblage makes it difficult to draw any significant conclusions, there is nothing about the assemblage that is in any way extraordinary for one of this period. Sheep/goat and cattle were regularly exploited throughout the Iron Age and Roman periods, as was the horse and pig, albeit not generally in the same numbers as sheep/goat or cattle (Maltby 1981). The dominance of such remains within the assemblage from Hardingstone is therefore not unusual. The good survivability of large, strong bones such as those of cattle and horse does also need to be taken into consideration, as this dominance may be a reflection of preservation rather than husbandry practices at this site.

With the exception of the sheep/goat mandible from context 106, which would be considered adult following the York System (O'Connor 2003: table 31), the other mandibles for which it was possible to calculate ages would appear to have belonged to juvenile or sub-adult animals. Two mandibles from context 104 still have the deciduous (M4) molar present, and the pig mandible from context 106 shows the M3 permanent molar in the process of erupting. This suggests that these animals might have been slaughtered before reaching full maturity, perhaps for their meat.

The presence of immature animals at this site was supported by the unfused distal epiphyses of an ovicaprid metatarsal from context 104 and a pig metacarpal from context 106, and the proximal epiphysis of a large mammal sized femur from context 307. There is some debate about the precise age at which fusion occurs in different species and the extent to which modern species are comparable to their prehistoric forebears. Distal metapodia are, however, generally considered to be middle fusing bones, with fusion occurring in pigs at approximately 24-27 months and in sheep at approximately 18-28 months. The proximal epiphysis of the femur is considered to be a late fusing bone, with fusion occurring in cattle at approximately 42 months of age (Reitz and Wing 1999: table 3.5).

Species such as cattle and sheep can also be reared for their secondary products such as milk and wool or, in the case of cattle, used for traction. Such uses can explain the presence of adult animals within the assemblage.

Whilst the only evidence of canids within the faunal assemblage itself was a single scapula from context 304, the presence of gnawing upon several elements confirms the presence of these at the site on at least some occasions.

Charred plant macrofossils and other remains by Val Fryer

Introduction and methods

Samples for the extraction of the plant macrofossil assemblages were taken from the middle Iron Age ditches, and four were submitted for assessment.

The samples were bulk floated by Northamptonshire Archaeology and the floats were collected in a 500 micron mesh sieve. The dried floats were scanned under a binocular microscope at magnifications up to x 16, and the plant macrofossils and other remains noted are listed on Table 5. Nomenclature within the tables follows Stace (1997). All plant remains were charred. Modern contaminants, including fibrous and woody roots, were common in all four samples.

Charred plant macrofossils

Although exceedingly rare, cereal grains, chaff and seeds of common weed plants were recorded from three samples. Preservation was poor to moderate, with the grains being largely fragmented and the chaff very abraded. Elongated 'drop-form' grains, probably of spelt wheat (*Triticum spelta*), were noted in samples 1 and 4, and a single spelt glume base was also present in sample 1. Only two weed seeds were located, again in samples 1 and 4. Both were of common field or grassland weeds, namely fat hen (*Chenopodium album*) and medick/clover/trefoil (*Medicago/Trifolium/Lotus* sp.). Charcoal fragments were present throughout, but were only recorded at a high density within sample 1.

Other remains

Mollusc shells (not tabulated) were recorded from all four samples. However, some retained delicate surface structures and surface pigmentation and, at the time of writing, it is not clear whether any were contemporary with the contexts from which the samples were taken. All four of Evans (1972) ecological groups of terrestrial molluscs were represented, along with rare specimens of marsh/freshwater taxa including *Lymnaea peregra* and *Vertigo* sp.

Other remains were scarce, but did include fragments of black porous and tarry residue, bone,

fish bone and vitreous globules.

Table 5:: Charred plant macrofossils and other remains

Sample No.	**1**	**2**	**3**	**4**
Context No.	**104**	**106**	**304**	**305**
Cereals				
Triticum sp. (grains)	x			x
T. spelta L. (glume base)	x			
Cereal indet. (grains)	xfg		xfg	
Herbs				
Chenopodium album L.	x			
Medicago/Trifolium/Lotus sp.				x
Other plant macrofossils				
Charcoal <2mm	xxx	x	xx	xx
Charcoal >2mm	xx			
Indet. seed		x		
Other materials				
Black porous 'cokey' material	x		x	
Black tarry material	x	x		
Bone	x		x	x
Fish bone	x			
Small coal frags.	x	x		x
Small mammal/amphibian bones	xpmc		xpmc	
Vitrified material	x			
Sample volume (litres)	**20**	**20**	**20**	**20**
Volume of flot (litres)	**0.1**	**<0.1**	**<0.1**	**<0.1**
% flot sorted	**100%**	**100%**	**100%**	**100%**

Key
x = 1 – 10 specimens xx = 10 – 100 specimens xxx = 100+ specimens
fg = fragment pmc = possible modern contaminant

Conclusions and recommendations

The low density of material recovered precludes any accurate interpretation of the assemblages. With the possible exception of sample 1, which may be derived from a small deposit of fuel/hearth debris, there is no evidence for the systematic disposal of refuse within any of the excavated features. It appears most likely therefore, that some or all of the material recovered is derived from scattered or wind-blown refuse, which accidentally became incorporated within the pit and ditch fills.

As plant remains were so scarce, no further analysis is recommended.

7 CONCLUSIONS

The geophysical survey identified two irregular linear features in the northern part of the application area which were interpreted as an extension of the pattern of Iron Age ditches lying to

the east. This was confirmed by the trial trenching with Iron Age pottery and other materials coming from ditches in Trenches 1 and 3.

No other archaeological features were discovered and it appears that the other geophysical anomalies can be attributed to modern materials in the soil. There was no evidence of a Roman kiln in Trench 1, and it is likely that the extreme magnetic readings here were caused by modern debris. The application site would therefore seem to lie outside the zone of kilns and pagan Saxon burials that have been found nearby (Chapman 2005)

The Iron Age ditches lay directly beneath modern allotment soils and were therefore not particularly well preserved. Some of the material in the soil samples suggested that modern contamination may be present. The ditches did, however, contain a reasonably large quantity of pottery and animal bones which was relatively well preserved and appears to have been discarded quite close to a focus of Iron Age occupation. The charred material may include hearth debris from Sample 1.

The geophysical survey indicates that Ditch 105 is probably the terminal of Ditch 303. Assuming these to have been contemporary with Ditch 103, there is the suggestion that there was some kind of entranceway, 5 m wide, between these two terminals (Fig 5). The ditches are, however, irregular in plan and apparently discontinuous, and do not fall into an obvious category of Iron Age settlement. They are likely to have been boundary ditches, although the finds (which included a quernstone) would appear to indicate settlement nearby. The previous archaeological discoveries indicate that settlement lay to the west and to the east (Chapman 2005), so it is likely that the application site lay within a general zone of occupation and it is possible that subsequent cultivation has removed all but the deeper features associated with it.

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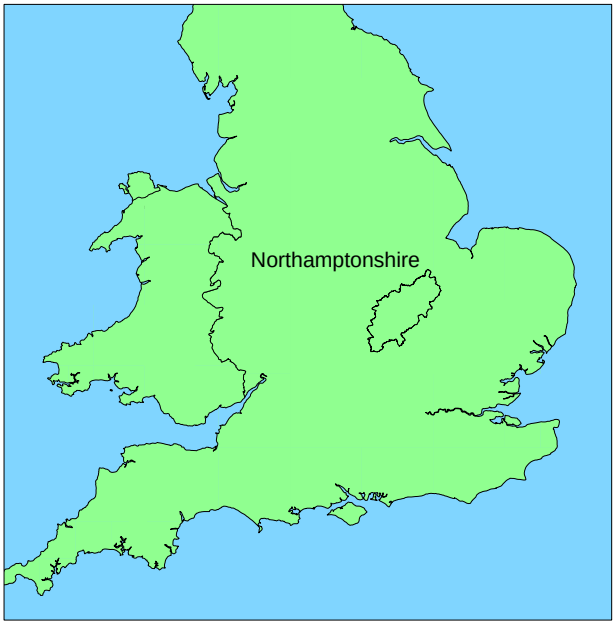

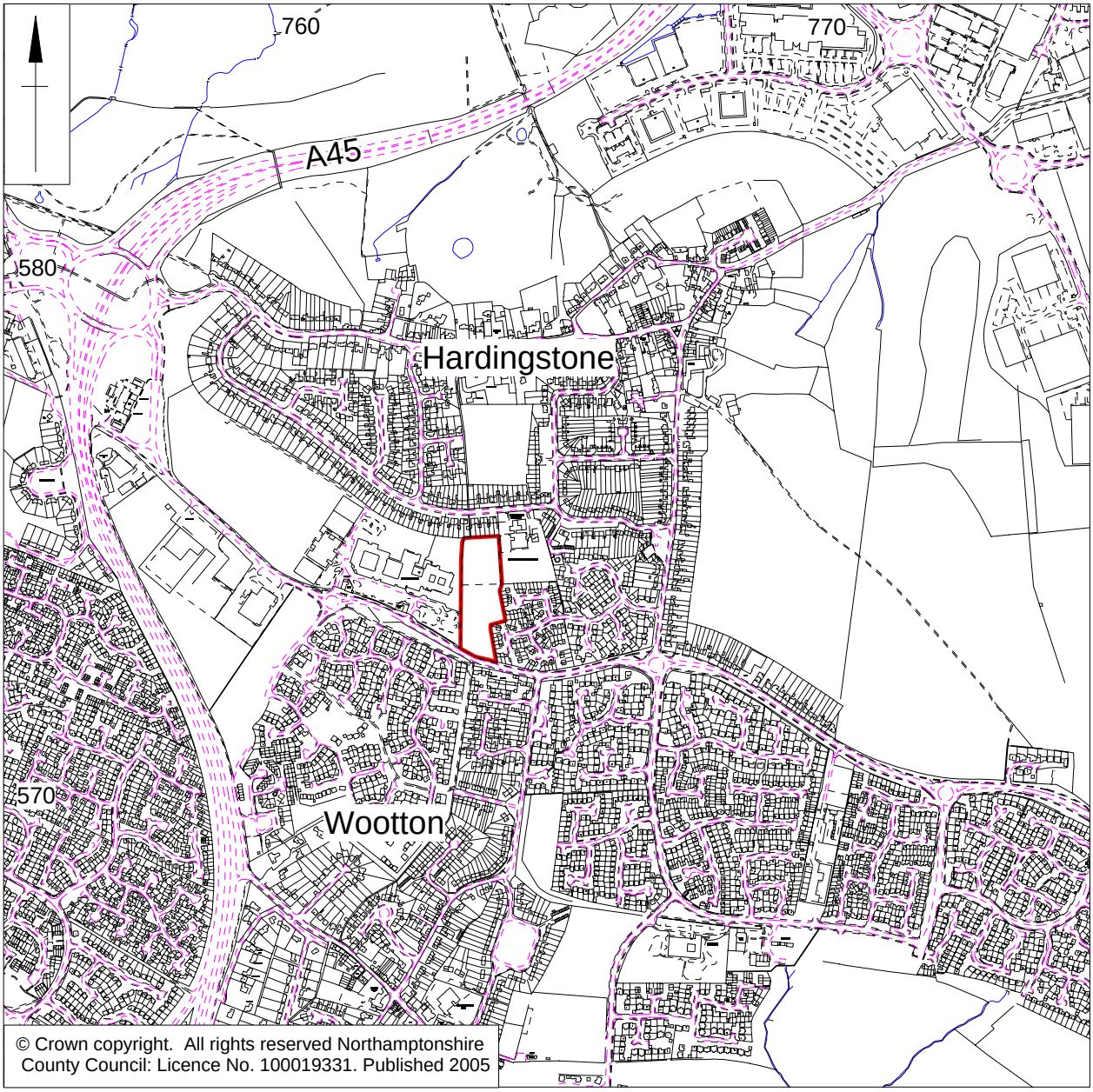

Fig 1

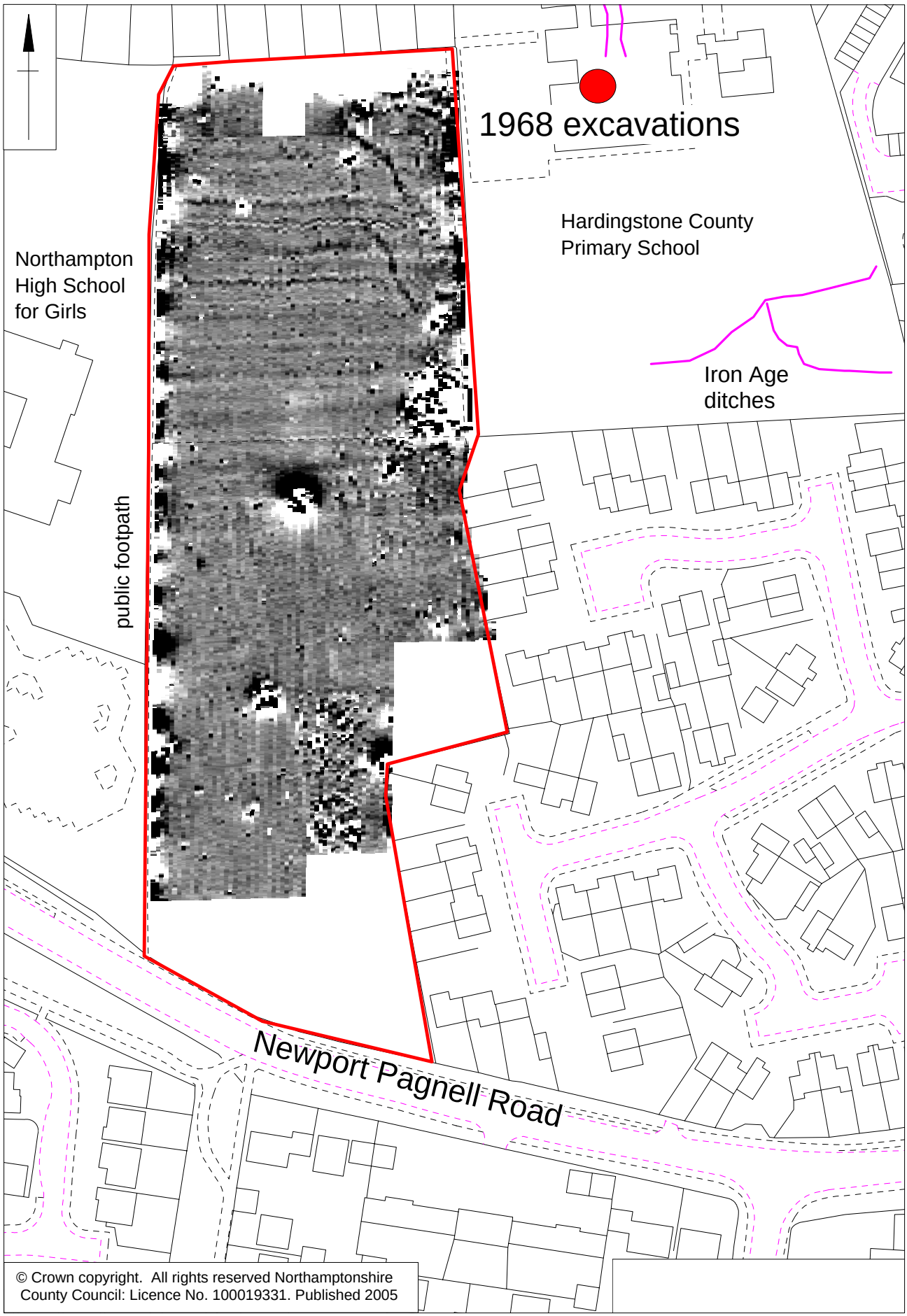

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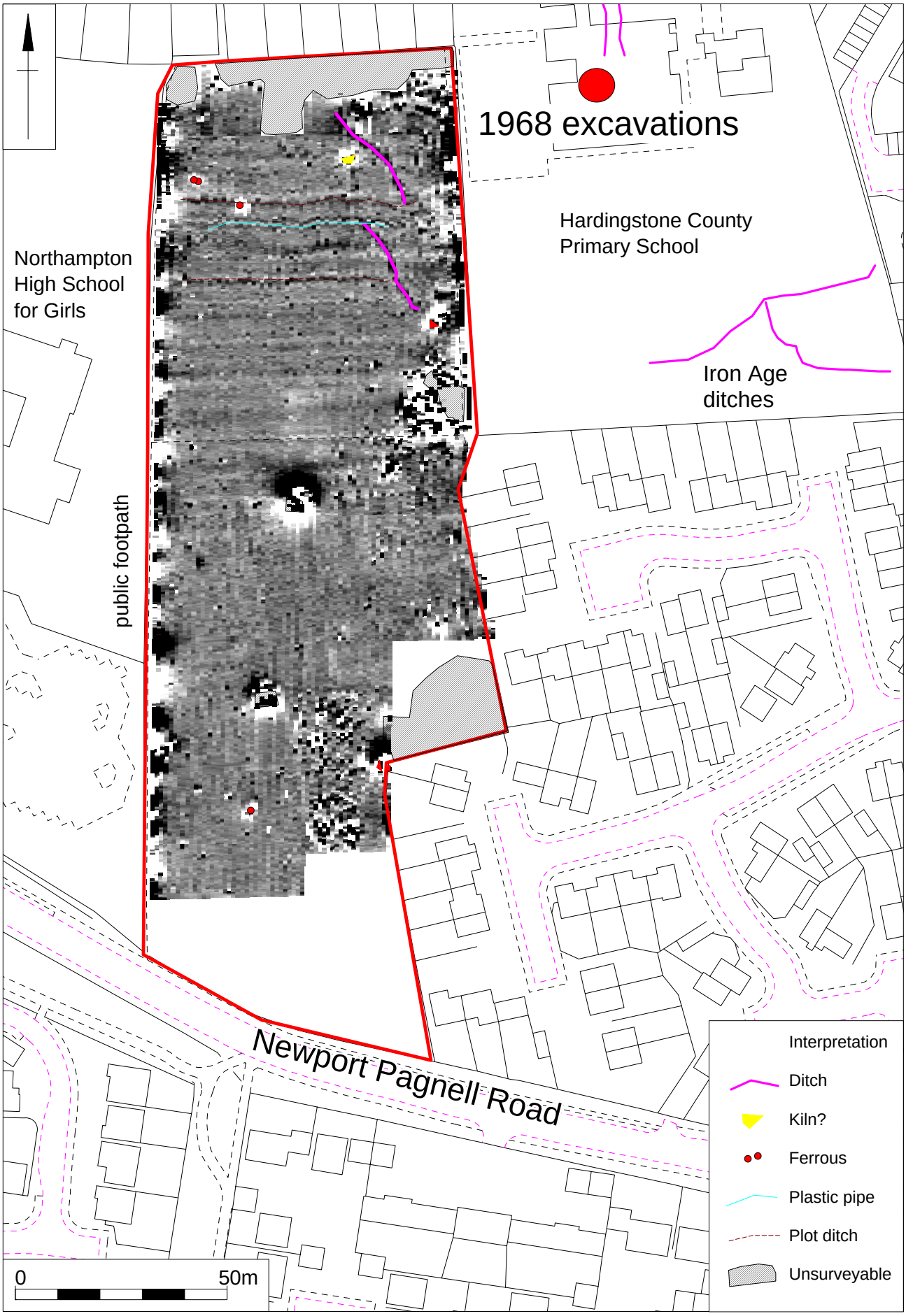
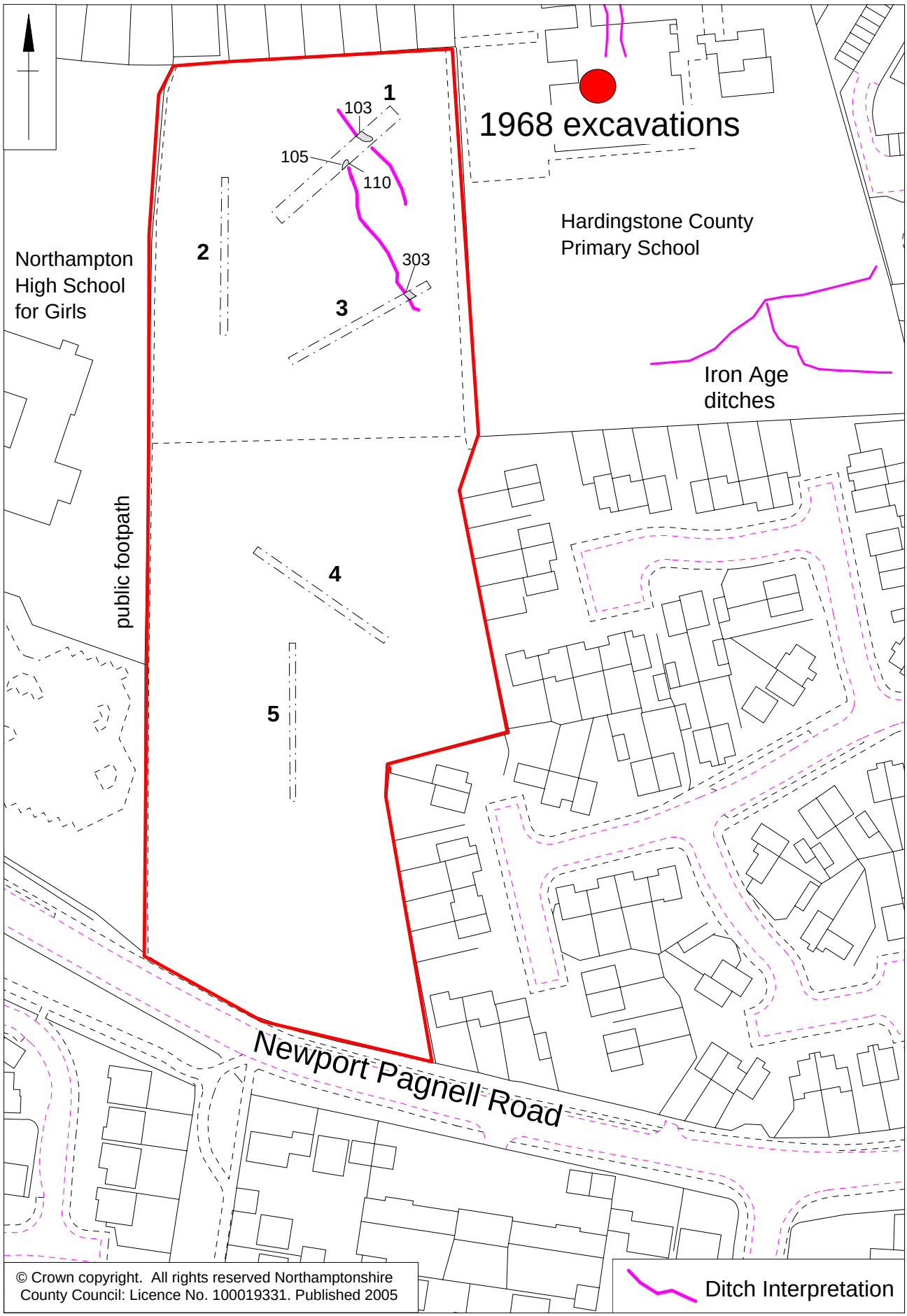
Fig. 2



Scale 1:1250 Gradiometer Results +5nT (black) ~ -5nT (white) Fig. 3



Scale 1:1250

Fig.4

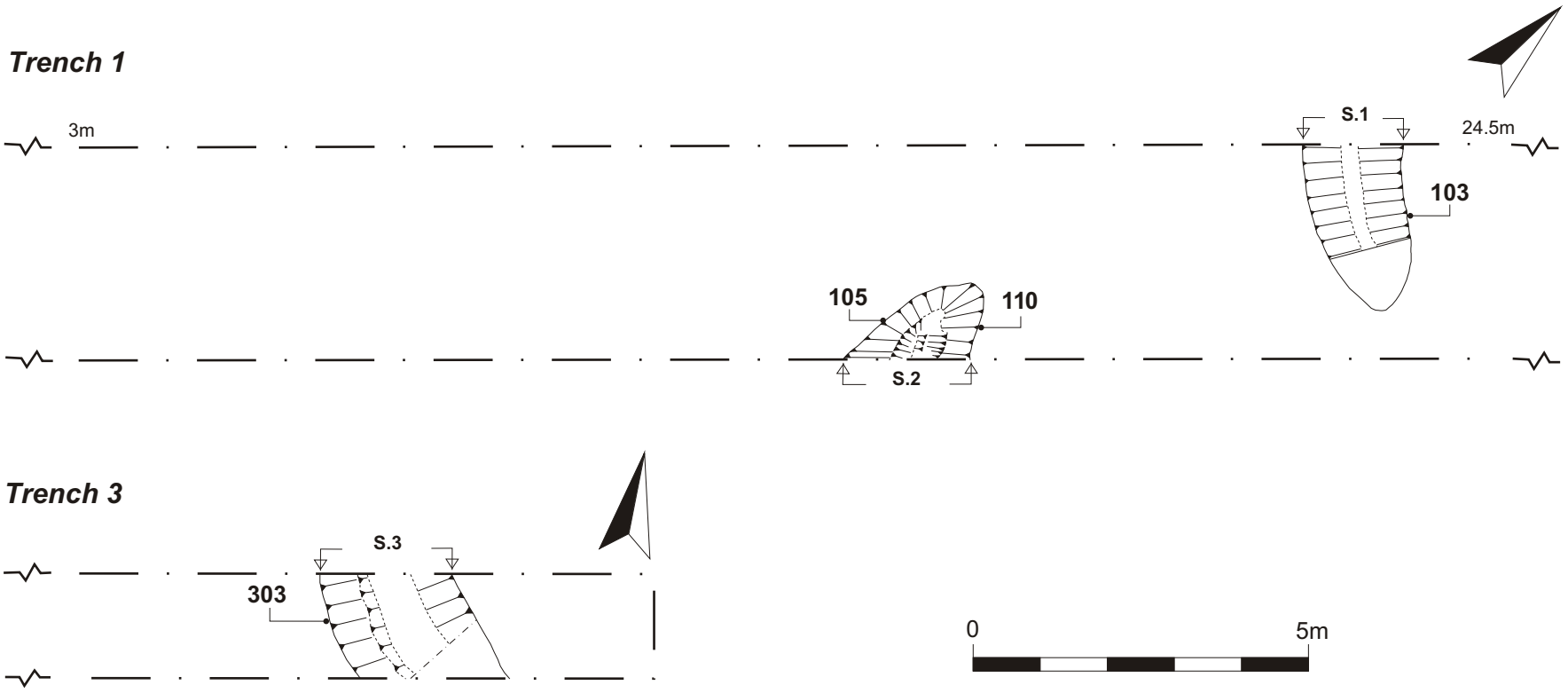
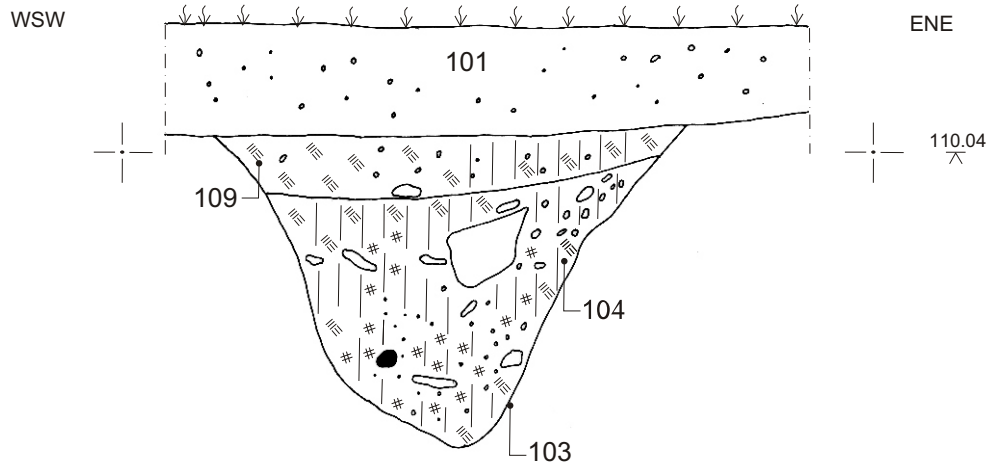
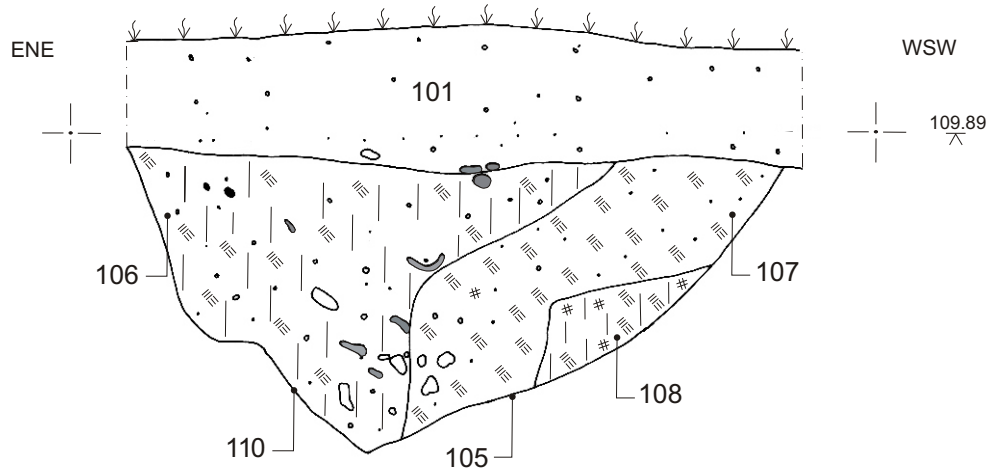


Fig. 5

Section 1



Section 2



Section 3

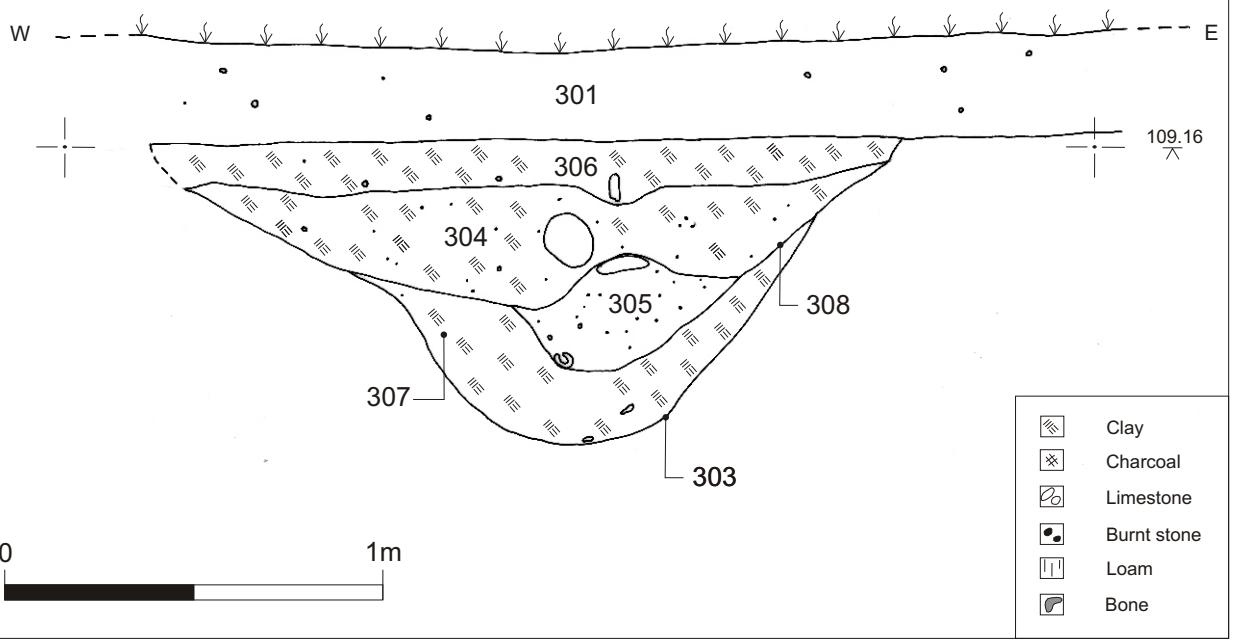


Fig. 6

Plate 1

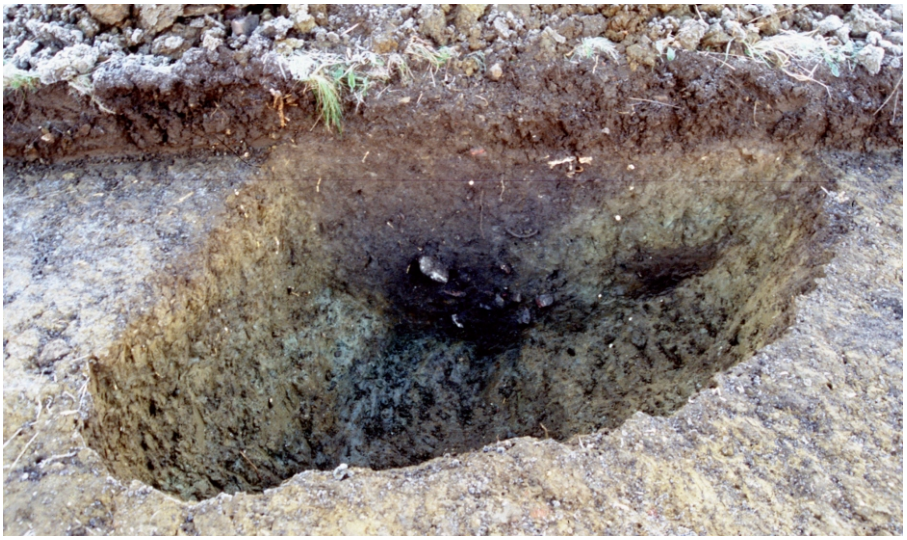


Plate 2

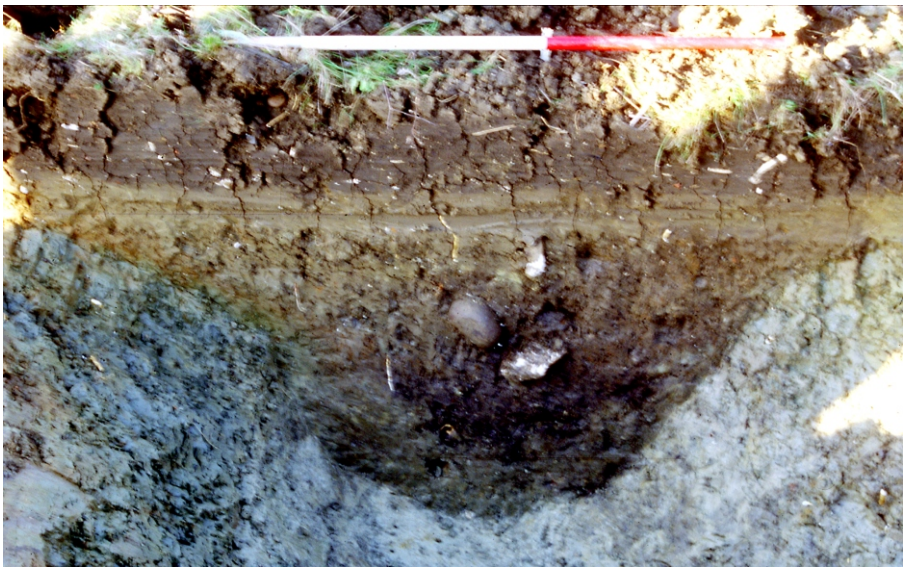


Plate 3