Archaeological Field Unit

Roman Remains at Downing Court, Swaffham Bulbeck, Cambridgeshire

Spencer Cooper

2004

Cambridgeshire County Council
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Roman Remains at Downing Court, Swaffham Bulbeck, Cambridgeshire

(TL 5551 6256)

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SUMMARY

Between the 20th and 24th January, 2004 an archaeological evaluation was undertaken at Downing Court, Swaffham Bulbeck. (NGR TL5551 6256) by staff of the Archaeological Field Unit (AFU) of Cambridgeshire County Council. The proposed development involved the construction of 20 new dwellings. The work was carried out in accordance with a Brief for an archaeological evaluation issued by Kasia Gdaniec of the Cambridgeshire County Council Archaeological Service (Planning Application No H/00/1854FUL). The evaluation revealed a number of Roman postholes, pits and ditches.

Significant stratigraphy was revealed in the western end of Trench 3 with a group of pits truncating an earlier field boundary. The ditches uncovered in Trench 3 may be continuations of those noted in Trench 2.

Roman building material and metal work was found in the topsoil and in features. The recovery of box flue tiles and tegulae suggest the presence of a significant Roman building in the vicinity. A copper alloy artefact (recovered by metal detecting) may also indicate the status of the site.

Following the evaluation a geophysical survey was carried out which showed a range of anomalies across the site. These anomalies were examined (as far as possible) during the monitoring of subsequent groundworks.

The results of all three stages of work (evaluation, geophysical survey and archaeological investigation) suggest that there is a Roman villa or farmstead in the vicinity.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF APPENDICES

Drawing Conventions

Sections

Limit of Excavation

Cut

Cut - Conjectured

Soil Horizon

Soil Horizon - Conjectured

Intrusion/Truncation

Top of Natural

Top Surface

Break in Section

Cut Number 118

Deposit Number 117

Ordnance Datum 18.45m OD N

Plans

Limit of Excavation

Deposit - Conjectured

Natural Features

Intrusion/Truncation

Sondages/Machine Strip

Illustrated Section S.14

Archaeological Deposit

Excavated Slot

Cut Number 118

Roman remains at Downing Court,
Swaffham Bulbeck, Cambridgeshire
(TL 5551 6256)

1 INTRODUCTION

Between the 20th and 24th January 2004 an archaeological evaluation was undertaken at Downing Court, Swaffham Bulbeck. (NGR TL5551 6256) by staff of the Archaeological Field Unit (AFU) of Cambridgeshire County Council. The proposed development includes construction of 20 dwellings. The project was commissioned by Freshwater Estates and was carried out in accordance with a Brief for an archaeological evaluation issued by Kasia Gdaniec of the Cambridge County Council County Archaeology Office (Planning Application E/03/00276/FUL). Following evaluation a geophysical and metal detector survey was carried out and the groundwork of the development was monitored by AFU staff.

2 GEOLOGY AND TOPOGRAPHY

The geology of the site is Lower Chalk (Lower Beds Chalk Marl) and it lies at approximately 9m OD with the land sloping gently down to the river to the north. The village lies on the eastern edge of a small valley, which cuts back into the chalk. Part of the parish is on low lying ground and Adventurers' Ground was enclosed and drained in the 17th century. The remaining fen and higher ground to the south-east of the village were enclosed in the nineteenth century.

3 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

Prehistoric settlement and burial evidence (in the form of pottery and flint scatters and barrows) has been identified in the parish but none is particularly close to the development site. The closest stray finds and cropmarks are SMR no. 6658 (pottery and fire cracked flint) and SMR nos. 10131 and 10132 which are ring ditches tentatively identified as barrows which may be outliers of the Hare Park group (CB8099 and CB7991). The Fenland Survey identified a Neolithic long barrow to the north-west and other prehistoric sites along the nearby fen edge (Hall 1996).

Roman pottery and tile was found during archaeological investigation at the Primary School (Connor. 1998) just over 200m south of the development site.

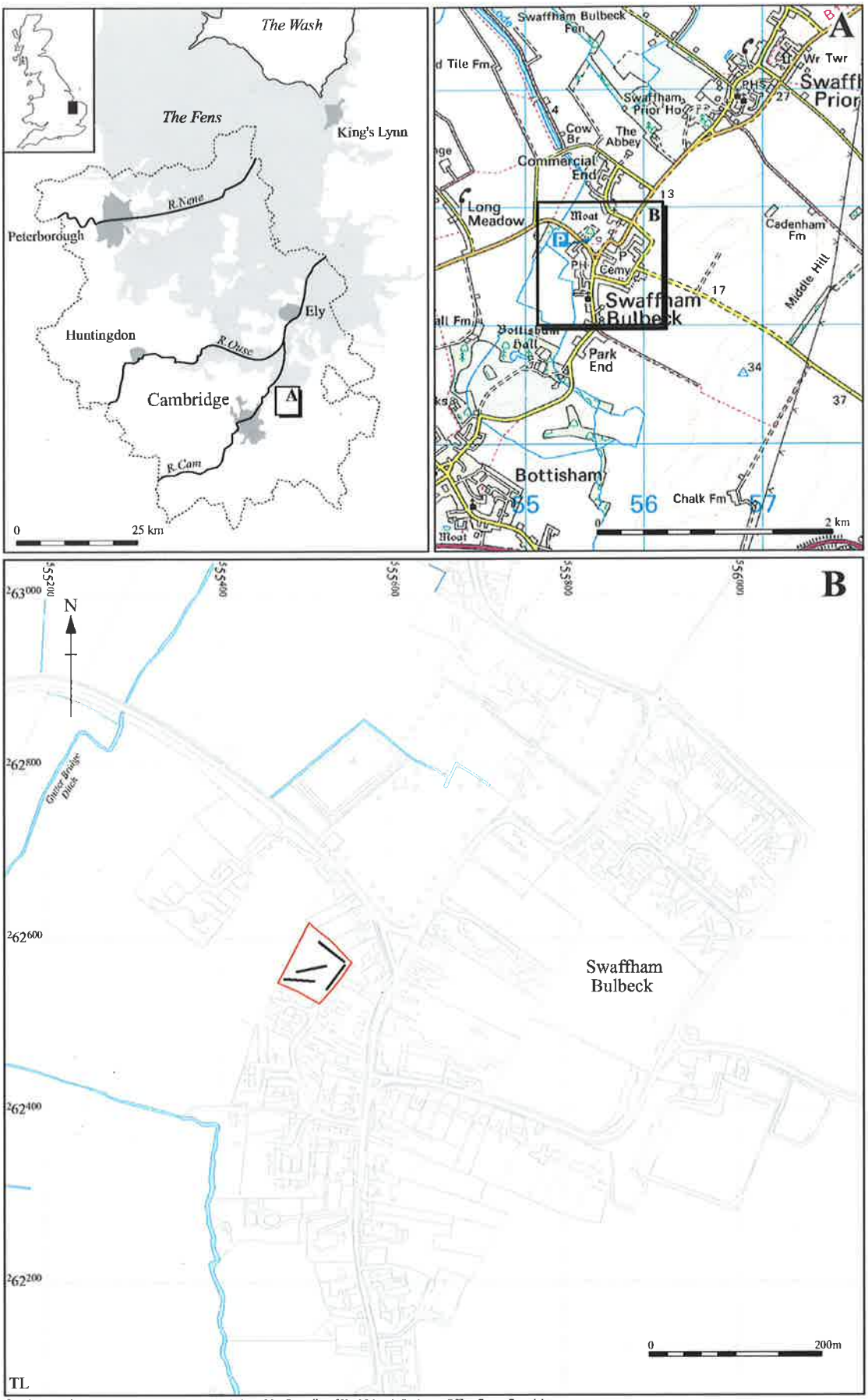

Figure 1 *Location of Trenches with Development Area outlined.*

Furthermore Roman activity is represented by Romano-British villa estates resplendent with stone structures and dense surface finds scatters, one being a Scheduled Ancient Monument (SAM 254) just over 1.2km to the north (SAM 254) with a further suggested villa or farmstead some 1.3km to the south-east.

The development site is at the north-western end of the High Street, approximately 300m north of the 13th century church of St. Mary and 200m south-east of the medieval moated site of Denney Plantation (SAM 11552). The Denney moat lies just north of Downing College Farm (immediately to the west of the present site) and formed one in a roughly north–south line of three moated sites (Lordship House, Mitchell Hall and Burgh Hall) on the chalk marl of the Lower Chalk series. These sites are contemporary with the medieval Benedictine nunnery (SMR 6559) at the northern end of the village. Their moats were filled by a long diversion of the Gutter Bridge Ditch.

Evidence of encroachment of fen deposits to within *c.*0.5km of the development site has been noted in the Fenland Survey (Hall 1996). The villages of Lode, Longmeadow and Commercial End, Swaffham Bulbeck formed the principal quays and docking points for the lodes connecting the villages to the Cam. These lodes would have been used for the transport of clunch and other materials. It appears from archaeological investigation (Connor 1998) that the clunch quarries known from Swaffham Bulbeck and Swaffham Prior had their origins in Roman times and continued in use through the medieval period until the 19th century. A clunch extension was added to Downing College Farm in the 19th century. Several of the medieval and post-medieval buildings in the village have clunch incorporated in their structure. Several medieval and early post-medieval houses have also been noted along the High Street and are recorded in the inventory of historical monuments (RCHME 1972). The history of the parish is summarised in the Victoria History of the county (VCH 2002).

The Adventurers' Ground, which was former fen, was enclosed and drained in the 17th century. The remaining fenland and higher ground to the south-east of the village were enclosed in 1800. The 1800 Enclosure Map (CRO L87/3) shows the development site as being an open field (no. 79) to the rear of properties along the High Street

4 METHODOLOGY

Four trenches totalling 154m in length were excavated using a 1.6m wide toothless ditching bucket. The trenches were recorded using the AFU standard archaeological recording systems. The spoil heaps from each trench were metal detected.

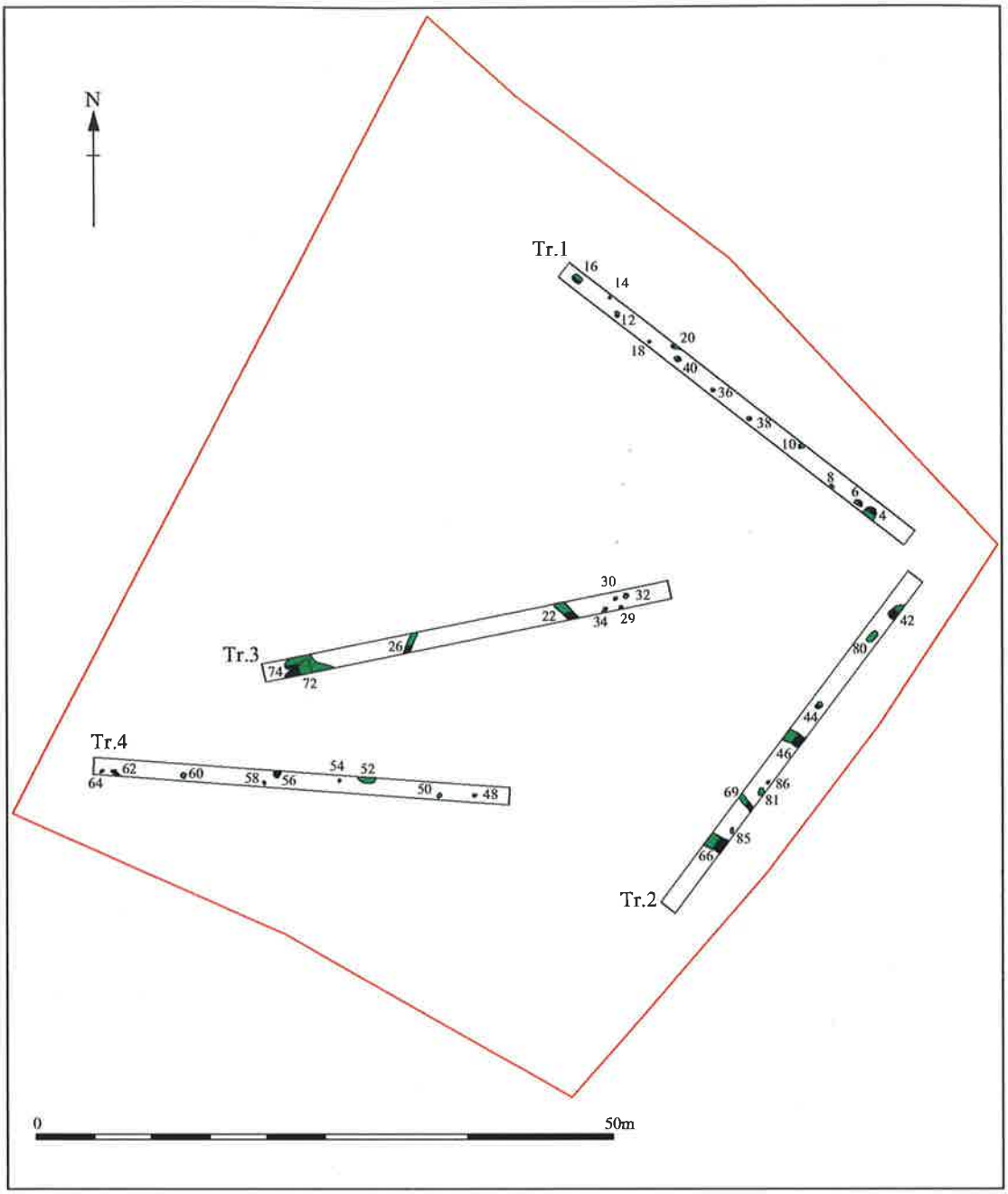

Figure 2 *Trench plan with features*

Following evaluation a Brief was issued by the Archaeology Section of Cambridgeshire County Council on January 29, 2004 requesting a geophysical and metal detector survey of the site (Appendix 3). The Brief also required that house foundations car parks and access roads were monitored and recorded to allow the preservation *in situ* of archaeological remains rather than expose them to limited archaeological investigation. It was hoped that interpretation of the site would be possible through evaluation, geophysical survey and recording thus allowing preservation *in situ* without limited archaeological investigation.

5 RESULTS

Trench 1

Trench 1 was 38m long, 0.55m deep, and ran on a north-west to south-east alignment. Twelve archaeological features were uncovered in the trench, including pits, postholes and a possible ditch.

The most significant feature revealed in this trench was a deep pit (**4**) that was over 1.2 m deep and 1m wide. This pit contained three fills 2, 3 and 79. Fill 2 was light brown silty clay, which produced animal bone and Roman grey ware pottery. Fill 3 was a light greyish brown silty clay that contained charcoal flecks and produced animal bone. Fill 79 was a dark greyish silty loam.

In the centre of the Trench 1 a number of postholes (**6, 8, 10, 38** and **40**) were revealed which might have formed a building or fence line. Immediately to the north-west of pit **4** was posthole **6** which was 0.17m wide and 0.10m deep and contained a single a light greyish brown silty clay fill 5.

Posthole **8** was 0.17 wide and 0.10m deep and contained a single fill 7. Fill 7 was a light greyish brown silty clay which contained no artefacts.

Posthole **10** was 0.24m wide and 0.17m deep and contained a single fill 9. Fill 9 was a light greyish brown silty clay.

Posthole **36** was 0.28m wide and 0.06m deep and contained a single fill 35. Fill 35 was a dark grey silty clay.

Posthole **38** was 0.34m wide and 0.07m deep and contained a single fill 37. Fill 37 was a light grey silty clay which contained no artefacts.

Posthole **40** was 0.32m wide and 0.09m deep and consisted of a single fill 39. Fill 39 was a dark grey silty clay which contained animal bone fragments.

In the north-western part of the trench a pit and further postholes were revealed. Pit **16** was 0.45m wide and 0.23 deep and contained a single fill 15. Fill 15 was a greyish brown silty clay.

Posthole **14** was 0.21m wide and 0.17m deep and contained a single fill 13. Fill 13 was a greyish light brown silty clay.

Posthole **12** was 0.30m wide and 0.14m deep and contained a single fill 11 which was a greyish light brown silty clay.

Posthole **18** was unexcavated.

The terminus of a ditch, **20**, was revealed in the centre of the trench. Ditch **20** was 0.30m wide and 0.19m deep and contained a single fill 19. Fill 19 was grey-light brown silty clay.

Trench 2

Trench 2 was 36m long and 0.53m deep and was on a north-east to south-west alignment.

Nine archaeological features were identified in Trench 2 including three ditches, five postholes and one pit.

The most significant features encountered within the trench were the three ditches (**66, 69** and **46**) which may represent field boundaries.

In the southern end of the trench ditch terminus **66** was uncovered. Ditch **66** was 1.20m wide and 0.38m deep and contained a single fill 65. Fill 65 consisted of a dark grey silty clay which contained a fragment of a Roman tile.

Ditch **66** probably represents a Roman field boundary and may be traced through to the western end of Trench 2.

Ditch **69** ran on an east–west alignment was 0.40m wide and 0.12m deep. It contained a single fill 68 which consisted of a light grey silty clay.

Ditch **46** ran on an east–west alignment and was 0.90m wide and 0.10m deep. It contained a single fill 45 a light grey silty clay.

Postholes **85, 86, 81** and **80** were not excavated following consultation with the Development Control Officer (Kasia Gdaniec) who monitored the site.

Pit **42** was at the northern end of the trench. Pit **42** was 1.42m wide and 0.29m deep and contained a single fill 41. Fill 41 was a light grey silty clay and produced animal bone and Roman building material.

Posthole **44** was 0.40m wide and 0.15m deep and contained a single fill 43. Fill 43 was alight grey silty clay.

Trench 3

Trench 3 was 36m long and 0.60m deep and ran on an east–west alignment. This trench contained ten features including four postholes, three ditches and three pits.

In the eastern part of the trench a group of postholes (**29**, **30**, **32**, and **34**) was uncovered. Posthole **29** was 0.28m wide and 0.15m deep and contained a single fill (28). It contained greyish brown silty clay.

Posthole **30** was 0.28m wide and 0.15m and contained a single fill (29). Fill 29 was a greyish brown silty clay and produced no artefacts.

Posthole **32** was 0.34m wide and 0.18m deep and contained a single fill (31). Fill 31 was dark grey silty clay which produced animal bone.

Posthole **34** was 0.33m wide and 0.09m deep and contained a single fill (33). Fill 33 was dark grey silty clay that contained animal bone.

Ditch **22** ran on an east–west alignment and was 0.33m wide and 0.09m deep. It contained a single fill (21), a greyish brown silty clay and produced medieval pottery.

To the west of ditch **22** was ditch **26** which ran on a north–south axis. Ditch **26** was 1.30m wide and 0.53m deep and contained a single fill (52).

In the western end of the trench there were several inter-cutting features, pits **72** and **74, 76** and ditch **84**.

Pit **72** was 0.80m wide and 0.35m deep and contained two fills 70 and 71. Fill 70 was a mid grey brown silty clay and 71 was mid brown silty clay which produced Roman box flue tile. Pit **72** truncated pit **74**.

Pit **74** was 0.70m wide and 0.23m deep and contained a single fill (73). Fill 73 was a grey silty clay which contained no artefacts. Pit **74** truncated pit **76** and ditch **84**.

Pit **76** was 0.60m wide and 0.18m deep and contained fill 75. Fill 75 was a grey silty clay which contained no artefacts.

Ditch **84** was.1m wide and 0.36 m deep and contained a single fill 83 which was a grey silty clay with occasional chalk fragments. This ditch may be a continuation of ditch **94** noted in the road corridor stripping (see below).

Figure 3 *Proposed development with features noted during watching brief*

Trench 4

Trench **4** was 36m long and 0.50m deep and ran on a north-east to south-west alignment. In the eastern end of the trench two unexcavated postholes **50** and **48** were identified. To the west of postholes **50** and **48** there were several unexcavated features including pit **52** and postholes **54**, **58, 60** and **64**.

Ditch terminus **56** was in the centre of the trench. It was 0.40m wide and 0.20m deep and contained a single fill (55). Fill 55 was a light grey silty clay with no finds

Ditch **62**, located in the western end of the trench, was 0.40m wide and 0.16m deep. It contained a single fill 61 a light grey silty clay.

GEOPHYSICAL SURVEY

Following the archaeological evaluation geophysical survey and a metal detector survey were carried out. The results are presented in Appendix 3.

PRESERVATION *IN SITU*

Following an evaluation and geophysical survey a preservation *in situ* scheme was implemented which consisted of observing and recording the digging of foundation trenches for houses, access roads and car parks and investigation of features along service routes. All archaeological features observed in the road foundations and car park were observed in plan only, those revealed in house foundations were recorded in section as well as plan.

It was envisaged that the construction of the houses would take place on a concrete pad which would be significantly above the archaeological deposits. Terram/geotextile membrane was to separate the poured concrete from any archaeological fills or deposits allowing preservation of remains.

Road Foundation (Fig. 3)

A number of features including postholes and pits were identified within the area stripped for the access road.

Pit **87** was 1.5m wide and contained a light grey silty clay.

To the west was posthole **88** that was 0.40m wide and contained a dark grey silty clay.

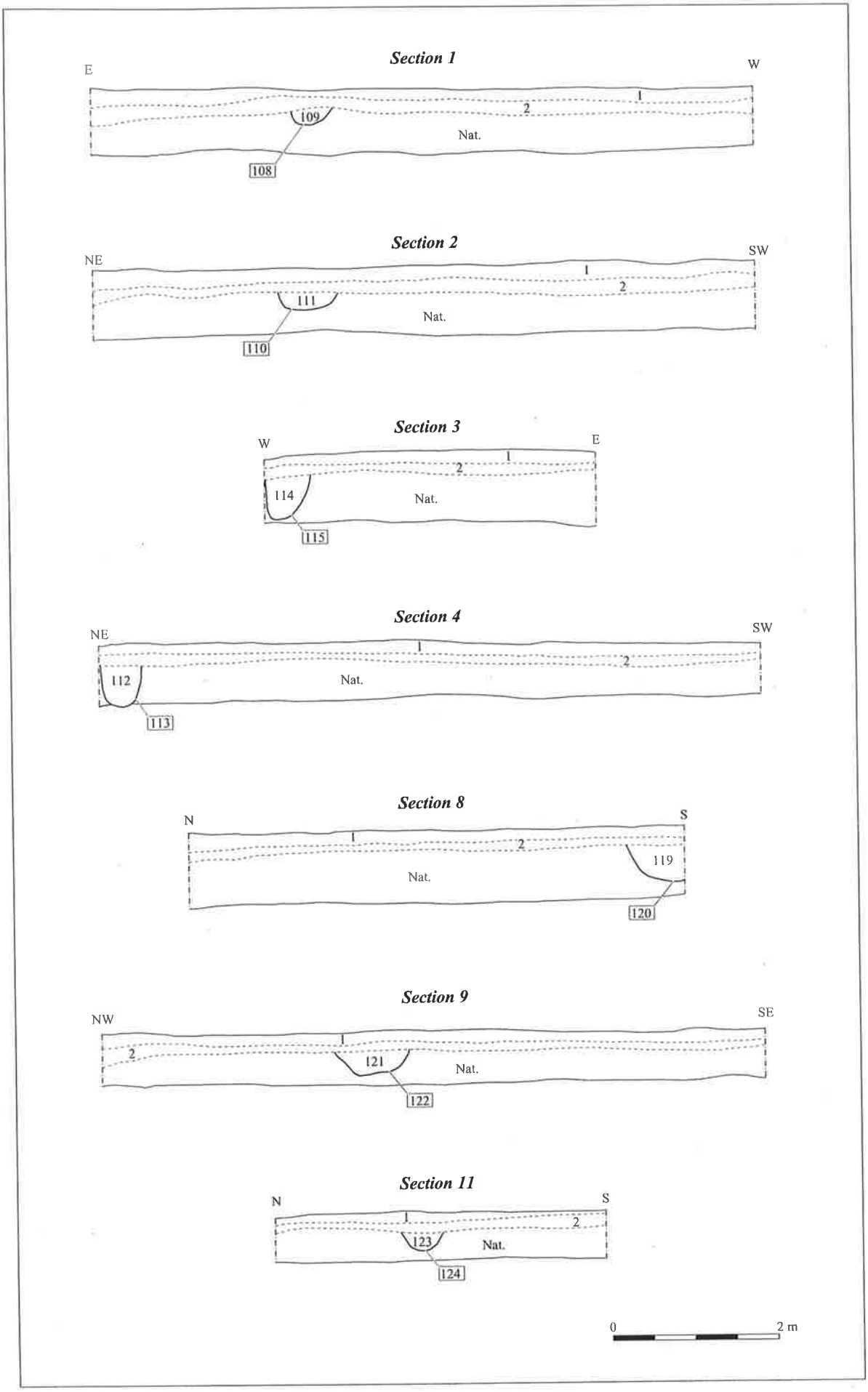

Figure 4 *Section drawings 1, 4, 8, 9 and 11*

Feature **89** was a posthole that was 0.25m wide and contained a dark grey silty clay.

Feature **90** was a posthole that was 0.25m wide and contained a dark grey silty clay.

Feature **92** was a posthole that was 0.40m wide and contained a dark grey silty clay.

To the north of pit **91** was posthole **95**. Posthole **95** was 0.25m wide.

Pit **91** was in the centre of the main road foundation. This pit was 4.10m wide and contained a dark grey silty clay. This pit may represent a Roman clunch quarry pit.

Feature **96** was a posthole which was 0.28m wide and contained dark grey silty clay.

Posthole **93** was 0.18m wide and contained a dark grey silty clay.

A number of ditches were identified within the footprint of the road.

Ditch **94** ran on an east west alignment and contained a dark grey silty clay.

Ditch **116** ran on an east west alignment.

To the west of ditch **116** was a large pit **105**. Pit **105** was circular, 3m wide. and contained a dark grey silty clay.

Car Park (Fig. 3)

A number of postholes and pits were identified in the car park area to the west of the main access road.

In the south-west corner of the car park area was a terminus of a ditch. Ditch **98** was was 0.40m wide and contained a dark grey silty clay.

Feature **99** was a posthole which measured 0.55m wide and contained a dark grey silty clay which was 0.55m wide.

Feature **100** was a posthole which was 0.25m wide and contained a dark grey silty clay.

Feature **101** was a pit which was 0.85m wide and contained a dark greyish brown silty clay.

Feature **102** was a posthole which was 0.30m wide was and contained a dark greyish silty clay.

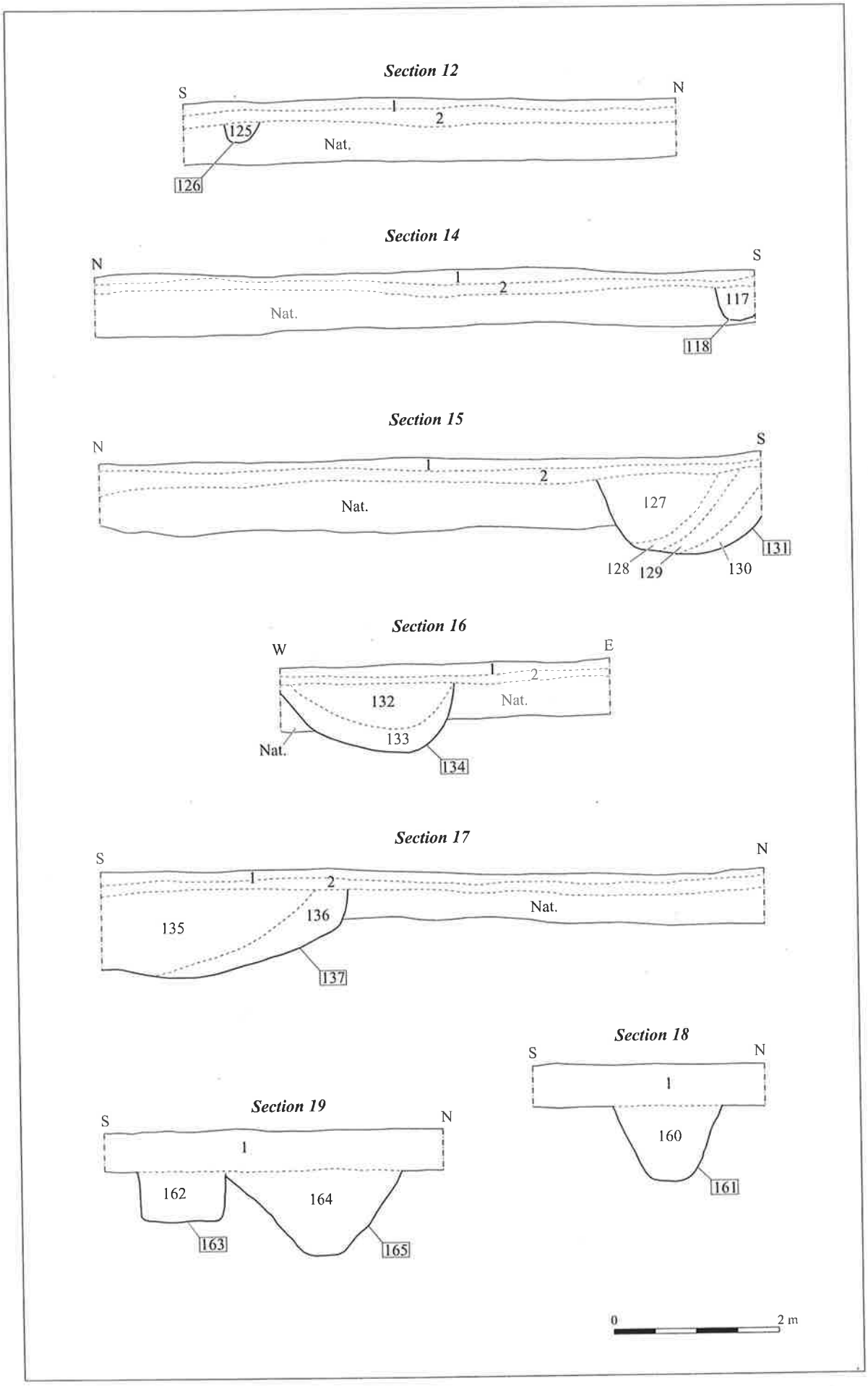

Figure 5 *Section drawings 12, 14-19*

Feature **103** was a posthole which was 0.25m wide and contained a dark grey silty clay.

Feature **104** was a posthole which was 0.29m wide and consisted of a dark grey silty clay.

Feature **116** was a ditch which ran on an east–west alignment and was 0.70m wide and over 8m long and truncated pit 105.

Pit **105** was a large pit, which may have been a quarry pit. It was 3m wide and 5m long and contained a dark grey silty clay. To the north of pit **105** was a large quarry pit (**106**). Pit **106** was 3.8m wide and contained dark grey silty clay.

House Plots 1-2

House plots 1-2 were in the south-west corner of the site. A number of pits and ditches were recognised within the sections of the foundation trenches.

Pit **151** was 1.4m wide and 0.64m deep and contained a single mid grey sandy silty fill 150.

Pit **153** was 1.4m wide and 0.15m deep and contained a mid grey brown silty sand. Pit **155** was 1.3m wide and 0.45m deep and contained a silty sandy fill.

Pit **157** was 0.95m wide and 1.05m deep and contained a mid grey brown silty sand.

Pit **159** was 0.4m wide and 0.35m deep and contained a mid grey brown silty sand.

House Plots 3-7

House plots 3-7 were in the north-east corner of the site. A number of pits and ditches were recognised within the sections of the foundation trenches.

Section 1 (Fig. 4)

A small pit (**108**) was identified in the northern part of the section. Pit **108** was 0.40m wide and 0.20m deep and contained a single fill (109). Fill 109 consisted of a dark greyish brown silty clay.

Section 2 (Fig. 4)

Pit **110** was identified in the northern part of the section. Pit **110** was 0.75m wide and 0.25m deep and contained a single fill 111. Fill 111 comprised dark grey silty clay.

Section 3 (Fig. 4)

Pit **115** was identified in the western end of section. Pit **115** was 0.50m wide and 0.50m deep and contained a single fill (116). Fill 116 consisted of a dark grey silty clay.

Section 4 (Fig. 4)

Pit **113** was located in the northern end of the section. Pit **113** 0.50m wide and 0.50m deep and contained a single 112. Fill 112 was a dark grey silty clay.

Section 6

Pit **139** was uncovered in the eastern end of the section. Pit **139** was 0.65m wide and 0.27m deep and contained a single fill 138. Fill 138 was a dark grey silty clay.

House Plots 8-11 (Fig. 3)

Section 8

Pit **120** was 0.60m wide and 0.40m deep and contained a single fill 119. Fill 119 was a dark grey silty clay.

Section 9 (Fig. 4)

A possible pit **122** was located in the western end of the section. Pit **122** was 0.41m wide, 0.21m deep and contained a single fill (121). Fill 121 was a dark grey silty clay.

Section 11 (Fig. 4)

Pit **124** was 0.41m wide and 0.20m deep and contained a single fill (125). Fill 125 was a dark grey silty clay.

Section 12

Pit **126** was 0.31m wide and 0.21m deep and contained a single fill (125). Fill 125 was a dark grey silty clay.

House Plots 12-13 (Fig 3)

Section 14

Pit **118** was 0.40m wide and 0.50m deep and contained a single fill 117. Fill 117 was a dark grey silty clay.

Section 15 (Fig. 5)

A large pit (**131**) was identified in the centre of the trench. Pit **131** contained four fills (127, 128, 129 and 130). Upper fill 127 was a light grey brown silty clay which was 1.0m thick. Fill 128 was a dark grey silty clay which was 0.15m thick. Fill 129 was a light brown silty clay which measured 0.16m thick. Lower fill 130 was 0.12m deep and comprised a dark grey silty clay. This deep feature may represent a large quarry pit.

Section 16 (Fig. 5)

A large pit (**134**) was identified in the southern part of the section. Pit **134** was 2.20m wide and 1.0m deep and contained two fills, 132 and 133. Fill 132 was 2m wide and 0.52m thick and comprised of a dark grey silty clay. Fill 133 was a dark grey silty clay which measured 2m wide and 0.27m thick. This feature may have been a large quarry pit or rubbish pit.

Section 17 (Fig. 5)

Pit **137** was 3m wide and 1.27m deep and contained two fills 135 and 136. Fill 135 was a dark grey silty clay that was 2.50m wide and 0.90m thick. Fill 136 was a dark grey silty clay which was 2.45m wide.

House plots 14-16 (Fig. 3)

No features were seen in the foundations trenches for these properties.

House plots 17-20 (Fig. 3)

Section 18 (Fig. 5)

In this section a possible enclosure ditch (**161**) was identified. Ditch **161** was 1.3m wide and 0.95m deep and contained a single fill 160. Fill 160 was a mid brown sandy silt. Further sections of this ditch were noted - features **163** and **167**, below.

Section 19 (Fig. 5)

Ditch **163** was identified in the eastern part of the section. Pit **163** was 1.08m wide and 0.60m deep and contained a single fill 162. Fill 162 was a mid to dark grey silty clay. Ditch **163** truncated ditch **165**. Ditch **165** was 2.15m wide and 1.02m deep and contained a single mid grey silty sand fill (164).

Section 20

Ditch **167** was 2.3m wide and 1.1m deep and contained a mid brown sandy silt (166).

6 DISCUSSION

Evaluation

Trench1

Trench 1 remains were characterised by a series of postholes and pits. In the centre of Trench 1 a number of postholes (**6, 8, 10, 38** and **40**) were revealed which might have formed a building or fence line. Pit **4,** in the south-western part of the trench, may have been a rubbish pit associated with the structural remains. Other features within this trench (**12**, **14**, **16**, **18, 20** and **36**) may represent structural remains associated with a Roman farmstead.

Trench 2

Trench 2 revealed three possible Roman field boundaries and structural evidence. Ditches **46, 66** and **69** appear to be Roman field boundaries associated with settlement. These ditches produced fragments of Roman box tile and roof tiles. Other features include postholes and pits (**85**, **81**, **86, 80** and **40**) which may have formed a building or fence line and may be associated with settlement.

Trench 3

In the western end of the trench there was significant stratigraphy in the form of a group of pits **72, 74** and **76** cutting boundary ditch **84**. This group of features contained Roman building material and may be associated with a nearby Roman farmstead or villa.

Ditch **22** contained medieval pottery but these may be intrusive as this feature appears to be a continuation of a field boundary noted in Trench 2 and in subsequent groundworks.

Trench 4

Features including postholes and pits could also be associated with Roman settlement.

Road Foundation

Soil stripping of the area within road foundation revealed a significant density of archaeological features. The largest feature uncovered in this area was pit **91** which may have been a Roman clunch quarry. In the eastern part of the road large pit **105** was revealed which could possibly be a Roman well or another quarry pit.

Ditches **116** and **94**, running north–south, possibly represent Roman field boundaries, indicated by the geophysical survey and excavated in Trench 2.

A number of postholes (**89**, **88**, **90**, **92**, **93**, **95**, **96** and **97**) were identified in the southern part of the road. These postholes may form part of a large structure - possibly a Roman timber building or possibly a fence line as they run at right angles to ditch **94**.

Car Park

A number of postholes (**99**, **100**, **103** and **104**) in the car park area may represent a large Roman building although no discernable pattern indicating a structure could be made out.

Pits **98** and **101** may represent Roman or medieval rubbish pits. Without full excavation insufficient dating material was recovered to date them although these features have been preserved for future investigation.

House Plots 1-2

A number of features, mostly pits were identified in the southern part of the site. Pits uncovered may relate to the quarrying of chalk/clunch.

House Plots 3-7

Features, mostly pits, were identified in the north-eastern part of the site. The pits may relate to remains identified in Trench 1. The geophysical survey did not indicate significant pits in this area.

House Plots 8-11

A number of rubbish pits were identified in the north western part of the site. Pits uncovered may relate to remains identified in the northern part of Trench 1 and continue beyond the evaluation trench. A ditch identified by geophysical survey was not exposed during groundworks.

House Plots 12-16

A number of small pits were identified in Plots 12 and 13, in the western part of the site but no features were noted in Plots 14 to 16. This may be due to the excavation of the foundations than a reflection of lack of activity in this part of the site. There was a noticeable falling off in the number and size of features in the western part of the development area. The ditch indicated by the geophysical survey was not exposed during groundworks.

House Plots 17-20

A possible Roman enclosure ditch (**161**, **163** and **167**) was identified in the western part of the site. The presence of this enclosure would reinforce the idea that there is a large rural Roman site close to the development area. Modern disturbance hindered the effectiveness of geophysical survey in the southern part of the site so the enclosure ditch was not noted in the non-intrusive survey.

COMPARITIVE RESULTS

The techniques employed have been successful in identifying a Roman rural site close to or within the subject site. Much of the evidence from the various techniques correlates in a very broad way. For instance, in the centre of the development area a number of ditches running on a north-west to south-east alignment (field boundaries) were identified in the evaluation (ditches **22, 66, 69**, **46**, and **22**) where sections were excavated, geophysical survey and the road foundations (**94** and **116**).

In the south-eastern part of the part of the site a number of postholes were revealed. In the preservation *in situ* phase over 15 postholes (**89, 88, 90, 91, 92, 96 93, 99**) were revealed which may have formed some form of Roman building or fence line. This observation is broadly supported by postholes (**29, 30, 32** and **34**) investigated in trenches 4 and 3 which may also represent structural remains

In the north-western part of the site three groups of pits were identified in the geophysical survey. This pattern roughly correlates with the third stage of work, which revealed pits **106** and **105** in the same area.

A large number of features were uncovered in the house foundations and these were recorded in accordance with the requirements of the Brief. The supervision of the ground reduction works for car parks and access roads allowed confirmation of features identified by the non-intrusive survey. Investigation of features along service trenches was hindered by the narrowness of the trenches.

7 CONCLUSION

The evaluation has demonstrated the presence of significant Roman remains including postholes, pits and ditches through excavation of features. Evidence from Trench 1 suggests that there may be a potential building (or a fence line) with an associated storage/rubbish pit or well.

Trench 2 revealed three possible Roman field boundaries and structural evidence.

Significant stratigraphy was revealed in the western end of Trench 3 with a group of pits truncating an earlier field boundary. The ditches uncovered in Trench 3 may link to the ones identified in Trench 2 and noted in the geophysical survey and during groundwork monitoring.

A significant outcome of the evaluation and metal detector survey was the identification of the presence of Roman building material and metal work in the topsoil and subsoil. The recovery of box flue tiles and tegulae point to the presence of a villa or large building in the immediate vicinity. Furthermore, a copper artefact that was recovered while metal detecting the spoil from Trench 1 may indicate the status of the site.

One of the most striking observations of the evaluation was the lack of features or artefacts dateable to the medieval period. Only one feature, ditch **22**, contained medieval pottery. This is surprising considering the proximity of the development area to the church and the historic core of the village.

The geophysical survey and metal detecting survey have added very little to the results of the evaluation trenches and recording of features recorded in building foundations. A number of ditches such as **94** and **116** excavated in the evaluation trenches were identified in the watching brief and were detected in the geophysical survey. Furthermore intercutting features uncovered in Trench 3were detected in the geophysical survey.

The impression of the site from all three stages of suggests that there may be a Roman villa/farmstead in the vicinity. Evidence for boundaries and possibly structures was recorded. Activities undertaken on the site also included quarrying for clunch possibly in the Roman and the medieval period.

Features have been largely preserved *in situ* and their disturbance has been minimised in line with the requirements of the Brief. The use of geotextile membrane cannot be guaranteed by the archaeologists observing and recording archaeological features exposed during groundworks.

ACKNOWLEDGEMENTS

The author would like to thank Freshwater Estates UK Ltd who commissioned and funded the archaeological work. Thanks are extended to thank Rob Atkins, Steve Graham and Dennis Payne for their work on site and Judith Roberts for managing the site. The illustrations were prepared by Crane Begg, Alexandra Howe and Emily Oakes. The brief for archaeological works was written by Kasia Gdaniec, County Archaeology Office, who visited the site and monitored the evaluation.

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Maps Consulted

Enclosure map 1800 (CRO L87/3)
First Edition 1888 Ordnance Survey map (CRO L87/3)

APPENDIX 1 Finds list

Context	Material	Object Name	Weight in kg	Comments
1	Ceramic	Brick	0.06	Brick/Tile
2	Ceramic	Vessel fragment	0.00	
2	Bone	Animal bone	0.04	
2	Cinder		0.01	(or maybe Clinker)
2	Ceramic	Fired clay	0.01	
2	Mortar	Mortar	0.02	
3	Bone	Animal bone	0.05	
3	Bone	Animal bone	0.03	
3	Flint	Flake	0.01	
3	Ceramic	Vessel	0.01	
3	Ceramic	Brick	0.07	Brick/Tile
3	Mortar	Mortar	0.01	
3	Ceramic	Ceramic Building Material	0.02	
5	Bone	Animal bone	0.00	
9	Bone	Animal bone	0.00	
11	Bone	Animal bone	0.01	
15	Shell	Oyster	0.00	
15	Bone	Animal bone	0.01	
19	Bone	Animal bone	0.01	
21	Bone	Animal bone	0.03	
21	Ceramic	Vessel fragment	0.01	
21	Ceramic	Brick	0.02	Brick/Tile
23	Ceramic	Fired clay	0.01	
23	Bone	Animal bone	0.01	
23	Flint	Flake	0.01	
31	Bone	Animal bone	0.00	
37	Bone	Animal bone	0.00	
41	Bone	Animal bone	0.05	
41	Ceramic	Brick	0.06	Brick/Tile
55	Stone	Stone	0.00	Unworked
55	Bone	Animal bone	0.02	
70	Bone	Animal bone	0.01	
71	Ceramic	Ceramic Building Material	0.34	
73	Ceramic	Brick	0.02	
73	Stone	Stone	0.06	Worked Stone
73	Stone	Stone	0.01	
73	Bone	Animal bone	0.34	
75	Bone	Animal bone	0.00	
83	Flint	Flake	0.02	

83	Bone	Animal bone	0.01	
91	Bone	Animal bone	0.39	
91	Ceramic	Tile	0.22	
91	Ceramic	Brick	0.06	Brick/Tile
105	Bone	Animal bone	0.02	
105	Slag		0.04	
105	Ceramic	Brick	0.02	Brick/Tile
105	Ceramic	Vessel fragment	0.06	
150	Bone	Animal bone	0.00	
154	Bone	Animal bone	0.02	
99999	Bone	Animal bone	0.16	
99999	Ceramic	Tile	0.14	
99999	Ceramic	Ceramic Building Material	0.32	
99999	Bone	Animal bone	0.01	

APPENDIX 2 Small finds list

Context Number	Small Find Number	Material	Object Name
99999	1	copper alloy	Buckle
99999	2	copper alloy	Button
99999	3	copper alloy	Artefact
99999	4	Fe (iron)	Buckle
3	5	Fe (iron)	Nail
99999	11	copper alloy	Coin
99999	12	copper alloy	
99999	13	copper alloy	
99999	14	copper alloy	Buckle
99999	15	Fe (iron)	Blade
99999	16	Pb (lead)	
99999	17	copper alloy	Buckle

99999 signifies found in topsoil or during metal detector survey

APPENDIX 3 ROMAN POTTERY

The pottery was spot dated by Stephen Macaulay.

Recovery

All the sherds forming the basis of this assessment were collected by hand.

Quantity

The assemblage was recovered from excavated pits and ditches and postholes. The pottery was derived from three contexts. This is a small assemblage for the type of site which suggests that we are on the edge of the settlement. The assemblage will be important in understanding the development of the site in the Roman period and aid us in elucidating the function of the site.

Introduction

Amongst the pottery recovered from the evaluation there are a few contexts, which date from the 2nd-4th century.

This was a local coarse ware assemblage which was comprised of grey Horningsea ware and shelly ware. The range of wares present suggest this is a utilitarian assemblage with a lack of high status finewares.

In conclusion the assemblage would appear to be derived from a 2nd-4th century Romano-British farmstead.

Context	type	spot date
2	1x Horningsea 1 x Horningsea B-S	100-300
21	2x Horningsea 3x oxidised Horningsea	100-300
105	1 x coarse shelly ware 1x shelly ware corded decoration 1x rim sherd shelly ware.	100-300

APPENDIX 4 ANIMAL BONE

Context no	Description
002	Three teeth, one pig, one sheep, one cow. Sheep long bone and jaw fragments, five unidentified fragments, two burnt
003	Six fragments, one possibly bovine and five bovine.
005	One fragment, unidentified
009	One fragment, unidentified
011	Three fragments, one possibly bovine
015	Two bone fragments, unidentified, 2 teeth, one sheep, one pig
019	Pig/sheep foot bone
021	12 small fragments, including one sheep tooth
023	One fragment, poor condition, possibly bovine tooth
031	One fragment, unidentified
037	One fragment, unidentified
041	Bovine leg bone
055	Sheep jaw. Poor condition
070	Two long bone fragments, possibly sheep
073	Two bovine long bone fragments and a rib fragment. Eight fragments, probably sheep and bovine
075	Unidentified fragment
083	Two bird long bone fragments. One unidentified fragment
091	Fragmentary scapula, complete tarsel, four long bone fragments and one tooth, all bovine. Two fragments of a long bone, possibly sheep
105	Three fragments, possibly sheep
150	One possible sheep long bone fragment, one possible bird long bone fragment
154	Sheep jaw fragment
99999	Sheep jaw fragment and possible long bone fragment. Bovine long bone fragment and two teeth. Three other fragments. Two pig teeth

APPENDIX 5 BRICK AND TILE

Twelve pieces of Roman tile weighing 1220g were recovered from six different contexts. The roof tile consisted of 5 tegula pieces, a possible imbrex fragment, with the remainder being undiagnostic. There was also a box flue tile fragment with combing

The presence of imbrex , tegulae and box tiles suggests that there is a Roman structure in the vicinity.

Context/ No.	No. of Pieces	Weight (g)	**Comments**
1	1	60	Box tile with combing
3	2	72	1 Imbrex and 1misc
21	1	6	1 misc.
71	1	325	1 Tegulae with combing, mortar and possible fingerprint.
91	3	273	1 Tegula with flange,1 Tegula and 1 misc.
105	1	24	1 misc
99999	3	460	2 Tegula with flange

APPENDIX 6- METALWORK by Dennis Payne.

Material recovered during archaeological investigatin (mainly through the use of metal detecting) has resulted in the production of a registered finds catalogue.

Quantity

Twelve registered finds were recorded including a Roman coin and a possible Roman cutting tool.

Small find No	Context No	Material	Description
1	99999	Cu	16th century belt buckle.
2	99999	Cu	Four buttons, post medieval
3	99999	Cu	Roman, possible cutting implement
4	99999	Fe	Fragment of iron horse bridle 19th century.
5	3	Fe	Nail, post medieval
11	99999	Cu	Roman coin
12	99999	Cu	Fragments of copper alloy.
13	99999	Cu	Furniture plate post-medieval
14	99999	Cu	Buckle post-medieval
15	99999	Fe	Scythe blade 18th century
16	99999	Pb	Lead fragments.
17	99999	Cu	Furniture fitting post-medieval

Provenance, dating and residuality

Majority of metalwork dates from the post-medieval period and reflects a rural location. The coin profile conforms to that for rural sites, with the majority of coins dating from the late 3rd to 4th century.

Condition

All objects are currently held in a stable environment.

Sources and Potential

This is a limited assemblage that does not warrant any specific analysis

APPENDIX 7 FLUXGATE GRADIOMETER, RESISTANCE AND METAL DETECTOR SURVEY RESULTS

Summary

- *Fluxgate gradiometer, resistance and metal detecting surveys were undertaken on land at Swaffham Bulbeck, Cambridgeshire*
- *Preceding excavations of the survey area confirmed that the site contains Romano-British remains, including ditches, pits and postholes, and there was evidence to suggest that a villa or large building could lie close to the site*
- *The magnetic survey appears to have identified traces of ditches and pits that relate directly to some of the previously excavated features. However, strong magnetic variation produced by modern activity appears to have reduced the effectiveness of the survey and there is a strong possibility that significant features remain undetected*
- *The resistance survey did not reveal the presence of potentially significant remains, such as buried walls*
- *Seven objects were recovered during the metal detector survey. These were passed to the client, who assumed responsibility for their conservation and appraisal*

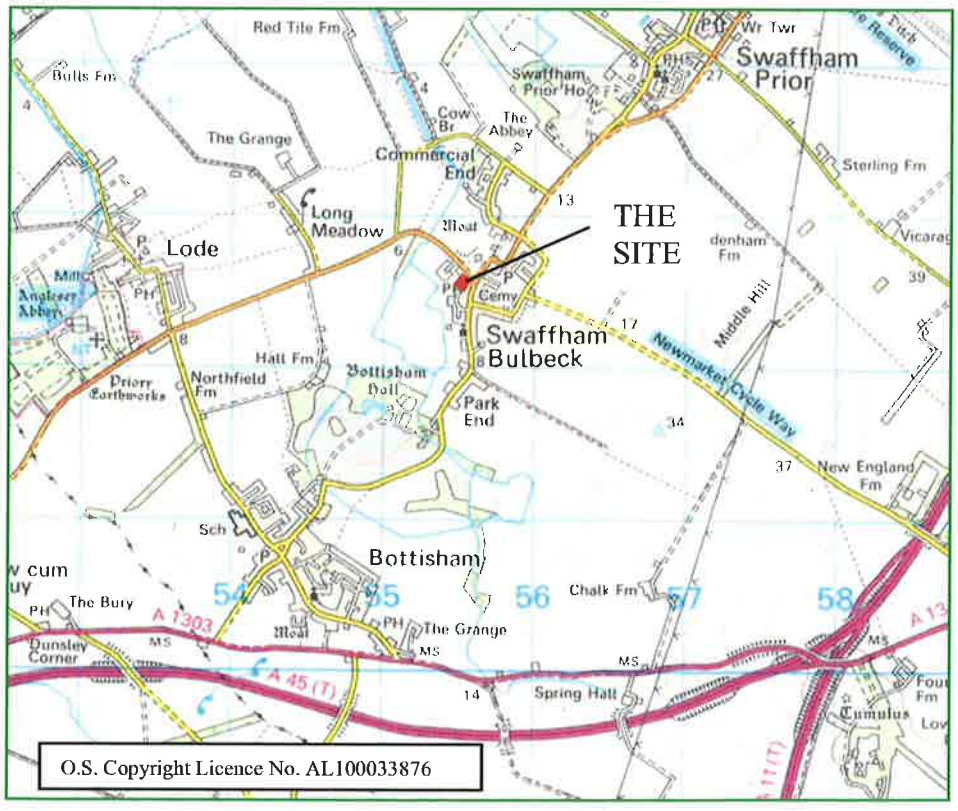

Fig. 1: Location of survey, scale - 1:25000

1.0 Introduction

Cambridgeshire County Council Archaeological Field Unit commissioned Pre-Construct Geophysics to undertake fluxgate gradiometer, earth resistance and metal detecting surveys on land at Downing Court, Swaffham Bulbeck in Cambridgeshire. This work was carried out as part of an archaeological evaluation of the site, conducted to fulfill the recommendations of Cambridgeshire County Council, and in advance of a planning application to construct 25 dwellings (Planning ref: E/03/00276/FULL). The archaeological potential of the site is high and the primary objective of the evaluation has been to identify archaeological remains in order to formulate a strategy whereby these are preserved *in situ*. An archaeological trial excavation of the site was undertaken in January 2004 by Cambridgeshire County Council Archaeology Field Unit (CCCAFU, 2004). The current surveys were designed to provide supplementary evidence of archaeological features that remain thus far un-detected.

The survey methodology was based upon guidelines set out in the English Heritage document '*Geophysical Survey in Archaeological Field Evaluation*' (David 1995).

2.0 Location and description

Swaffham Bulbeck lies approximately 8km to the east of Cambridge along the B1102 (Fig.1). The site, 'Downing Court', is situated at the western edge of the village and *c.* 300m to the north of the medieval church of St. Mary. The sub-rectangular unit of land (*c.*0.5ha) is bounded on all sides by Heras fencing. It was anticipated, and subsequently proven, that the close proximity of the metal fence and other modern features (see below) would be detrimental to the magnetic survey.

Current land use is uncultivated pasture with small areas in the northwest and southwest corners set aside for the storage of building materials. A portable toilet was located at the north-western edge of the site.

Traces of four backfilled trenches indicate the extent of the excavations undertaken by CCCAFU (Figs. 5, 6).

The underlying drift geology of the area comprises Lower Chalk overlain with marl (B.G.S. 1978, Sheet 188 Cambridge, Solid and Drift Edition, 1:50,000). The magnetic susceptibility of this type of geology is variable (Clark 1990, 92).

3.0 Archaeological and historical background

This section is based on information contained within the documents '*Brief for Archaeological Investigation*' (Archaeology Section, Cambridgeshire County Council, 2004) and '*Roman Remains at Downing Court, Swaffham Bulbeck, Cambridgeshire- Summary Statement*' (CCCAFU, 2004).

Although there is no direct evidence of prehistoric activity on the site, worked stone objects, flints and barrows have been identified within the parish.

Within a radius of *c.*1.3 km, the surrounding area contains Romano-British villa estates, including one designated as a Scheduled Ancient Monument (SAM 254). Although previous excavation has also produced evidence chalk quarrying that dates from the Roman period, peak production did not occur until the earlier medieval period, with a resurgence of activity in the 17th and 18th centuries.

A recent evaluation of the site (Cooper, S 2004. *Roman Occupation Remains at Swaffham Bulbeck*, AFU Site Report) identified evidence of Romano-British settlement remains; enclosure ditches and numerous postholes and pits. The preponderance of the latter (discrete) features suggests domestic occupation of the area, although it is possible that traces of industrial activity (as yet, undefined) are also present. Quantities of greyware pottery were recovered, as well as floor tile fragments and bronze objects. The recovery of box flue tiles and tegulae suggests the presence of a large high status building within or close to the proposed development site.

4.0 Methodology

Gradiometry is a non-intrusive scientific prospecting technique used to determine the presence/absence of some classes of sub-surface archaeological remains (*e.g.* 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 remains.

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

Resistivity surveys measure the electrical resistance of the earth's soil moisture. A twin probe configuration is normally applied, which involves the pairing of electrodes (one current and one potential), with one pair remaining in a fixed position (remote probes), whilst the mobile probes measure resistivity variations across the survey grids. Resistance is measured in ohms, and this method generally detects to a depth of 1m. Features such as wall foundations are usually identified as high resistance anomalies, as are rubble spreads, made surfaces (*i.e.* yards and paths) and metalled roads and trackways. In contrast, low resistance values are normally associated with water-retentive features such as pits, ditches, drains and gullies.

The Gradiometer survey was undertaken using a Bartington Grad-01 Dual Fluxgate Gradiometer with an electronic sample trigger 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 resistance survey was carried out using a Geoscan RM15 Resistance Meter with an AD1 adapter, configured as a two-twin parallel electrode probe array formation in mobile probe spacing of 0.5m. The zigzag traverse method of survey was used, with 1.0m wide traverses across 30m x 30m grids.

Instruments	Bartington Grad 601 fluxgate gradiometer (DL601 data logger) RM15 Resistance Meter with a twin probe array Fisher 1236X metal detector
Grid size	30m x 30m
Sample interval	0.25m (Grad 601) and 1m (RM15)
Traverse interval	1.0m
Traverse method	Zigzag
Sensitivity	0.1nT (Grad 601) and ohms (RM15)
Processing Software	Gradiometer and resistance-Geoplot (v.3.0)
Weather conditions	Fair
Area Surveyed	c.0.5ha
Date of survey	12/2/04
Survey personnel	Peter Masters, Peter Heykoop, Simon Savage
National Grid Reference	TL5551 6256

Table 1: Summary of survey parameters

Data from both surveys was analysed using Geoplot v.3.0 (Geoscan 2000). In the resultant plots, low magnetism/resistance is shown as white and high magnetism/resistance as black. The results are presented as raw and enhanced data images.

The magnetic data was processed using zero mean functions to correct the unevenness of the plots in order to give a smoother graphical appearance. The data was also processed using an algorithm to remove magnetic spikes, thereby reducing extreme readings that are sometimes caused by stray iron objects and spurious effects due to the inherent magnetism of soils.

The resistance data was processed using high and low pass filters in order to reduce anomalies caused by variations in geology and the depth of topsoil.

The results are presented as greyscale, trace and interpretive images (Figures 4-7).

A metal detector survey was undertaken using a Fisher 1236X along traverses within the gradiometer and resistance survey grids. The instrument was calibrated to discriminate (and thus exclude) iron objects. This strategy was employed due to the preponderance of modern debris that was noted on the ground surface.

The metal detector find spots were recorded by reference to the survey grids (Fig.6). The finds were placed in labelled bags and passed on to CCCAFU, who assumed responsibility for their conservation and appraisal. The final results of the post-excavation studies are not known by PCG.

5.0 Analysis and Interpretation of results

Gradiometer survey (Figs. 2, 4)

As anticipated, the proximity of the Heras fencing (together with other modern objects such as building materials and the portable toilet) resulted in a relatively strong and distorting magnetic response along the perimeter of the site (Fig. 4: shown as purple dashed line). In addition, a number of strong anomalies were recorded within the central parts of the site (circled purple). These probably signify modern ferrous objects.

The evaluation trenches had been backfilled immediately before the survey was undertaken and, where recorded, appear as magnetically depleted linear anomalies: the positions of evaluation Trenches 3 and 4 are clearly defined (orange lines). Traces of Trench 1 were also recorded. The magnetic variation reflects the reinstatement process, which has resulted in the formation of low and unconsolidated earthworks. Trench 2 was sited along the eastern edge of the site in close proximity to Heras fencing, the strong magnetic response of which has masked traces of the excavation.

The survey may have recorded slight traces of linear features (red lines). Some of these are extremely diffuse or ill defined, particularly anomalies 2-5, where the close proximity of modern ferrous materials may have reduced the resolution of these anomalies. It is possible that natural processes may be responsible (*e.g.* near surface glacial fractures within the solid deposits of chalk), although the excavations did not uncover traces of this phenomenon. Their archaeological potential is enhanced by the presence of known remains (including ditches, pits and postholes) that were identified during excavation (Cooper 2004). Ditches were revealed in Trenches 2, 3 and 4, and the positions and alignments of linear anomalies 1- 4 suggest that they may be ditches that continue into/across the excavated areas.

Linear anomaly 5 is very faint, and its easternmost extent has not been clearly defined by the survey. There is little evidence to indicate that it continues into the area defined by Trench 1, although relatively strong variation in the eastern part of the site may have masked its magnetic signature (it should be noted that a possible ditch terminus was recorded in Trench 1, albeit on the eastern side of the trench). Should anomaly 5 continue into the area occupied by Trench 1, it may have been as a feature within the upper soil that was stripped in advance of excavation. (*e.g.* cultivation score).

Two moderately well-defined parallel linear anomalies (6 and 7) may indicate buried ditches or gullies. However, they were recorded within the vehicular access zone to the site, and it is also possible that they reflect recent traffic compaction/wheel rutting.

A number of pit-like anomalies were recorded (circled red). Anomaly 8 was detected close to the western end of Trench 3 and probably relates to a pit that was excavated. The latter contained Roman box flue tile. A similar anomaly (9) was detected to the immediate north of the trench.

Resistance survey (Figs. 3, 5)

The resistance survey did not identify any clear evidence of significant archaeological activity. It is possible that high soil moisture levels prevented known ditches and other features resolving as variations in electrical resistance. The excavation trenches were recorded as high resistance anomalies. This may reflect relatively unsaturated material that was reinstated at the time of survey.
The survey did identify zones of slightly higher resistance (Fig.5: boxed in green), although this probably reflects geological/moisture level variations. The contrast is more apparent in the raw data plot.

Metal detecting survey (Fig 6)

The metal detecting survey produced seven finds; recovered in the mid and southern parts of the site. They were passed (as found) to CCCAFU, and at the time of writing, the precise nature these finds is not known to the author.

6.0 Conclusions

The surveys have identified only limited evidence of archaeological remains that are known to lie within the proposed development area. A number of magnetic anomalies possibly indicate ditches and pits that directly relate to excavated features. The efficiency of the magnetic survey has been compromised by the close proximity of modern ferrous objects, such as Heras fencing and construction materials, the magnetic responses of which may be masking underlying features. The resistance survey was particularly unsuccessful in detecting archaeological remains. This may, in part, be the result of high soil moisture levels that have reduced the contrast (if any) of potential resistance anomalies.

7.0 Acknowledgements

Pre-Construct Geophysics would like to thank Cambridgeshire County Council Archaeological Field Unit for this commission.

8.0 References

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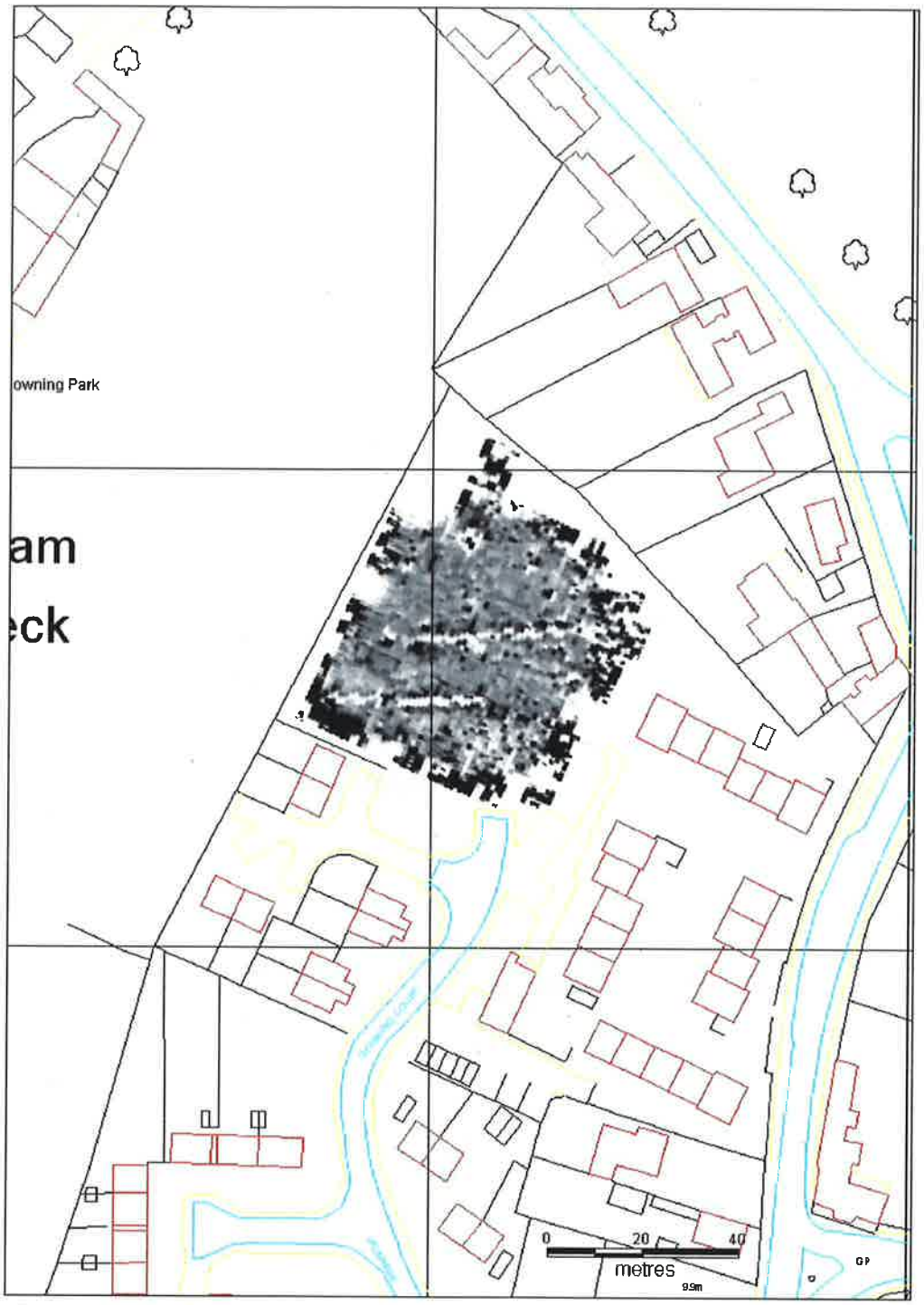


Figure 2 Location of Gradiometer Survey, Scale 1:2500

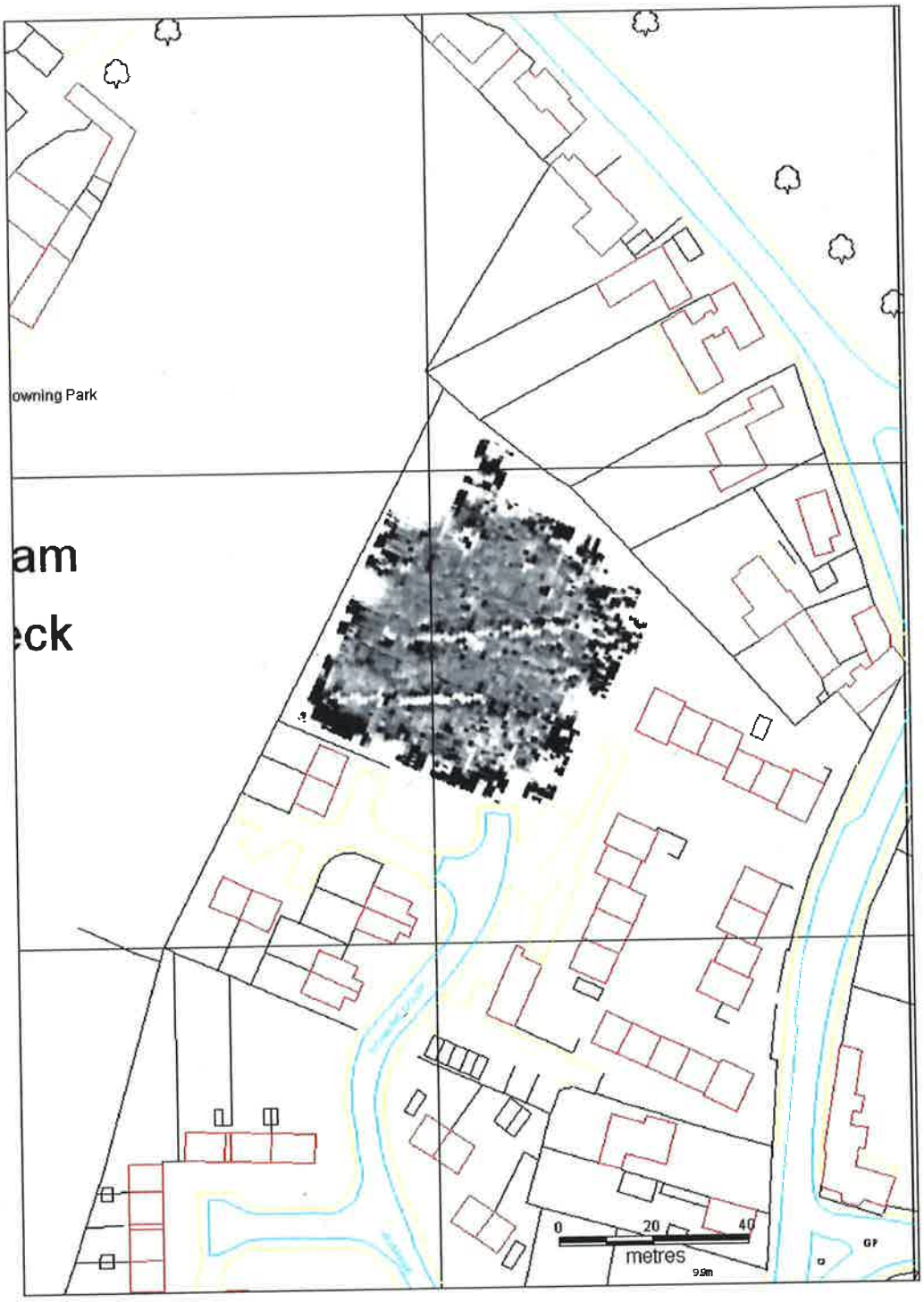
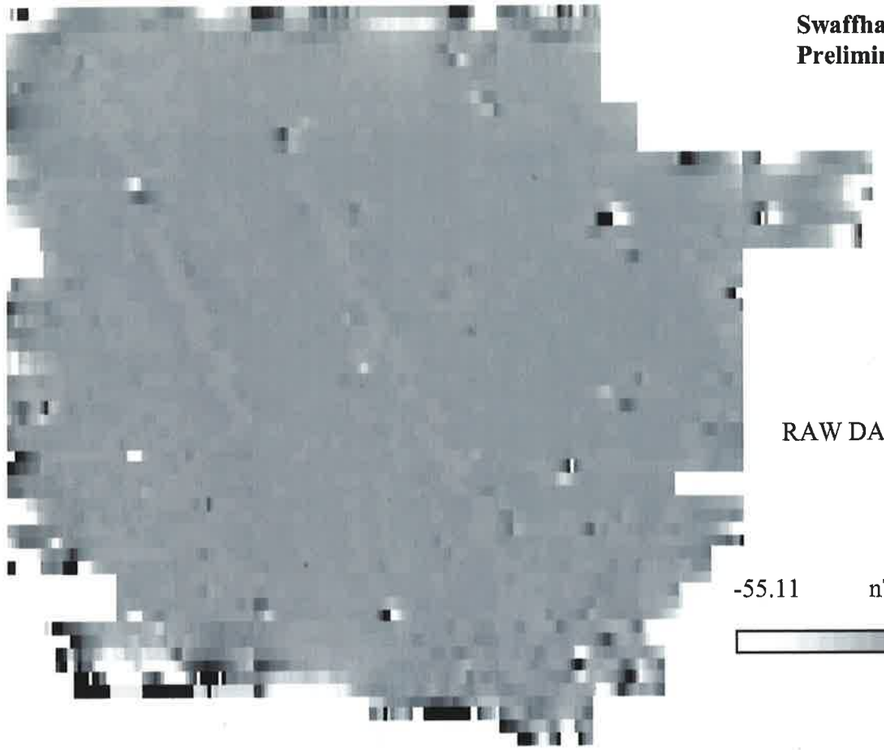


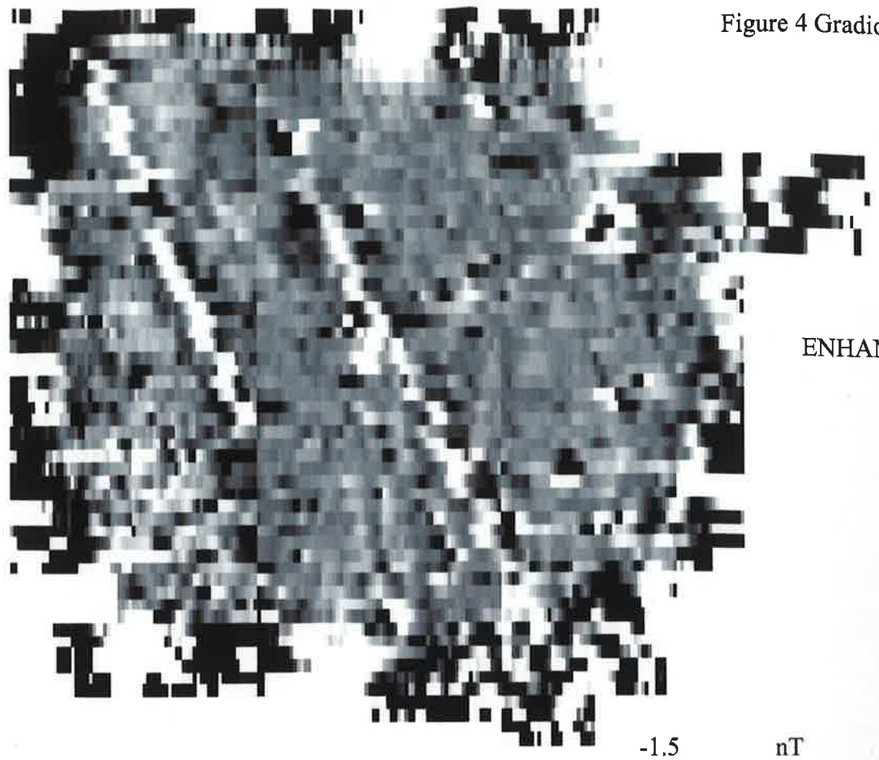
Figure 3 Location of Resistivity Survey, scale 1:2500

Swaffham Bulbeck, Cambridgeshire
Preliminary interpretation of results



RAW DATA

-55.11 nT 80.44

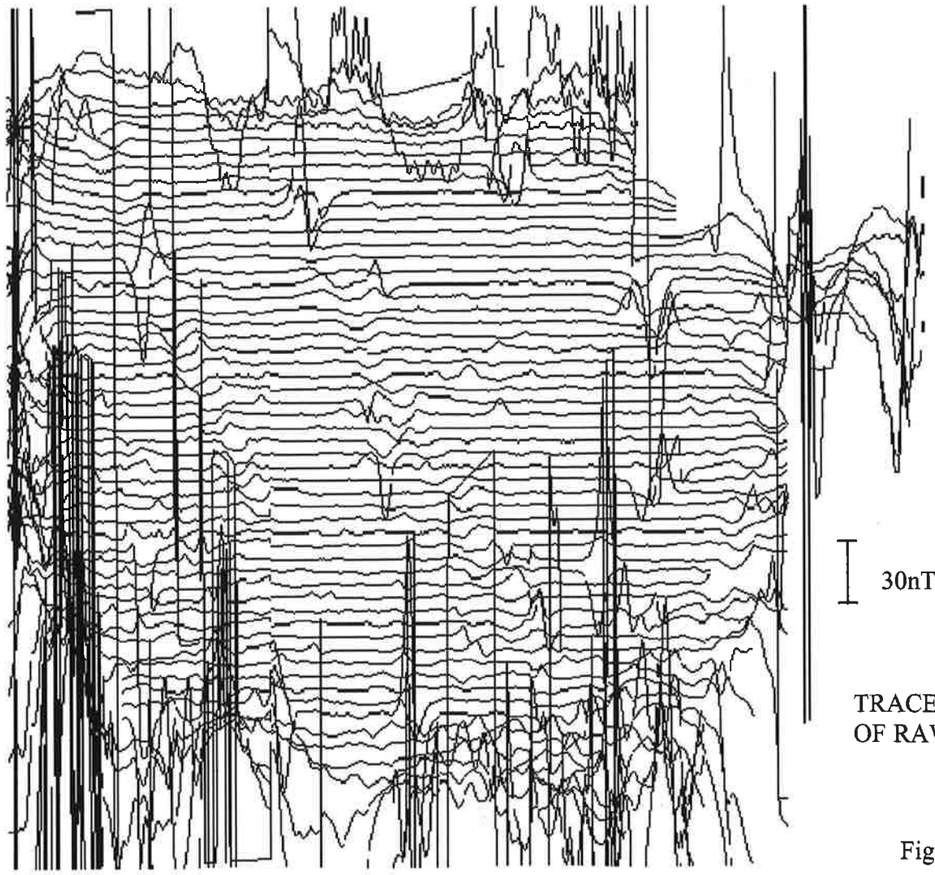


ENHANCED DATA

-1.5 nT 1.5

N

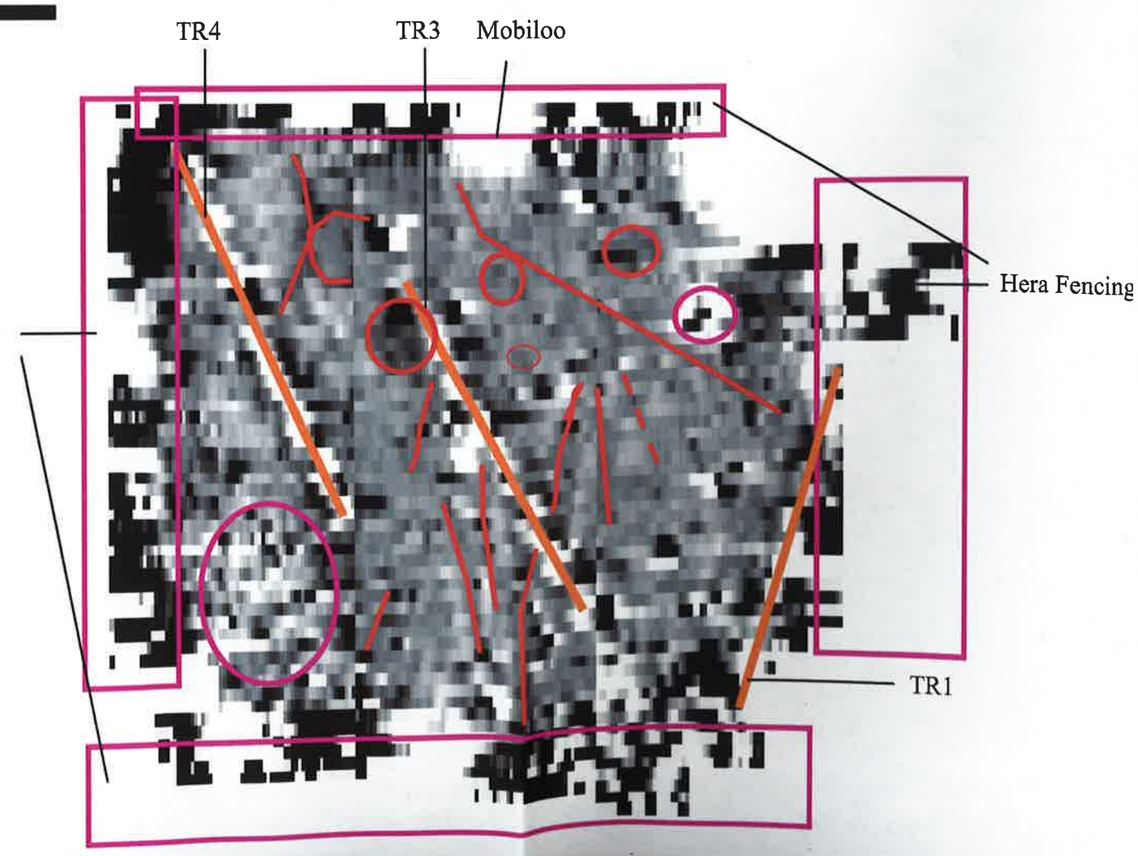
30m



30nT

TRACE PLOT
OF RAW DATA

Figure 4 Gradiometer Survey 1:500



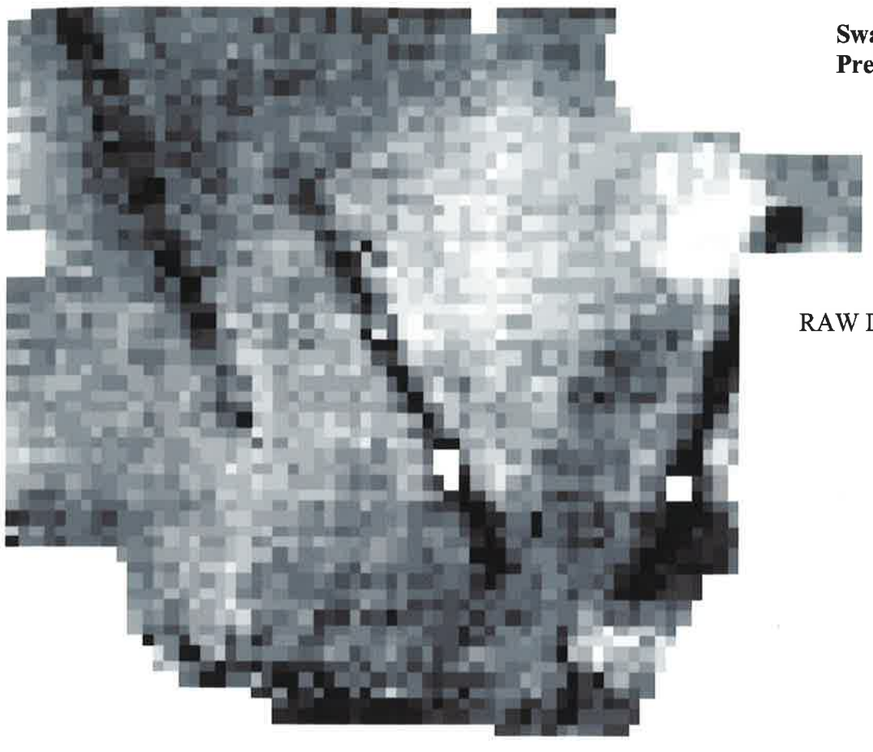
Ditches?

Pits?

Modern disturbance

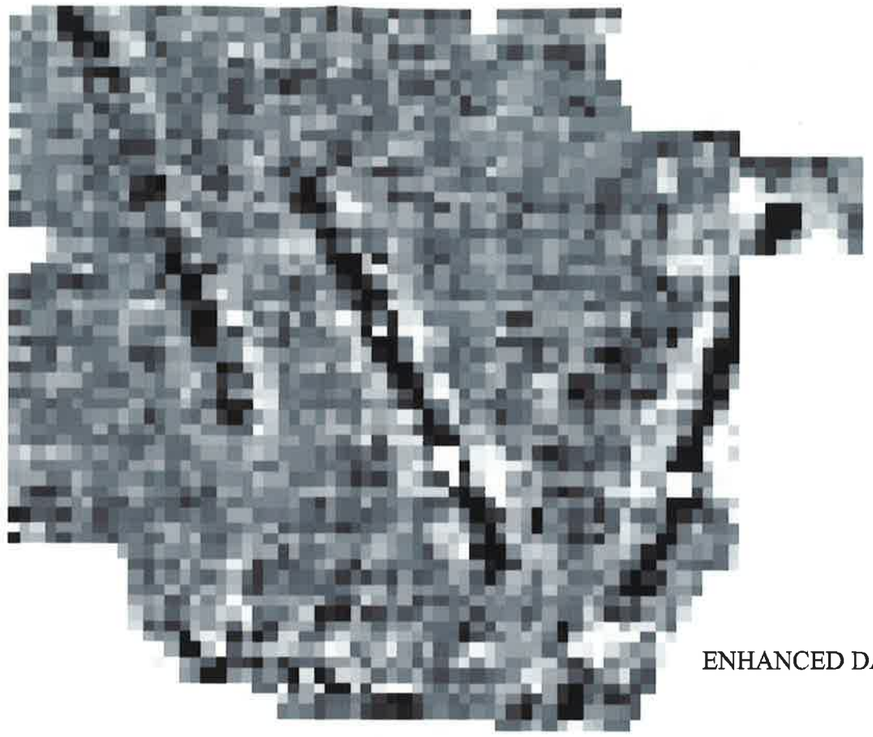
Figure 5 Resistance Survey 1:500

Swaffham Bulbeck, Cambridgeshire
Preliminary interpretation of results



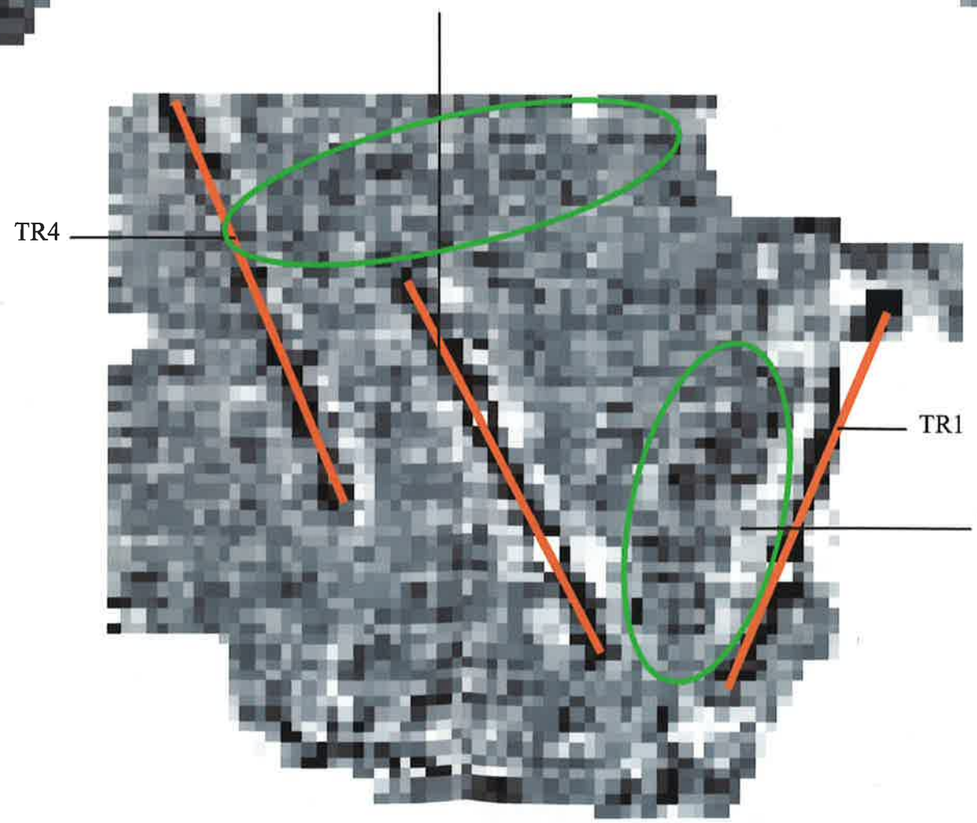
RAW DATA

19.80 ohms 28.14



ENHANCED DATA

21 ohms 25



30m

Figure 5 Resistance Survey 1:500

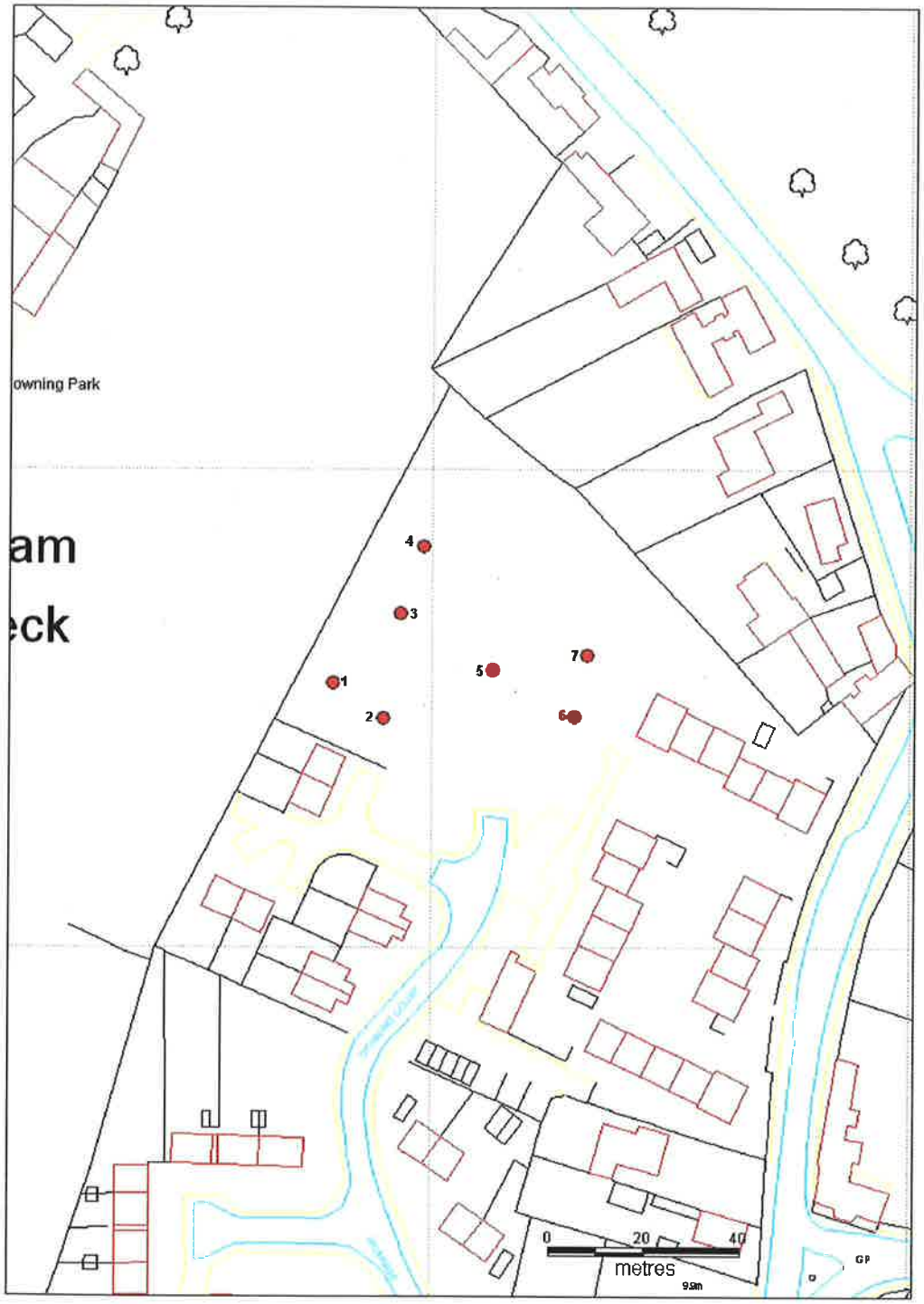


Figure 6 Location of metal detecting finds, scale 1:1000

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IFA

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