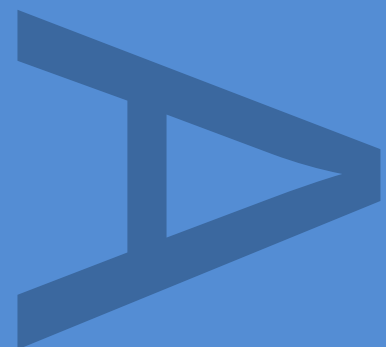


**LAND OFF WINDMILL HILL,
EXNING, SUFFOLK**

**AN ARCHAEOLOGICAL
EVALUATION**

OCTOBER 2012



**PRE-CONSTRUCT ARCHAEOLOGY
R11313**

**ARCHAEOLOGICAL EVALUATION AT WINDMILL HILL,
EXNING, SUFFOLK**

Site Code : EXG099

Central NGR: TL 6287 6589

Local Planning Authority: Forest Heath District Council

Planning Reference: N/A

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ABSTRACT

This document details the results of an archaeological trial trench evaluation at Windmill Hill, Exning. The work was commissioned by CgMs Consulting Limited on behalf of Carter Jonas LLP to assess the archaeological implications of residential development of the site. An earlier geophysical survey had identified a number of anomalies across the site and nine trial trenches were positioned to investigate these.

The most significant archaeological remains identified were located in the north-east corner of the site in Trench 9, which were sealed by a deep subsoil accumulation (1.40m below modern ground level). These features were not identified by the geophysical survey due to the considerable depth of the overlying deposits. A large ditch was a substantial boundary feature containing a structural beam slot or palisade trench. Two pits, one containing burnt flint were located to the north of this ditch. These features represent likely evidence for Middle Bronze Age settlement of some status which seems to have been located within and beyond the northern limits of the current area of investigation.

A Mid Roman field system or enclosure was indicated by two ditches revealed within Trenches 2 and 9. A very small assemblage of pottery was recovered (two sherds, 22g), yet the perpendicular alignment of the ditches indicates the presence of a Mid Roman agricultural landscape.

A weak linear anomaly investigated to the west of the site (Trench 6) was found to be an undated tree hollow.

An area of strong positive magnetic anomalies in the central northern part of the site was found to correspond with a large modern backfilled quarry pit which encompassed the whole of Trenches 4 and 8.

1 INTRODUCTION

- 1.1 This document details the results of an archaeological trial trench evaluation at Windmill Hill, Exning, Suffolk (Fig. 1). The work was commissioned by CgMs Consulting on behalf of Carter Jonas LLP and was carried out in order to assess the likely archaeological impact of proposed residential development of the site.
- 1.2 A Written Scheme of Investigation (WSI) for archaeological trial trenching within the proposed development area was prepared in response to a Design Brief for archaeological trial trenching prepared by Dr Jess Tipper of Suffolk County Council Archaeological Service.
- 1.3 A geophysical survey of the site was carried out by Cranfield University Forensic Institute in September 2012. The survey identified a number of anomalies possibly associated with large-scale industrial activity (Masters 2012). The archaeological potential of the site and surrounding area, local archaeological sites and finds recorded in the Suffolk Historic Environment Record, and historic cartographic evidence are discussed in detail in this earlier report.
- 1.4 The site comprises a roughly triangular area of 2.4ha, sloping down to the east and south from a high point in the north-west corner. Until recently, it was used as a paddock for horses. The underlying geology is mapped as Late Cretaceous Zig Zag Chalk (Masters 2012) but the trial trenching revealed the site actually lies on localised deposits of iron-stained sand; chalk was encountered only at the far west end of Trench 2.
- 1.5 Nine trial trenches were excavated and recorded on 15th-17th October 2012, totalling 270m. Evidence of significant Bronze Age settlement activity was revealed as was a probable Mid to Late Roman field system or enclosure.

2 ARCHAEOLOGICAL METHODOLOGY

- 2.1 Nine 30m trial trenches were laid out following the trench location plan in the Written Scheme of Investigation produced by CgMs Consulting (Fig. 2). Trench 4, in the centre of the site, was relocated c. 5m to the south of the original proposed location in order to avoid a mains sewer which crossed the site from west to east. The trenches were positioned to investigate anomalies identified by the geophysical survey. Due to the considerable depth of topsoil and subsoil overlying archaeological features, the sides of Trench 9 were battered and angled by machine to allow safe working within the trench.
- 2.2 The ground reduction was carried out under archaeological supervision using a 13 ton 360 tracked excavator fitted with a toothless ditching bucket. Topsoil and subsoil deposits were removed in spits down to the level of the clean natural geology where potential archaeological features could be observed and recorded.
- 2.3 OD heights and trench locations were recorded using a Leica 1200 GPS rover unit.

3 ARCHAEOLOGICAL SEQUENCE

Overburden

- 3.1 Deep subsoil overlay the natural sand (10) across the southern and eastern parts of the site, its depth increasing broadly in line with the downward slope of Windmill Hill from a high point in the north-west corner of the site (27m OD). At its deepest, towards the south-west corner of the site (north end of Trench 1), the subsoil was 1.65m deep, with the natural geological horizon (present at 17.84m OD) sealed by 2.15m of subsoil and topsoil (Plate 1). The subsoil (14) was generally a mid to dark reddish-brown clayey sand, though it was lighter and more yellowy in areas where the underlying natural sand was less iron-stained (e.g. Trench 6 and the eastern half of Trench 3 (17)). In the south-west of the site (southern part of Trench 1 and western part of Trench 5), the subsoil (14) was underlain by a thin light yellowish-brown sand interface with the natural geology (20). These deep subsoil deposits are the result of hill-wash and colluvial action.
- 3.2 In contrast, the topsoil and subsoil deposits towards the top of the hill (north-west of the site; Trench 6 and west of Trench 7) were shallow (0.18 and 0.22m deep, respectively), with the natural sand present at just c. 0.40m below modern ground level (25.57m OD at the north end of Trench 6; Plates 7 and 8). Had any archaeological features ever been present in this area, they would have had little protection from agricultural activity and other ground disturbance.

Middle Bronze Age: 1500-1000BC

- 3.3 The most significant archaeological remains identified by the trial trenching were in the far north-east corner of the site (Trench 9), sealed by deep, undisturbed subsoil and overburden (c. 18m OD, 1.40m below modern ground level). Ditch [11] and two small pits [29] and [32] were identified of likely Middle Bronze Age date (Plates 11 and 14).

- 3.4 Ditch [11] was of particular interest, with small but important finds and environmental assemblages indicative of settlement and agricultural activity of Middle Bronze Age date. The ditch comprised a substantial boundary feature (2.20m wide and 0.75m deep) with a highly unusual profile suggestive of a structural beam slot for a large fence or palisade extending along its south side (Fig. 4; Plates 12 and 13). This palisade/ fence decayed in-situ, leaving a vertical-sided void filled with dark, charcoal-rich material (26); the same material filled the upper portion of the ditch and indicates the original presence of additional (now decayed) structural components. A small quantity of Middle Bronze Age pottery (six sherds 15g) was recovered from fill (26) (Matt Brudenell pers comm.). An environmental sample <1> (26), from the ditch showed evidence of hearth detritus and/or burnt cereal processing waste (see Appendix 2).
- 3.5 A quantity of animal bone and burnt flint (14 pieces; 1150g, Table 1) present in the excavated (1m) slot reflects proximity to occupation areas. The animal bone assemblage derives from butchery and includes part of a sheep mandible, several cattle teeth and other cut bone fragments. The ditch's lower fill (27), consisted of weathered sand and gravel from the open sides of the ditch, built-up against the north side of standing structural elements. Fill (28), on the south side of the palisade/ fence, was a clayey packing deposit. Ditch [11] is aligned east to west, extending down the hillside towards the Newmarket Number 1 Drain, the source of the river Snail, which runs along the eastern site boundary.
- 3.6 Immediately north of Ditch [11] was a small pit [29] which had a similar dark fill to (26) and also contained burnt flint (Figs. 3 and 4, Table 1). It extends under the baulk and is probably contemporary.
- 3.7 Pit [32] contained no finds and had a natural-looking fill but is likely to be broadly contemporary based on its stratigraphic level.

| Cut | Fill | Enviro Sample No. | Quantity | Weight (g) |
|-----|------|-------------------|----------|------------|
| 11 | 26 | | 11 | 821 |
| 11 | 26 | 1 | 21* | 261 (+26*) |
| 29 | 30 | | 1 | 41 |

Table 1: All burnt flint by context

* Asterix denotes the smaller fragments which are not counted in quantity, but weight is in brackets

Mid Roman: 100-300AD

3.8 A north-east to south-west-aligned ditch [19] at the western end of Trench 2 corresponded with another weak linear anomaly identified by the geophysical survey (Fig. 2). The ditch was aligned across the width of the trench and was 1.5m wide by 0.44m deep, with steep sides and a flattish base (Figs. 3 and 4; Plates 2 and 3). It contained a single fragment of animal bone and a small piece of Roman amphora (21g), dating AD50-250 (24). This fill was sealed by 0.63m of subsoil (14) and topsoil (15).

3.9 Ditch [12] was on a north-west to south-east, alignment measuring 1.1m wide and 0.35m deep (Fig 3). Fill (25) was light brown suggestive of silting in an open ditch. It contained a Middle to Late Bronze Age (possibly EIA) 'squat' flint flake made from very good quality Brandon flint. Its striking platform/core face angle has been trimmed and is worn, suggesting it was used as a scraper or chisel-type tool (Barry Bishop pers comm.). This fill also contained and a single Wattisfield greywares sherd (1g) from Ditch [12] (25) (Katie Anderson pers comm.). It is likely that the prehistoric material within this ditch entered residually due to proximity to pre-existing Middle Bronze Age settlement activity.

Post medieval and Modern: 19th-20th Century

3.10 The central northern area of the site (Trenches 4 and 8) was heavily-disturbed by past quarrying. Trench 8 was machine-excavated to a depth of up to 1.70m at its east end and the exposed horizon was still within a modern deposit (13) containing (machine-made, frogged) brick

rubble and fragments of wood/ branches (up to 2 feet long). This layer (13) was dark grey-brown clay with an oily, 'cessy' appearance (Plate 10). It was sealed by 0.20m of redeposited natural sand (22) and a thick (up to 0.90m) compact light to mid grey chalky clay layer containing occasional brick rubble, asphalt and breeze block fragments (21). These levelling/ capping deposits sealed the top of the backfilled pit. Deposit (13) and the overlying capping deposits were encountered throughout the whole length of Trench 8 (Plate 9). Trench 4 was excavated to a depth of 0.90-1.12m (south end and north end, respectively) and was found to contain a very similar 'cessy' deposit containing wood and modern brick, sealed by a sandy gravel layer (18) (Plate 5). No natural sand was present in either trench. No edges to these deposits were identified but they are likely to represent recent backfills of a large quarry pit or pits, the projected extent of which is shown on Fig. 2. This feature can be linked with the strong positive and dipolar anomalies identified by the geophysical survey in the northern central part of the site (Fig. 2; Masters 2012, 4).

- 3.11 The capping deposits/ levelling layers present in Trenches 4 (18) and 8 (21) extend outwards beyond the edges of the quarry pit and overlie the subsoil in the west of Trench 3, east of Trench 5, and the whole of Trench 9.

Undated Feature

- 3.12 In the centre of Trench 6 was a shallow tree hollow [23] with an irregular profile and plan, containing no finds (Fig. 3; Plate 7). Its location approximately corresponds with a weak linear anomaly identified by the geophysical survey (Fig. 2).

4 CONCLUSIONS

- 4.1 The most significant archaeological remains were found in Trench 9, in the north-east corner of the site. These features were not identified by the geophysical survey due to the considerable depth of the overlying deposits. A cluster of features, comprising a ditch and two small pits, was sealed below deep subsoil and other deposits (c. 18m OD, 1.40m below modern ground level). The dark, charcoal and burnt flint-rich fills of the ditch and one of the pits suggest areas of occupation in close proximity. The large size of Ditch [11] and the presence of a palisade or large fence within it implies an important boundary, possibly associated with a high-status or defended settlement. Fill (26) is of particular interest, containing Middle Bronze Age pottery, as well as charred remains indicative of hearth detritus and/or burnt cereal processing waste (see Fryer, Appendix 2). The environmental evidence recovered from this ditch indicates some potential for absolute dating; therefore any future work should include further investigation of this feature.
- 4.2 Immediately north of Ditch [11] was a small pit [29] which had a dark fill and also contained burnt flint (Figs. 3 and 4). It extends under the baulk and is probably contemporary with the ditches.
- 4.3 A large Early Iron Age ditch has previously been recorded on the top of Windmill Hill (Suffolk HER ESF20101, ESF21205, EXG082) and the boundary ditch in Trench 9 may indicate a prolonged history of relatively high status settlement in the immediate vicinity.
- 4.4 Ditch [19] in Trench 2 and Ditch [12] in Trench 9 formed a probable Mid Roman field system or enclosure aligned northeast southwest and northwest southeast. The prehistoric material recovered from the fill of Ditch [12] was residual; deriving from the Middle Bronze Age settlement activity indicated by Ditch [11] and associated pits. Despite the very small assemblage of Roman pottery (2 sherds 22g), Ditches

[19] and [12] share a perpendicular alignment, indicating a secondary phase of activity within the development area.

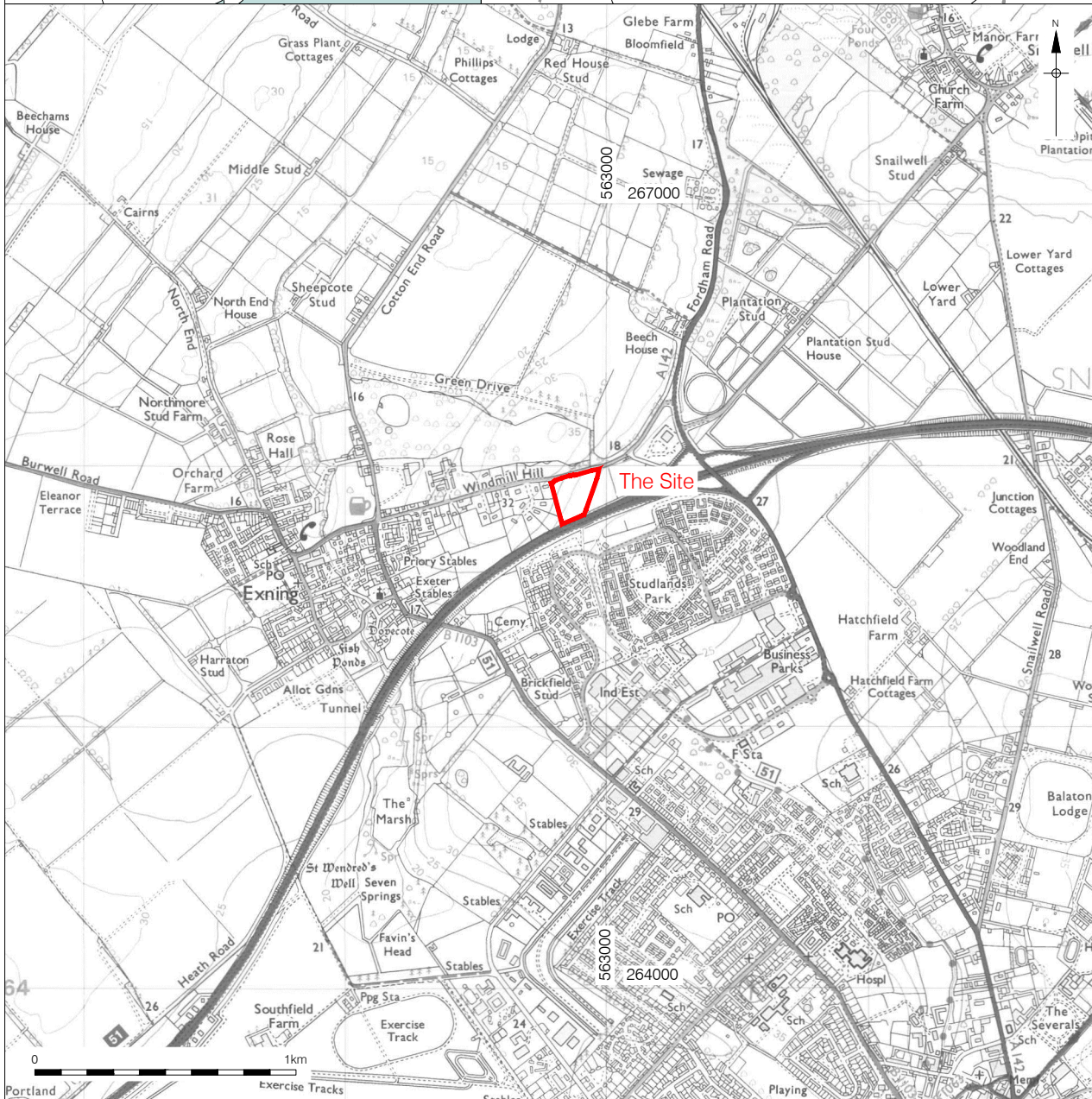
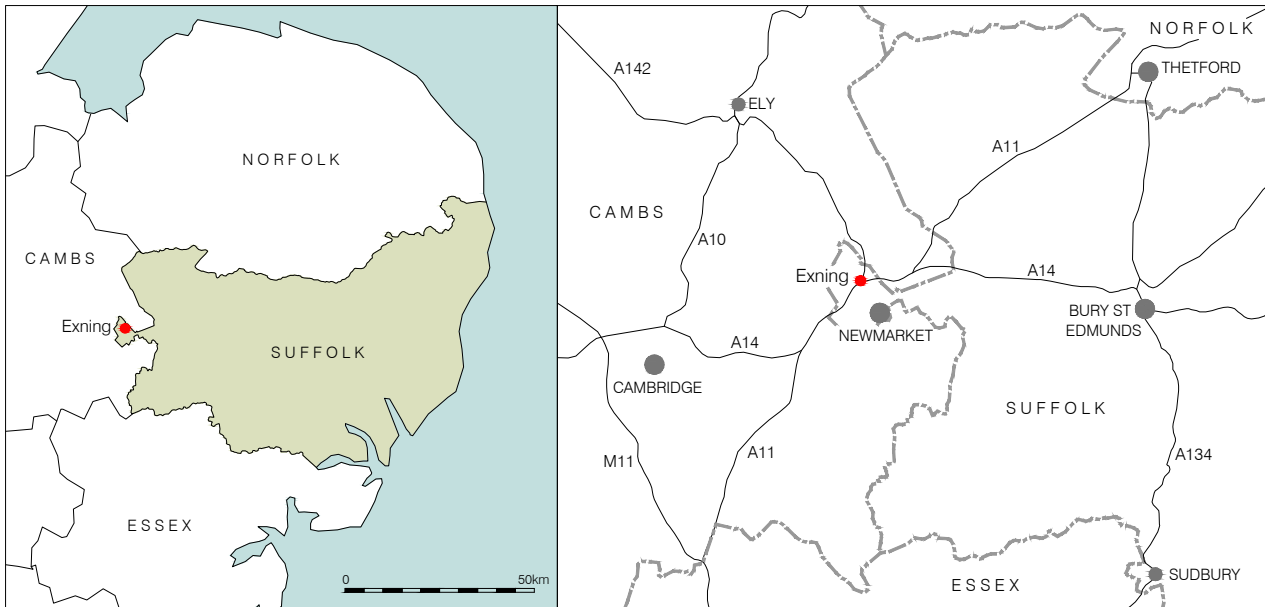
- 4.5 The anomalies are mainly of low archaeological interest. The large area of very strong magnetic anomalies identified by the geophysical survey in the central northern part of the site corresponds with a large backfilled quarry pit containing brick rubble and other modern material, and sealed by levelling/ capping deposits extending over and beyond the edges of the pit. The edges of this feature were not identified within the trial trenches but its fills were present throughout Trenches 4 and 8 to a considerable depth (at least 1.70m below modern ground level in the east of Trench 8). A large quarry pit on the site could be associated with the brickworks shown a short distance to the south on the 1902 Ordnance Survey map (Masters 2012, 3) or with gravel quarrying shown in the area on the 1903, 1927, 1940s and 1953 OS maps (*ibid.*).
- 4.6 A weak linear geophysical anomaly in the west of the site was identified as an irregular, undated tree hollow midway along Trench 6.
- 4.7 The area to the west of Trench 9 has been heavily-disturbed and it is unlikely that surviving prehistoric/ Roman remains continue beyond this north-eastern corner of the site. Should further archaeological excavation take place in this area, there is potential for recovery of further settlement related evidence which could help to clarify the function of the ditch recorded during the evaluation.

5 ACKNOWLEDGEMENTS

PCA would like to thank CgMs Consulting for commissioning the project on behalf of Carter Jonas LLP and Dr Jess Tipper for monitoring the project on behalf of Suffolk County Council Archaeological Service. Thanks to Josephine Brown of the PCA CAD Department for preparing the figures, Katie Anderson for identifying the single fragment of Roman pottery, Barry Bishop for his comments on the flint flake, Matt Brudenell for examining the small but significant assemblage of Bronze Age pottery and Val Fryer for examining the Environmental remains.

6 REFERENCES

Masters, P. 2012 *Geophysical Survey of Land off Windmill Hill, Exning, Suffolk, EXG 099*. Cranfield University Forensic Institute Report No. 065



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08/08/12 HB, updated 22/10/12 MR

Figure 1
Site Location
1:2,000,000; 625,000 & 25,000 at A4

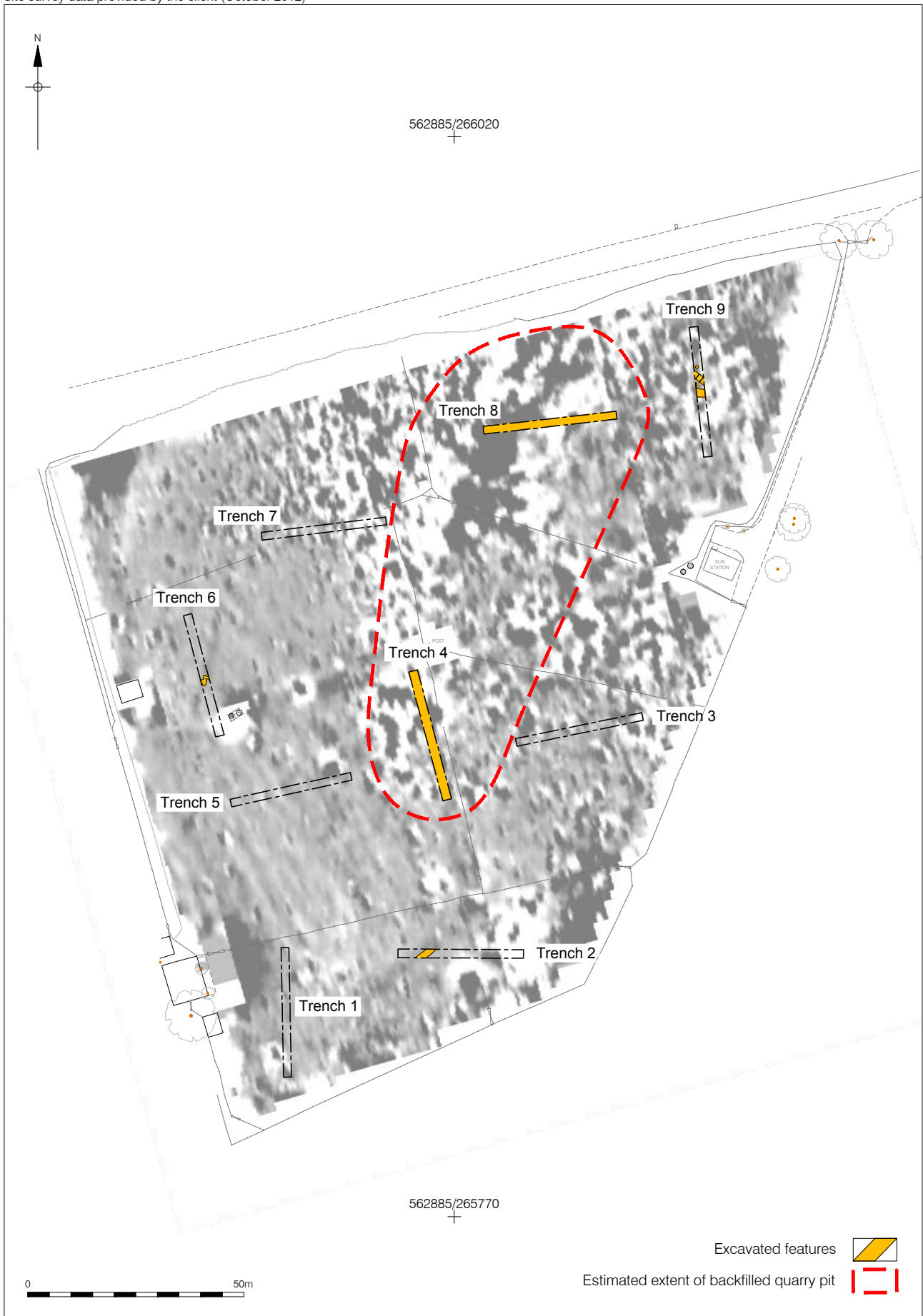
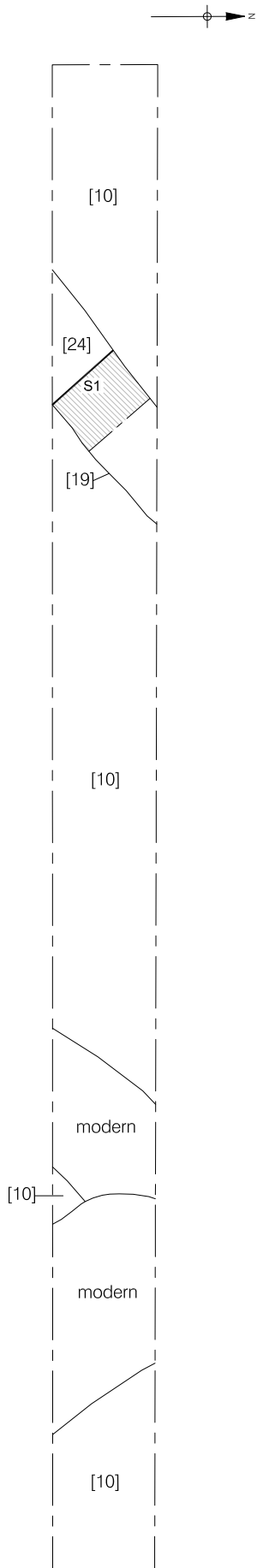
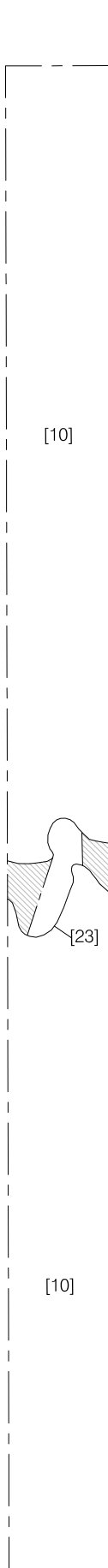


Figure 2
Detailed Site Location with Geophysical Survey results overlain
with Trench Locations and excavated features
1:1,250 at A4

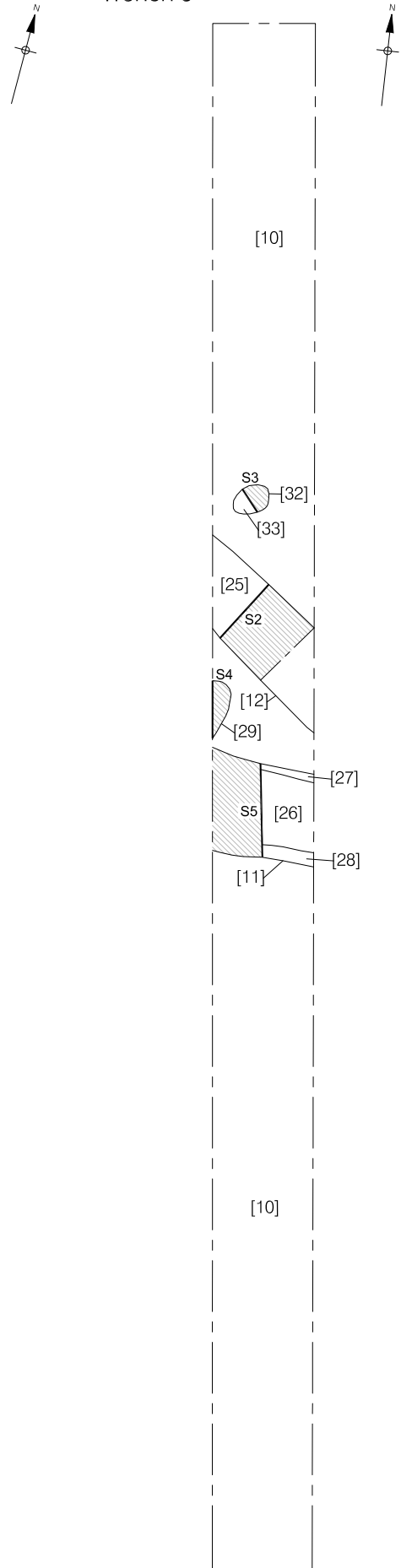
Trench 2



Trench 6



Trench 9



0 5m

Figure 3
Plans of Trenches 2, 6 and 9
1:125 at A4

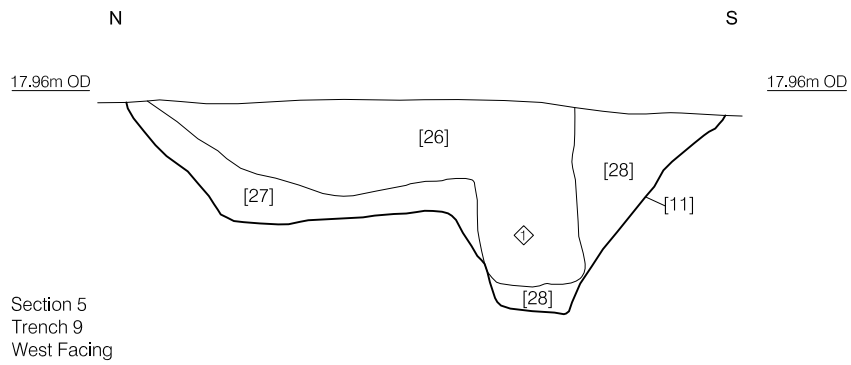
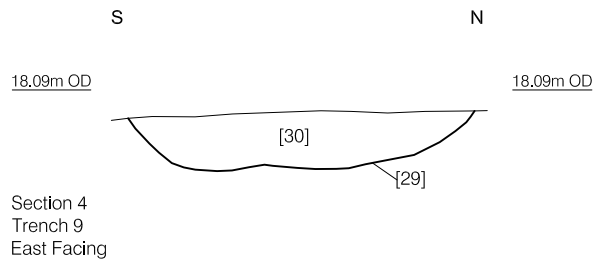
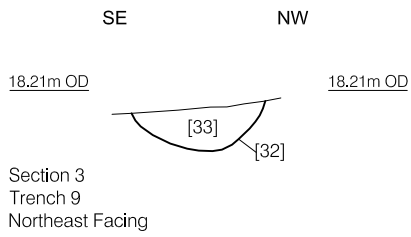
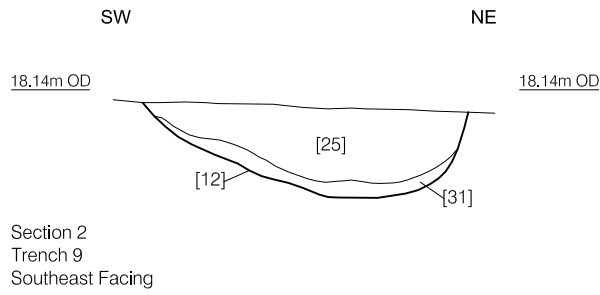
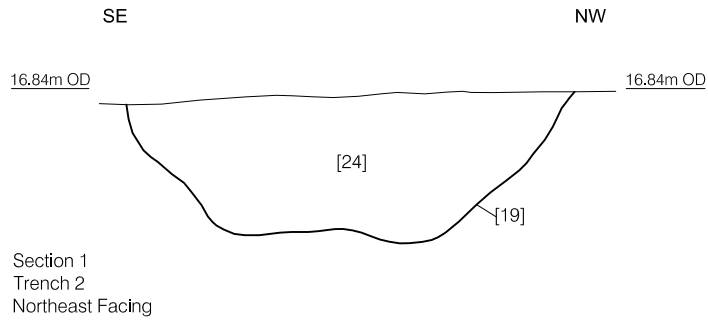


Figure 4
Sections 1 - 5
1:25 at A4

APPENDIX 1: CONTEXT REGISTER

| Context | Cut | Type | Trench | Comments |
|---------|-----|-----------------|---------------------|---|
| 1 | - | Trench | 1 | Trench 1 |
| 2 | - | Trench | 2 | Trench 2 |
| 3 | - | Trench | 3 | Trench 3 |
| 4 | - | Trench | 4 | Trench 4 |
| 5 | - | Trench | 5 | Trench 5 |
| 6 | - | Trench | 6 | Trench 6 |
| 7 | - | Trench | 7 | Trench 7 |
| 8 | - | Trench | 8 | Trench 8 |
| 9 | - | Trench | 9 | Trench 9 |
| 10 | - | Natural geology | 1, 2, 3, 5, 6, 7, 9 | Natural iron-stained sand. |
| 11 | - | Ditch | 9 | E-W-aligned prehistoric ditch containing beam slot/ palisade trench. |
| 12 | - | Ditch | 9 | NW-SE-aligned ditch. Roman? |
| 13 | - | Layer | 4, 8 | Fill of large quarry pit. Modern (20 th -century) finds. |
| 14 | - | Subsoil | 1, 2, 5, 6, 7, 9 | Generally a mid to dark reddish-brown slightly clayey sand, but light brownish-yellow where the natural sand (10) is less iron-stained. |
| 15 | - | Topsoil | All trenches | Fairly loose dark brown clayey sand. |
| 16 | - | Subsoil | 3 | Dark brown clayey sand. Localised variation to Subsoil (14). |
| 17 | - | Subsoil | 3 | Mid yellowish-brown clayey sand. |
| 18 | - | Layer | 3, 4, 5 | Light to mid yellow-brown sand and flint gravel. Levelling layer/ capping deposit over large quarry pit in central northern part of site, extending out beyond its edges. |
| 19 | - | Ditch | 2 | NE-SW-aligned ditch. Roman? |
| 20 | - | Subsoil | 1, 5 | Firm light yellowish-brown sand with occasional small to medium flint gravel. |
| 21 | - | Layer | 7, 8, 9 | Compact mixed light to mid grey chalky clay containing brick rubble, asphalt, breeze block etc. Capping deposit over large quarry pit in central northern part of site, extending out beyond its edges. |
| 22 | - | Layer | 8 | Fairly loose mid orangey-brown sand. Levelling |

| | | | | |
|----|----|-------------|---|---|
| | | | | layer over large backfilled quarry pit. |
| 23 | - | Tree hollow | 6 | Natural features in middle of Tr. 6. |
| 24 | 19 | Ditch Fill | 2 | Single fill of Ditch [19] |
| 25 | 12 | Ditch Fill | 9 | Upper fill of Ditch [12] |
| 26 | 11 | Ditch Fill | 9 | Upper fill of Ditch [11] |
| 27 | 11 | Ditch Fill | 9 | Lower fill of Ditch [11] |
| 28 | 11 | Ditch Fill | 9 | Fill of Ditch [11] |
| 29 | - | Pit | 9 | Small possible prehistoric pit. |
| 30 | 29 | Pit Fill | 9 | Single fill of Pit [29] |
| 31 | 12 | Ditch Fill | 9 | Basal fill of Ditch [12] |
| 32 | - | Pit | 9 | Small possible prehistoric pit. |
| 33 | 32 | Pit Fill | 9 | Single fill of Pit [32] |

APPENDIX 2: CHARRED PLANT MACROFOSSILS

(Val Fryer)

Introduction and method statement

Excavations at Exning, recorded a limited number of features of possible Middle Bronze Age date. A single sample for the retrieval of the plant macrofossil assemblage was taken from the fill of ditch [11] (context [26]).

The sample was bulk floated by PCA and the flot was collected in a 300 micron mesh sieve. The dried flot was scanned under a binocular microscope at magnifications up to x 16 and the plant macrofossils and other remains noted are listed in Table 1. Nomenclature within the table follows Stace (1997). All plant remains were charred. Modern woody and fibrous root/stem and seeds were also recorded.

Results

Cereal grains/chaff and seeds of common segetal weeds/grassland herbs were recorded at a low to moderate density along with a limited range of other remains. Preservation of the plant macrofossils was generally poor, with many of the grains being severely puffed and distorted, probably as a result of combustion at very high temperatures.

Barley (*Hordeum* sp.) and wheat (*Triticum* sp.) grains were recorded, although most cereals were too poorly preserved for close identification. Chaff was scarce, but wheat glume and spikelet bases were noted along with a single spelt wheat (*T. spelta*) glume base. Although small, the assemblage contained a number of weed seeds. Taxa noted included orache (*Atriplex* sp.), brome (*Bromus* sp.), black bindweed (*Fallopia convolvulus*), field gromwell (*Lithospermum arvense*), small grasses (Poaceae), knotgrass (*Polygonum aviculare*) and knawel (*Scleranthus annuus*). Small pieces of charcoal/charred wood were also abundant.

A number of shells of terrestrial and freshwater molluscs were recorded. Although the burnt specimens of *Carychium* sp. and ?*Pomatius elegans* were possibly contemporary with the context from which the sample was taken, the remaining specimens were reasonably well preserved, and it was considered most likely that the remainder were modern contaminants, possibly introduced via rodent or root disturbance.

The fragments of black porous material were all probable residues of the combustion of organic remains at very high temperatures. Other remains were scarce, but did include a small number of very abraded bone fragments and small splinters/flakes of heat shattered stone.

Conclusions and recommendations for further work

In summary, the composition of this assemblage would appear to indicate that it is primarily derived from a small deposit of hearth detritus and/or burnt cereal processing waste. By the later prehistoric period, processing waste was often used as fuel within a number of domestic, funerary and 'industrial' contexts, and it is possibly reasonable to assume that this practise originated with the advent of systematic agricultural production during the later Neolithic and Bronze Age periods. The composition of the weed seed assemblage from Exning may suggest that crops were being grown on land which had relatively recently come into cultivation, as grassland weeds including fumitory (*Fumaria officinalis*), medick/clover/trefoil (*Medicago/Trifolium/Lotus* sp.), field gromwell, grasses and mignonette (*Reseda* sp.) are comparatively common. The occurrence of a spelt wheat glume base is of interest, as this represents a further early record of this cereal being grown within the Mildenhall fenland/Breckland border area (for example West Row Fen (Martin and Murphy 1988) and RAF Lakenheath (Fryer 2003)).

Although this assemblage is of particular interest and does contain a sufficient density of material for quantification (i.e. 100+ specimens), analysis of a single sample in isolation would probably add little to the data

already contained within this assessment. Therefore, no further work is recommended at this stage. However, it should be noted that deposits within this area have the potential to provide very valuable data about early agricultural practises within East Anglia and, therefore, any contexts recorded during future archaeological interventions should be comprehensively sampled.

References

- Fryer, V., 2003 Charred plant macrofossils and other remains from the RAF Lakenheath Access Road, Suffolk (ERL 120)
Assessment report for the Suffolk County Council Archaeological Service
- Martin, E. and West Row Fen, Suffolk: a Bronze Age fen-edge settlement site
Murphy, P., 1988 *Antiquity*, Volume **62** Number 235, 353 – 358
- Stace, C., 1997 *New Flora of the British Isles*. 2nd edition. Cambridge University Press

| | |
|--|---------|
| Sample No. 1 (26) [11] Trench 9 | |
| Cereals | |
| <i>Hordeum</i> sp. (grains) | x |
| <i>Triticum</i> sp. (grains) | xx |
| (glume bases) | x |
| (spikelet bases) | x |
| <i>T. spelta</i> L. (glume base) | x |
| Cereal indet. (grains) | xxx |
| (detached embryo) | x |
| Herbs | |
| <i>Atriplex</i> sp. | x |
| <i>Bromus</i> sp. | x |
| Caryophyllaceae indet. | x |
| Fabaceae indet. | xfg |
| <i>Fallopia convolvulus</i> (L.)A.Love | x |
| <i>Fumaria officinalis</i> L. | x |
| <i>Lithospermum arvense</i> L. | x xxxfg |
| <i>Medicago/Trifolium/Lotus</i> sp. | x |
| Small Poaceae indet. | x |
| <i>Polygonum aviculare</i> L. | x |
| <i>Reseda</i> sp. | xcf |

| | |
|--------------------------------------|----------------|
| <i>Scleranthus annuus</i> L. | x |
| Other plant macrofossils | |
| Charcoal <2mm | xxxx |
| Charcoal >2mm | xx |
| Charcoal >5mm | x |
| Charred root/stem | x |
| Indet.seeds | x |
| Mollusc shells | |
| Woodland/shade loving species | |
| <i>Carychium</i> sp. | xb |
| <i>Discus rotundatus</i> | x |
| <i>Pomatius elegans</i> | xcffgb |
| Open country species | |
| <i>Helicella itala</i> | x |
| <i>Pupilla muscorum</i> | xx |
| <i>Vallonia</i> sp. | xx |
| <i>V. costata</i> | xx |
| Catholic species | |
| <i>Cochlicopa</i> sp. | x |
| Freshwater species | |
| <i>Armiger crista</i> | x |
| Other remains | |
| Black porous 'cokey' material | xxxx |
| Bone | x |
| Burnt stone | xx |
| Small coal frag. | x |
| Small mammal/amphibian bones | x xb |
| Sample volume (litres) | |
| Volume of flot (litres) | <0.1 |
| % flot sorted | 100% |

Table 2: Environmental sample results

Key to Table

x = 1 – 10 specimens xx = 11 – 50 specimens xxx = 51 – 100 specimens

xxxx = 100+ specimens

fg = fragment cf = compare b = burnt

APPENDIX 3: PLATES

PLATE1: Trench 1, view south showing considerable depth of subsoil and topsoil deposits above the natural sand (2m scale in background).



PLATE 2: Trench 2, view east with Ditch [19] in foreground and two modern rubbish pits containing brick (cut from the topsoil level) in the background.



PLATE 3: Trench 2, Ditch [19], north-east-facing section.



PLATE 4: Trench 3, view west.



PLATE 5: Trench 4, view north-north-west. The base of the trench is within the backfill (13) of a large quarry pit.



PLATE 6: Trench 5, view east.



PLATE 7: Trench 6, natural tree hollows [23], view north.



PLATE 8: Trench 7, view west showing heavily iron-stained natural sand (10).



PLATE 9: Trench 8, view west. Excavation ceased within the fill (13) of a large quarry pit.



PLATE 10: Stratigraphy within Trench 8, east end (mid excavation). Excavation has ceased within the fill (13) of a large quarry pit (2m scale).



PLATE 11: Trench 9, view south showing cluster of probable prehistoric/
Roman features: (from front to rear) Pit [32], Ditch [12], Pit [29] and Ditch [11].



PLATE 12: Trench 9, Ditch [11], west-facing section.



PLATE 13: Trench 9, Ditch [11], detail of beam slot/ palisade trench.



PLATE 14: Trench 9, view north-west showing Ditch [11], Pit [29] (in baulk) and Ditch [12].



APPENDIX 4: OASIS FORM

OASIS ID: preconst1-136070

Project details

| | |
|--|--|
| Project name | Evaluation at Windmill Hill, Exning, Suffolk |
| Short description of the project | Nine evaluation trenches excavated ahead of proposed residential development of site. Trenches positioned to investigate geophysical anomalies. A small cluster of prehistoric/ Roman features, including a large boundary ditch containing a palisade trench or beam slot, was identified in the north-east of the site under a deep subsoil accumulation. A possible Roman field ditch was also identified in the south of the site but otherwise the site was devoid of archaeological remains. The central northern part of the site had been heavily-disturbed by a large modern quarry pit |
| Project dates | Start: 15-10-2012 End: 17-10-2012 |
| Previous/future work | Yes / Not known |
| Any associated project reference codes | EXG 099 - Sitecode |
| Type of project | Field evaluation |
| Site status | None |
| Monument type | DITCH Late Prehistoric |
| Monument type | DITCH Roman |
| Significant Finds | NONE None |
| Significant Finds | NONE None |
| Methods & techniques | "Targeted Trenches" |
| Development type | Rural residential |
| Prompt | Planning condition |
| Position in the | Not known / Not recorded |

planning process

Project location

Country England

Site location SUFFOLK FOREST HEATH EXNING Windmill Hill,
Exning, Suffolk

Study area 3.40 Hectares

Site coordinates TL 6287 6589 52 0 52 15 59 N 000 23 13 E Point

Project creators

Name of Organisation Pre-Construct Archaeology Ltd

Project brief originator CgMs Consultants Ltd

Project design originator Mark Hinman

Project director/manager Mark Hinman

Project supervisor Tom Woolhouse

Type of sponsor/funding body Developer

Project archives

Physical Archive recipient Suffolk County Council

Physical Contents "Ceramics"

Digital Archive Exists? No

Digital Archive recipient Suffolk County Council

Paper Archive recipient Suffolk County Council

Paper Media available "Context sheet", "Drawing", "Photograph", "Plan", "Report", "Section"

Project

bibliography 1

Publication type Grey literature (unpublished document/manuscript)
Title Evaluation at Windmill Hill, Exning, Suffolk
Author(s)/Editor(s) Woolhouse, T.
Date 2012
Issuer or publisher Pre-Construct Archaeology Limited
Place of issue or publication Stapleford, Cambridgeshire
Description A4 Grey Literature Report, comb bound.
Entered by Tom Woolhouse (TWoolhouse@pre-construct.com)
Entered on 22 October 2012

APPENDIX 5: GEOPHYSICS REPORT

**GEOPHYSICAL SURVEY OF
LAND OFF WINDMILL HILL,
EXNING, SUFFOLK**

SITE CODE: EXG 099

Cranfield Forensic Institute Report No. 065

Peter Masters

September 2012

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FIG. 6: Interpretation of results, scale - 1:1000

ABSTRACT

A fluxgate gradiometer survey was carried out on land off Windmill Hill, Exning, Suffolk. The work was undertaken in September 2012. The purpose of the survey was to locate the nature and extent of any archaeological remains that may lie within the proposed area of investigation.

Zones of intense positive magnetic anomalies were detected in the north central area of the field. These magnetic responses are typical of indicating the presence of large scale industrial activity. However, it is likely that the magnetic responses may reflect the presence of naturally occurring iron rich deposits also known as iron panning.

Two ephemeral linear anomalies were detected in the western half of the field, possibly indicating the presence of ditches of unknown origin. It is feasible that these may also resemble naturally occurring features within the underlying geology.

Other anomalies detected are of a modern nature indicating features such as existing services, telegraph poles, buildings and other modern ferrous debris.

No other anomalies of an archaeological nature were detected within the proposed development site.

1.0 INTRODUCTION

A geophysical survey was undertaken by Pre-Construct Archaeology with Cranfield University and was commissioned by CgMs on behalf of Carter Jonas LLP on land off Windmill Hill, Exning, Ipswich, Suffolk (Fig 1).

The purpose of the survey was to determine the nature and extent of any archaeological deposits that lie within the proposed development area.

The survey methodology described in this report was based upon guidelines set out in the English Heritage document '*Geophysical Survey in Archaeological Field Evaluation*' (EH 2008).

2.0 LOCATION AND DESCRIPTION

The information contained within sections 2 and 3 of this report is based on information supplied by Pre-Construct Archaeology Ltd and the Historic Environment Record, Suffolk County Council.

The site is situated on the edge of Exning village, just off the A14 trunk road, 12 miles east of Cambridge and to the north of the town of Newmarket. The geophysical survey covers an area approximately 3.4ha in extent (centred on NGR TL 62876589).

The area of investigation is sub-triangular shaped field currently under grass, which was used up until recently as a paddock for keeping horses that was subdivided into smaller temporary fields. The field slopes fairly gently from north to south. Along the

western field boundary are three stables. Windmill Hill road runs along the northern boundary whilst the A14 forms the southern boundary. A concrete road leads from Windmill Hill along the eastern edge of the site to a small electricity sub-station.

The underlying geology of the site is comprised of Late Cretaceous Zig Zag Chalk Formation (ZZCH) (Geological Map Data ©NERC 2011). The magnetic susceptibility of these types of geologies is generally good.

3.0 BACKGROUND INFORMATION

In close proximity to the area of investigation a number of finds of archaeological importance have been recorded especially from the Anglo-Saxon period.

Immediately to the west of the site is the reported location of the Anglo-Saxon inhumation cemetery (Fig 2: HER No EXG 005) where in 1900 an iron dagger was found along with 4 cruciforms, a number of small-long brooches and amber beads. An excavation was carried out between 1974-75 prior to the area being built upon in 1976-77 finding no further evidence relating to the earlier finds on this site. These remains are depicted on the 1927 OS map.

A short distance to the east of EXG 005, two inhumation burials were found when excavating house footings (Fig 2: HER No EXG 028). Grave goods were found with one of the two graves consisting of an iron spearhead, shield boss, knife, stud, and small bronze fragments. Following further monitoring of the extensive footings on the site, no further burials were found.

An evaluation trench was carried out on land adjacent to the previous findings above at 8 Highlands, Exning. Isolated finds of Iron Age, Roman, and medieval date were recovered from a buried soil horizon but no evidence was recovered relating to the Anglo-Saxon burial cemetery (Fig 2: HER No EXG 090).

In 2006, an archaeological evaluation was undertaken at 7 The Highlands, Exning (Fig 2: HER ESF20101; ESF21205; EXG082). The evaluation revealed a substantial Early Iron Age ditch 20m long and 4m wide containing a large assemblage of finds, which may have enclosed a hill-top settlement.

To the north of the area of investigation, a number sites and finds have been recorded. An evaluation was carried to the north-east of the site on land adjacent to Beech House (Fig 2: HER ESF 20185; EXG 083) where two possible enclosures and a small number of pits and postholes dating to the late Roman period were found. Also a discrete dump of Roman roof tiles was uncovered suggesting the presence of a possible building nearby.

A short distance to the south of Beech House, a crop mark of a possible ring ditch was captured on an aerial photograph taken in 1963 (Fig 2: HER EXG 077). A further cropmark of a ring ditch (Fig 2: HER EXG 037) c.30m in diameter has been identified to the west of EXG 077.

To the south of the site and the current A14, a brick kiln and works existed (Fig 2: HER EXG 048) and is depicted on the 1902 OS map as 'The Old Brickworks'. The brick works is not shown on the 1880s OS map and it appears to have largely gone by the time the 1920s OS mapping is published. The former brick works is now part of the Studlands Park housing development.

A short distance to the south of the old brick works site, are former gravel pits where flint implements were found (Fig 2: HER EXG 009). The gravel pits are also depicted on the 1903, 1927, 1940s and 1953 OS maps.

Historic mapping shows the field much larger in size on the 1884 1st edition map. By 1903 the field had been divided up into smaller parcels of land but when the 1927 OS map was published the smaller fields had disappeared reverting back to a single field.

During the 1980s the field is made smaller with a small housing development being built on its western side and the A14 now runs along the southern field boundary.

4.0 METHODOLOGY

Gradiometry

Gradiometry is a non-intrusive scientific prospecting technique used to determine the presence/absence of some classes of sub-surface archaeological features (eg pits, ditches, kilns, and occasionally stone walls). By scanning the soil surface, geophysicists identify areas of varying magnetic susceptibility and can interpret such variation by presenting data in various graphical formats and identifying images that share morphological affinities with diagnostic archaeological as well as other detectable remains (Clark 1990; Gaffney and Gater 2003).

The use of gradiometry is used to establish the presence/absence of buried magnetic anomalies, which may reflect sub-surface archaeological features.

The area survey was conducted using a Bartington Grad 601 dual fluxgate gradiometer with DL601 data logger set to take 4 readings per metre (a sample interval of 0.25m). The zigzag traverse method of survey was used, with 1m wide traverses across 30m x 30m grids. The sensitivity of the machine was set to detect magnetic variation in the order of 0.1 nanoTesla.

The data was processed using *Archeosurveyor v.2.5.19.3*. The results are plotted as greyscale and trace plot images (Figs. 4 and 5).

The enhanced data was processed by using zero-mean functions to correct the unevenness of the image in order to produce a smoother graphical appearance. It was also processed using an algorithm to remove magnetic spikes, thereby reducing extreme readings caused by stray iron fragments and spurious effects due to the inherent magnetism of soils. The data was also clipped to reduce the distorting effect of extremely high or low readings caused by discrete pieces of ferrous metal.

5.0 INTERPRETATION AND ANALYSIS OF RESULTS (Figs. 3-5 and 6)

A detailed fluxgate gradiometer survey covering an area of c. 3.4ha of land immediately to the south of Windmill Hill, Exning, revealed some significant archaeological anomalies. The majority, however, appear to reflect modern disturbances.

Generally, a series isolated individual anomalies were detected (Fig. 6, examples circled pink) that reflect areas of modern ferrous litter, which lie just below or on the surface of the ground. A number of these anomalies relate to telegraph poles, modern buildings, fencing and other modern utilities above ground.

The results are dominated, especially in the north central part of the survey, by an abundance of very strong positive anomalies (Figs 3-5 and 6, **1**). Intense responses of this type are normally associated with the presence of thermoremanent features such as kilns or hearths. The large number of these anomalies is unusual and would even with a minority of these present suggest that the site may represent large-scale industrial activity had taken place here. Similar responses were recorded by the Ancient Monuments Laboratory, English Heritage on a site at Baston Drove, Thurlby, Lincolnshire (Cole 1995). Upon excavation, areas of iron panning were revealed. One of these anomalies was relocated by AML and excavated by hand, which revealed iron-rich deposits. It is therefore likely that these strong positive anomalies are naturally occurring. Without further invasive work, the exact nature of these anomalies remains unknown.

A strong dipolar anomaly (Figs 3-5 and 6, **2**) situated immediately to the south of the drain covers, the trace plot shows the distinct double peak signature indicating the presence of a possible kiln or a zone of industrial activity. As mentioned above, the anomaly may reflect the remains of a modern or naturally occurring magnetic response.

Two ephemeral linear anomalies (Figs 3-5 and 6, **3**) detected in the western half of the survey area possibly denote the presence of ditches. However, it is more likely that these may resolve as natural features within the underlying geology.

No other significant anomalies of archaeological interest were detected across the entire area of investigation.

6.0 CONCLUSIONS

Zones of extremely strong positive anomalies were detected within the north central area of the proposed development site. It is possible that these may denote the presence of industrial activity such as kilns or hearths. However, it is more likely that these may reflect the presence of naturally occurring iron deposits or iron panning.

Two ephemeral linear anomalies recorded in the western half of the field denote the presence of ditches of unknown date. It is quite possible that these may resolve as natural features within the underlying geology.

Other magnetic anomalies present in the resultant images reflect modern disturbances that include services, telegraph poles, buildings and other ferrous debris.

It can be concluded that the gradiometer survey has produced few significant archaeological anomalies. However, the presence of the large area of unexplained strong positive anomalies requires further investigation to gain a greater understanding of the deposits that lie beneath the ground surface. Industrial activity in the area is known from a former brick works to the south now under a modern housing development called Studlands Park.

7.0 ACKNOWLEDGEMENTS

Cranfield University, Centre for Archaeological and Forensic Analysis would like to thank Mark Hinman, Pre-Construct Archaeology Ltd and CgMs for this commission.

8.0 BIBLIOGRAPHY

- Clark, A. J. 1990 *Seeing Beneath the Soil* London, Batsford
- Cole, M. 1995 Baston Drove, Thurlby, Lincolnshire. Report on Geophysical Survey March 1995, *Ancient Monuments Laboratory Report Series, 55/95*. www.eng-h.gov.uk/reports accessed online 25/09/2012.
- E.H. 2008 *Geophysical Survey in Archaeological Field Evaluation*. London, English Heritage: Research & Professional Guidelines No.1. 2nd Edition
- Gaffney, C. & Gater, J. 2003 *Revealing the Buried Past – Geophysics for the Archaeologist*, Tempus publishing.

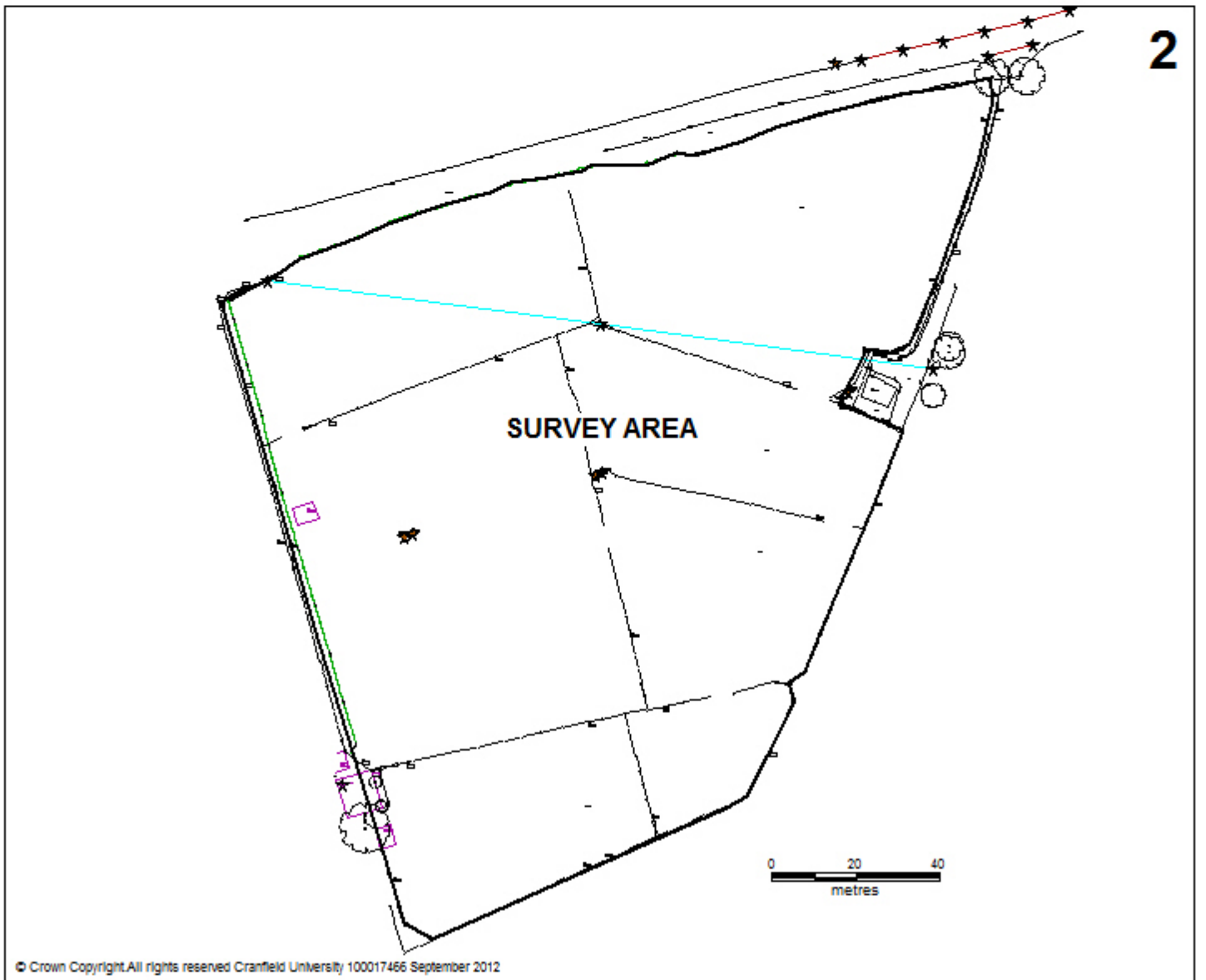
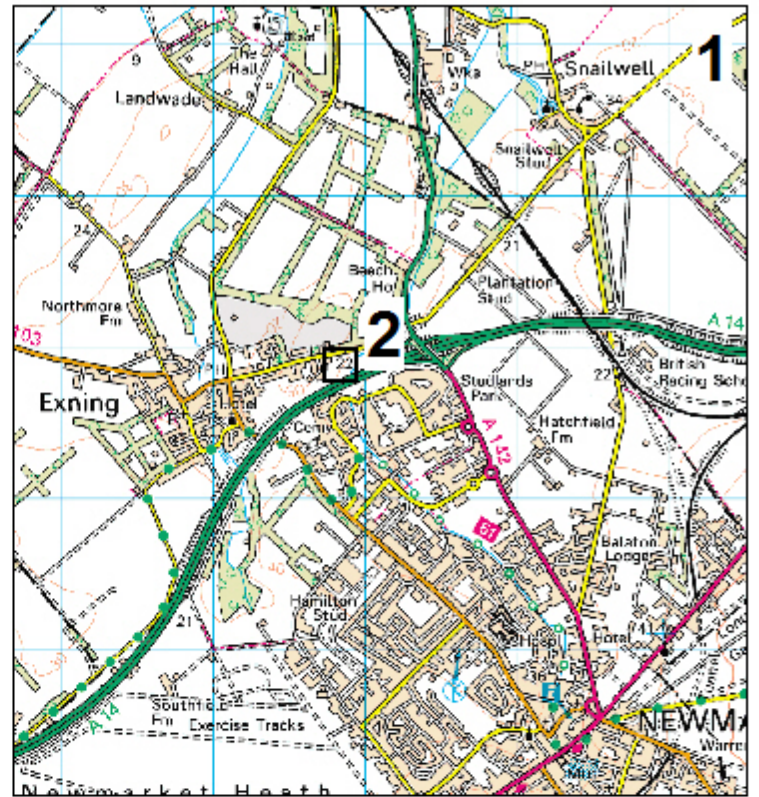
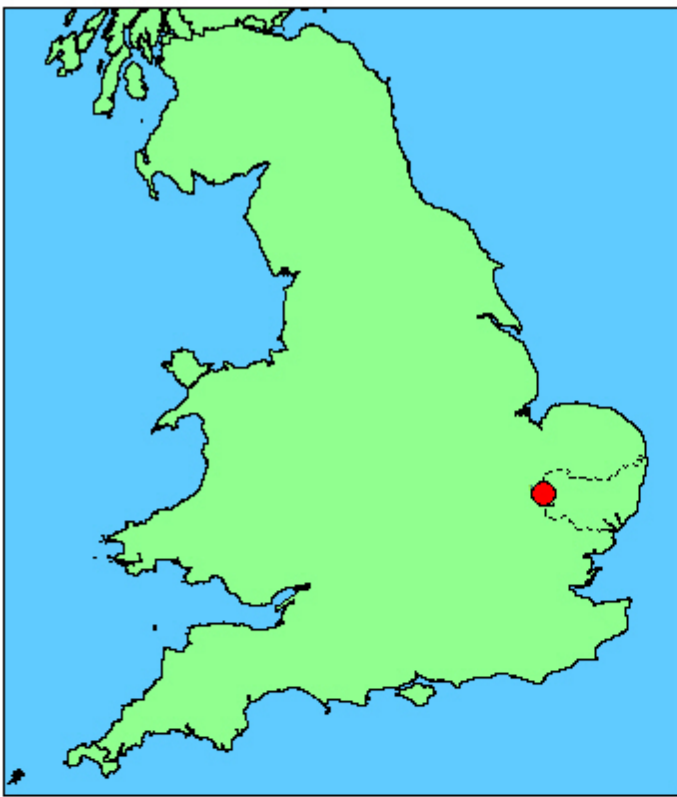


Fig. 1 - Location map, scale - 1:1500

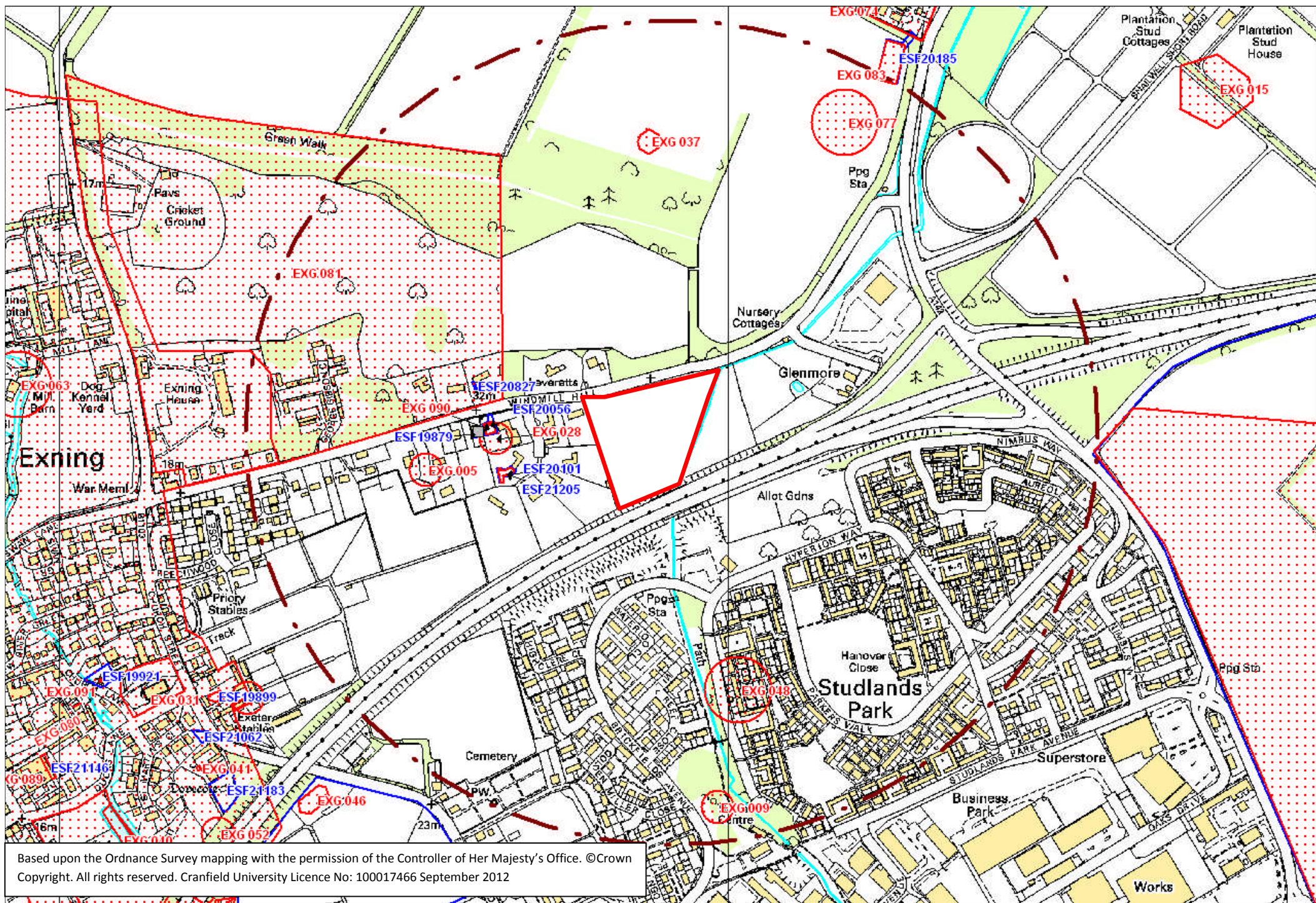


Fig. 2 – HER records in the immediate vicinity of the site.

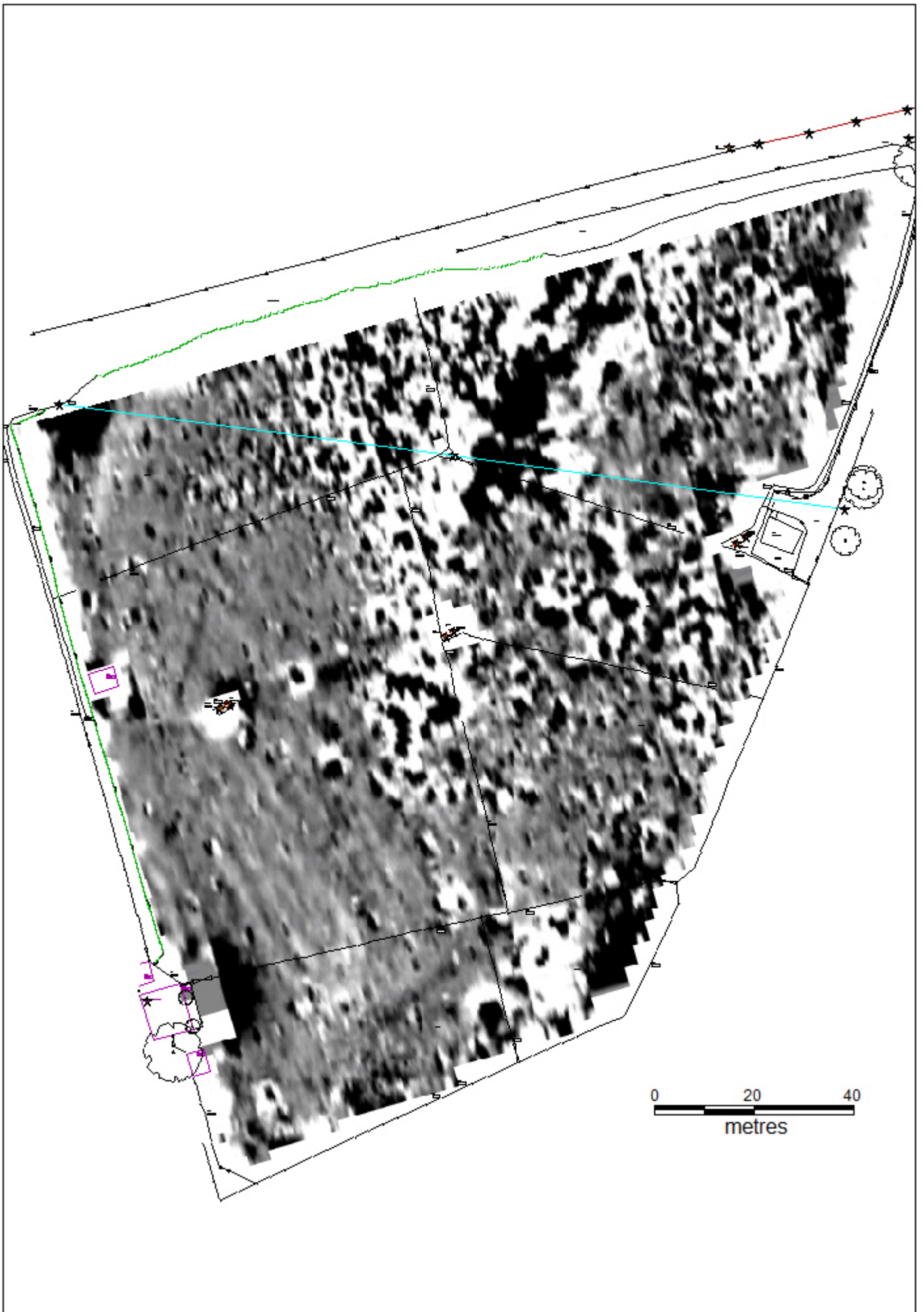


Fig 3 - Location of gradiometer survey, scale - 1:1000

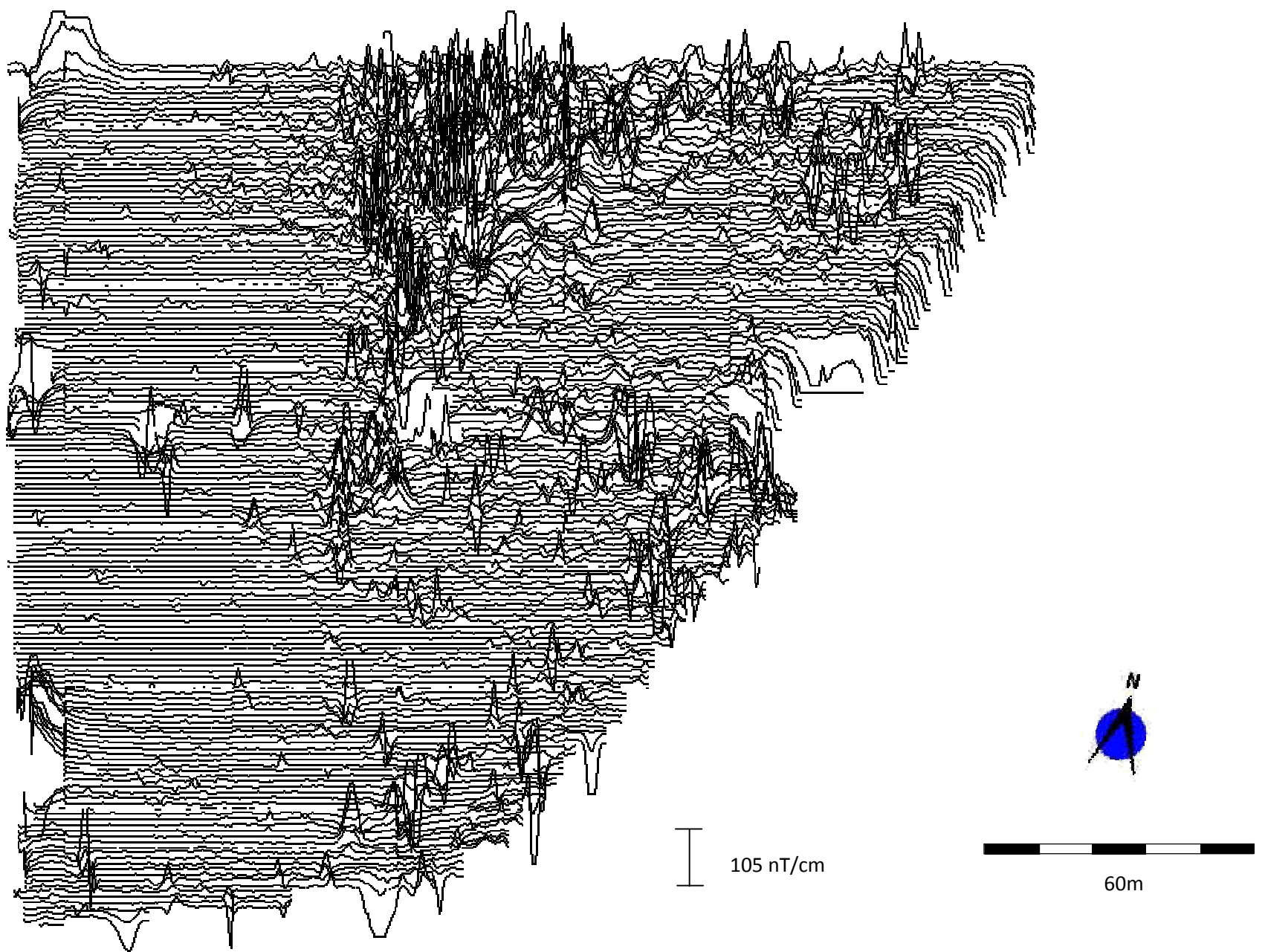
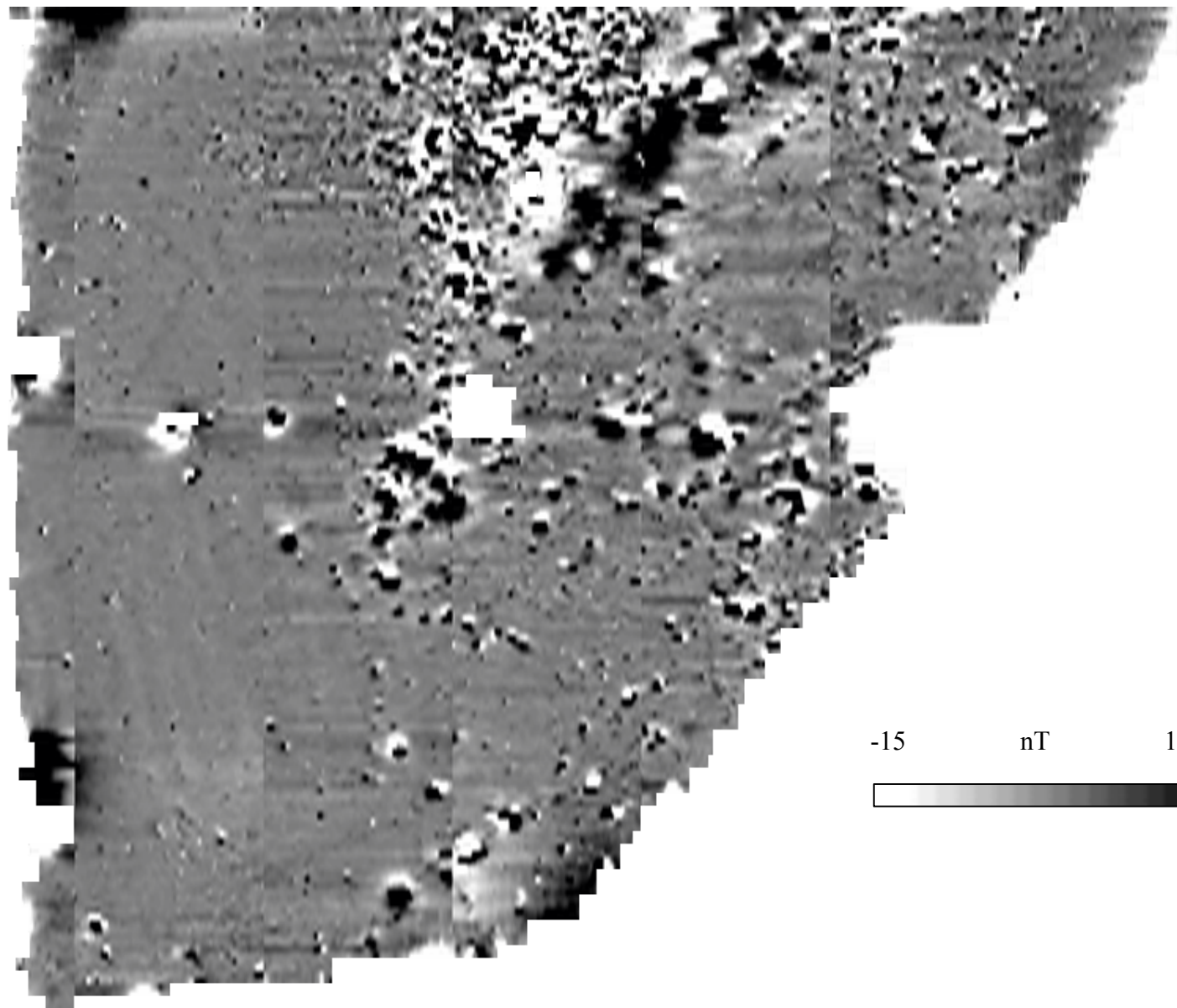
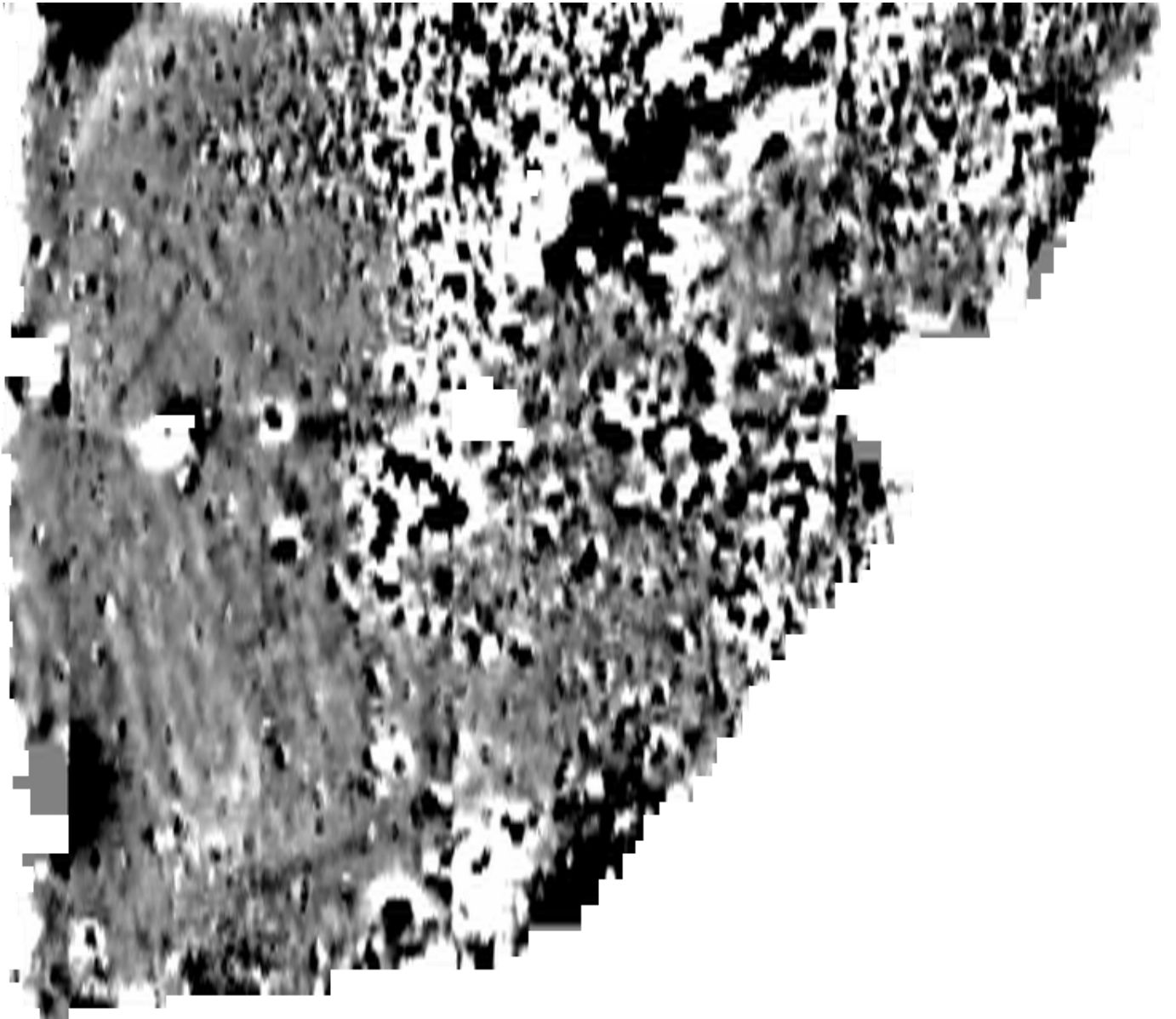


FIG. 4: Grey scale and trace plots of raw data, scale – 1:1000



-2.27 nT 2.37



60m

FIG. 5: Grey scale plot of enhanced data, scale – 1:1000

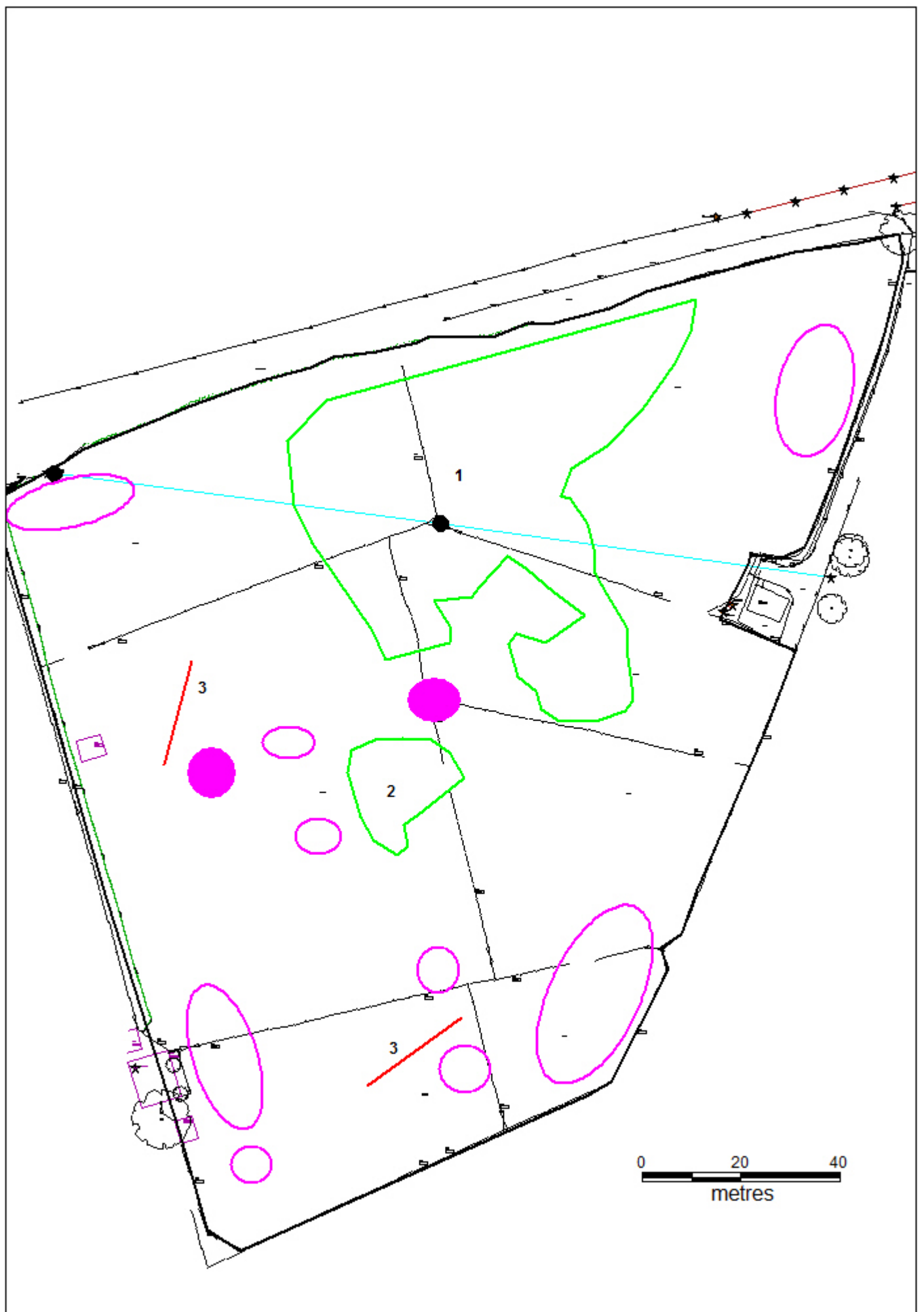


Fig. 6 - Interpretation plan, scale - 1:1000

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